Influence of IoT toward industry sector's employee performance.

OI KEN HUEY

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

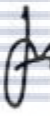
I hereby acknowledge that this project paper has been accepted as part of fulfilment for the degree of Bachelor of HONORS TECHNOLOGY MANAGEMENT (TECHNOLOGY INNOVATION).

SIGNATURE : 

NAME OF SUPERVISOR : DR HASAN BIN SALEH

DATE : 31/01/2023

Ts.DR GANAGAMBEGAI LAXAMANAN
Senior Lecturer
Faculty Of Technology Management and Technopreneurship
University Technical Malaysia Melaka

SIGNATURE : 

NAME OF PANEL : TS DR GANAGAMBEGAI A/P LAXAMANAN

DATE : 31/01/2023

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This thesis is submitted in partial fulfilment of the requirements for the award of

Bachelor of Technology Management (Technology Innovation) with Honors

Faculty of Technology Management and Technopreneurship

Universiti Teknikal Malaysia Melaka

18 JANUARY 2023

DECLARATION OF ORIGINAL WORK

I hereby declare that all the work of this thesis entitled "**Influence of IoT toward industry sector's employee performance**" is original done by myself and no portion of the work encompassed in this research project proposal has been submitted in support of any application for any other degree or qualification of this or any other institute or university of learning.

SIGNATURE

NAME : OI KEN HUEY

DATE : 31/01/2023

DEDICATION

I want to express my gratitude for the commitment of my dear family members who encouraged me to pursue a degree through education. Additionally, I want to convey my sincere gratitude to my friends, my professor, Dr. Hasan Bin Saleh, who is also my project supervisor for my senior project. They have given me their complete assistance and counsel during my research. Without their support and encouragement, it will be impossible to complete this research in a reasonable amount of time.

ACKNOWLEDGEMENT

First and foremost, I would want to thank God for giving me excellent health, strength, and the chance to effectively acquire my knowledge in order to do this Final Year Project (FYP) within the allotted time. I want to express my gratitude to my parents for their patience and support as they waited for me to complete my degree. I would also want to thank my friends for their timely suggestions on this research effort. They are imparting a great deal of expertise on how to move forward with this research effort. It aids in my more effective completion of my research project.

Secondly, I am expressing my sincere appreciation and thanks to my beloved supervisor Dr Hasan Bin Saleh for his helping, teaching, monitoring, support, and contribution. She has guided and assisted me patiently during two semesters in session 2020/2021. Also, I sincerely appreciate and thank Dr. Ganagambegai A/P Laxamanan as my panel research for sharing her knowledge and experience in Research Methodology. Her suggestions have been useful for me to proceed well this research project.

Last but not least, I would like to express my appreciation to all respondents who had contributed their time and efforts in filling the questionnaires. They had provided valuable feedbacks that assist me in finishing this research. With the assistance and supports from the respondents, I have successfully fulfilled all the components of a questionnaire. Once again, I am grateful and honestly thankful to all.

ABSTRACT

With so much competition in the business world, companies are increasingly forming partnerships to boost production and improve the efficiency of their operations. With the revolution industry 4.0, the internet of things, or IoT, is a network of interconnected smart devices, mechanical and digital machinery, items, animals, and people with unique IDs and the capacity to transfer data without needing human-to-human or human-to-computer contact. The Internet of Things (IoT) has already made inroads into nearly every business. The Internet of Things (IoT) provided benefit such as improve business decisions about the acquisition, motivation, usage, and retention of talented individuals in enterprises. The digitization from both unstructured and structured data has aided firms in forecasting future events in a variety of functional areas, including marketing, operations, finance, production, and human resource management. There's no denying that the Internet of Things will generate a massive amount of data about people and their processes. With IoT, it is sure going to have a significant impact on employee performance with function to track, monitoring and optimize performance by just using mobile device. Using IoT device will giving great advantage on employee performance in workplace. To complete this study, the measuring instrument in the form of a questionnaire has been chosen, and it was supplied in the targeted research location, Ayer Keroh industry area. The information gathered from the form a simple random sample of Ayer Keroh industry area worker as respondent. Data analysis, Electronic Monitoring and Human capital are the three constructs in the survey

ABSTRAK (BAHASA MALAYSIA VERSI)

Dengan begitu banyak persaingan dalam dunia perniagaan, syarikat semakin membentuk perkongsian untuk meningkatkan pengeluaran dan meningkatkan kecekapan operasi mereka. Dengan revolusi industri 4.0, internet of things, atau IoT, ialah rangkaian peranti pintar yang saling berkait, jentera mekanikal dan digital, item, haiwan dan orang dengan ID unik dan kapasiti untuk memindahkan data tanpa memerlukan manusia ke manusia atau hubungan manusia-ke-komputer. Internet Perkara (IoT) telah pun memasuki hampir setiap perniagaan. Internet of Things (IoT) memberikan manfaat seperti menambah baik keputusan perniagaan tentang pemerolehan, motivasi, penggunaan dan pengekalan individu berbakat dalam perusahaan. Pendigitalan daripada kedua-dua data tidak berstruktur dan berstruktur telah membantu firma dalam meramalkan peristiwa masa depan dalam pelbagai bidang berfungsi, termasuk pemasaran, operasi, kewangan, pengeluaran dan pengurusan sumber manusia. Tidak dapat dinafikan bahawa Internet Perkara akan menjana sejumlah besar data tentang orang dan proses mereka. Dengan IoT, ia pasti akan memberi kesan yang ketara terhadap prestasi pekerja dengan fungsi untuk menjejak, memantau dan mengoptimumkan prestasi dengan hanya menggunakan peranti mudah alih. Menggunakan peranti IoT akan memberi kelebihan besar pada prestasi pekerja di tempat kerja. Bagi melengkapkan kajian ini, alat pengukur dalam bentuk soal selidik telah dipilih dan dibekalkan di lokasi kajian yang disasarkan iaitu kawasan industri Ayer Keroh. Maklumat yang diperoleh daripada borang sampel secara rawak daripada pekerja kawasan industri Ayer Keroh sebagai responden. Analisis data, Pemantauan Elektronik dan Modal Insan adalah tiga konstruk dalam tinjauan.

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Chapter 1: Introduction

1.0 Introduction

In the twenty-first century, information technology has ushered in a revolution. This is the age that is distinguished by the advancement of technology and other new and advanced technology. These technologies assist mankind in completing tasks in a more timely and effective manner. As a result, the enterprise's massive amounts of data could be handled without constraint. In this way, processing power is greatly increased, which can prove to become a big significant advantage for that specific organization in the future. It is concerned with Internet-based hosted services.

Big data, AI, Cloud Computing, and the Internet of Things are the four primary components of the fourth industrial revolution (FIR), and these four components are together referred as the main components of the FIR. The impacts on worker performance are numerous. At hale, Barde, Kamble, Mirajkar, & Singh, 2012; Ross, 2011) define cloud computing as a set of information and communication technology services that are made broadly available via network access from a service provider. Increased internet and technological advancements enable Cloud technology providers to tap into new markets and disrupt established HR business practices (Willcocks et al., 2013). (Deloitte, 2011; Ross, 2011).

Based on Murtaza Ghobakhloo given opinion Industry 4.0, also known as the fourth industrial revolution and possible digital transformation, is rapidly expanding. People's lives and workplaces are being dramatically altered by the digital revolution, and the public is nonetheless hopeful about the possibilities that Industry 4.0 may present for sustainable growth. Industry 4.0 is regarded as a new industrial stage where product connectivity and vertical and horizontal manufacturing process integration can assist businesses in achieving improved industrial performance. The International Journal of Production's Lucas Santos Dalenogare, Guilherme Brittes Benitez, Néstor Fabián Ayala, and Alejandro Germán Frank note that little is known about how the industry views the potential contribution of Industry 4.0-related technologies to industrial performance, particularly in developing nations. Study of economics conclusion.

1.1 Background of Study

With so much competition in the business world, companies are increasingly forming partnerships to boost production and improve the efficiency of their operations. And be well-positioned in comparison to competitors' businesses on the market as a result, while the clients' The important conclusion is that there is a growing demand for high-quality services. Better human skills development is beneficial to businesses. boosts the company's long-term quality Because of its size, services, and the efficacy and efficiency of their Human Resources HR and the quality-per-deployment approach are becoming increasingly popular. More businesses are interested in automating the evaluation of their products. employees' performance following completion of a training program.

The Covid-19 Epidemic Employee Pulse survey report by Aon Malaysia has revealed that 74 per cent of employee has been fully working from home during the Movement Control Order Period (MCO). From the survey report, Malaysian Employers Federation executive director Datuk Shamsudin Bardan has point out that many employees and employer have significant drop in performance. And the report also reveals that 77 per cent of employee has drop the productivity and the rest 23 per cent are able to maintain or perform higher productivity.

The Internet of Things (IoT) is being used to improve business decisions about the acquisition, motivation, usage, and retention of talented individuals in enterprises. This paper aims to investigate how companies are employing technology and tools to drastically alter how HR and business leaders use people data. The digitization from both unstructured and structured data has aided firms in forecasting future events in a variety of functional areas, including marketing, operations, finance, production, and human resource management. There's no denying that the Internet of Things will generate a massive amount of data about people and their processes. For example, if a group of employees is dissatisfied and wants to leave the company, analytics could notify HR before employees decide to go, allowing some of them to stay. The information is extremely useful to decision-makers and strategists. Data analysis processing and machine learning capabilities can help in measuring engagement levels and simplifying engagement programmed with IoT.

1.2 Problem statement

The Internet of Things (IoT) has already made inroads into nearly every business. It's time for businesses to embrace this technology and transform themselves. In simple terms, the Internet of Things (IoT) refers to the interchange of data between various devices connected by a network. One thing that should not be overlooked is cybersecurity, as the number of devices grows, so do the hazards. In current research trying to find out the influence of IOT such as data analysis, electric monitoring and human capital affect the employee performance. (Khan, M. A., & Salah, K., 2018)

Organizations may use IoT analytics technologies to successfully use complicated IoT datasets. When businesses have a better understanding of data, they may improve goods and increase profits. Organizations can optimize products based on client wants since consumers are connected to the Internet. IoT analytics, for example, can provide the popularity of features, average usage patterns, and the best battery capacity. This functionality and analysis also aid firms in resolving issues and distributing software updates online. Customer engagement and user retention rise dramatically when fixes are given swiftly and on schedule (H Mohd Noor et al 2021)

Remote IoT apps enable operators to monitor and manage equipment performance without the need for on-site personnel. IoT sensors linked to cloud software applications can instantly report on things like machine condition, consumption, and even temperature, giving the responsible person real-time data (Kallman, Ernest, 1993). The IoT devices alert the professionals when criteria are exceeded, allowing them to act just in time to avoid additional lost.

By adapting IoT it able to improve employee performance by ease them to instant to book meeting rooms, communicate with any other team member to exchange idea and lot more by just carrying an internet enable mobile device. By using mobile device provide employee more flexible work environment due to the mobility of device, just a click anytime anywhere they can book, communicate or done their job. (J. Buckley, 2006)

With IoT, it is sure going to have a significant impact on employee performance with function to track, monitoring and optimize performance by just using mobile device. Using IoT device will giving great advantage on employee performance in workplace.

1.3 Research Question

Human resource leaders are faced to provide ways for simplifying traditional HR practices as business partners. Human Resource leaders, on the other hand, may be hesitant to move toward Cloud-Based Technology and instead rely on peer experience to learn how technologies deployed and the effects of adoption before making a technology transition. The following research questions directed the investigation into the topic of HR leaders' perspectives on using Cloud-Based Technology:

I. How does the Data analysis influence toward industry sector's employee performance?
II. How does the electronic monitoring influence toward industry sector's employee performance?
III. How does the human capital analysis influence toward industry sector's employee performance?

1.4 Research objective

I. To examine relationship between data analysis and employee performance.
II. To identify relationship between electronic monitoring and employee performance.
III. To determine relationship between human capital analysis and employee performance.

1.5 Scope and limitation of the study

The research will be conducted among the Industrial that can be found in Malacca. They will be providing form of question to answer the information gathered for the aim of answering a research question is referred to as data. The form of information required is determined by the research objectives. Using questionnaires and survey research, the methodology for the current FYP will take a descriptive stance, consider the facts, and clarify the facts. These assist in identifying and elucidating facts with the use of examples without contesting them. Numerous factors can be employed in descriptive research to explain facts.

1.6 Significant of study

Current study will provide survey or questionnaire to the targeted audience. From current study able to know well influence of IoT toward industry sector's employee performance. It introduces new methods of working, boosts productivity, and improves people's interactions with organizations. According to a study, improvements in an organization's process can have a positive impact on individual employees' performance and attitudes toward work.

1.7 Summary

In chapter 1 introduced the relation between IoT and employee performance. The Internet of Things (IoT) is a network of interconnected nodes that may share data among themselves without the need for human engagement. The Internet of Things (IoT) is, in other words, a network of electronic gadgets that can communicate and share data. IoT can boost employee productivity by enabling effective operations management, greater resource and asset use, and other benefits.

Chapter 2: Literature Review

2.0 Introduction

Review of the literature will be covered in the present chapter. In this chapter, the explanation of the relationship between independent and dependent variables will be covered. The theoretical framework will demonstrate how independent and dependent variables are related. The independent variable's hypothesis will be tested to determine whether it is significant with the dependent. The conclusion will be the last section of the current chapter.

2.1 Data Analysis

Data analysis is the deliberate use of mathematical and/or logical approaches to comprehend, justify, compress, generalize, and evaluate data. Various analytical techniques "offer a mechanism to make inductive inferences from data and to separate signal from noise inherent in the data," according to Shamoo & Resnik (2003). However, data analysis is typically a continuous iterative process in which data is gathered and analyzed almost concurrently. Statistical approaches can be employed in qualitative research. When they were gathering data, the researchers examined the findings made by Robinson Savenye in 2004 for patterns. Siegmund Brandt has also point out that provides a mathematically rigorous study of common statistical approaches for data analysis. For individuals interested in the principles of data analysis, this study served as a graduate textbook and reference guide. All branches of science and engineering that require a grasp of statistical techniques applicable to experimental data would benefit from this book. Examples of programmes and resolutions to programming issues built in the current computer language Java are included.

2.1.1 Big Data

Large volumes of data have been created at a fast rate since the introduction of computers. This is the driving force behind present and potential research frontiers. Smart phones, digital sensors, communications, computer, and storage advancements have made it possible to collect the data are the point that pointed out by Bryant, Katz, & Lazowska in 2008. The Big Data process is separated into two parts claims by Gandomi and Haider 2015, data management and data analytics. Data management include gathering and storing data, as well as cleaning and retrieving it in preparation for analysis. Data analytics, on the other hand, is concerned with deriving insights from data. Modeling, analysis, and interpretation are all involved.

Finding patterns and meaningful information in large data sets that can be used for a variety of tasks and have a positive economic and social impact is the main goal of big data analysis. This is essentially value and is frequently referred to in the literature as the fifth dimension of big data. Big data is being used in numerous industries, including smart grids, wireless and communications networks, mobile and e-health, transportation and logistics, and more. Big data management, data purification, imbalanced system capacity, unbalanced data, analysis and comprehension from data, and vast potential are just a few of the technological challenges and worries we confront in this area.

2.2 Electronic Monitoring

B.J. Alge asserted in 2001 that electronic performance monitoring is a term for an organisational system that makes use of technology to record, store, analyse, and publish data on employee behaviour in order to evaluate performance and monitor work activities. Agu. K also shared his thoughts on electronic monitoring, stating that EPM systems can be used to track positive employee behaviours including efficacy, performance, safety, and even personal wellness routines. Using tracking systems like WorkIQ and Desk Time, businesses may compress real-time employee behaviour data into weekly or yearly reports that are directly sent to employees and describe how they use computer time during the week.

2.3 Human Capital

Human capital, according to Claudia D. Goldin, refers to the pool of skills that the worker possesses. When the return on investment (ROI) outweighs the cost, certain skills are generated (directly and indirectly). These skills have private benefits since they increase one's capacity for productivity as one gains more of them. However, externalities that boost other people's economic ability frequently occur as human capital grows. The history of these ideas is examined in this article, which concentrates on the two fundamental facets of human capital: health and education. The role of human capital in economic development as well as the institutions that promote human capital investment are investigated. highlight and emphasise the historical aspect of human capital research.

According to M. Woodhall, the term "human capital" alludes to the reality that people invest in themselves through activities like education and training in order to raise their lifetime wages and therefore their income in the future. Contrary to "consumption," which offers benefits or immediate gratification but does not provide future income, the term "investment" refers to spending money on property that will yield income in the future. It is possible to evaluate the profitability of investments in human capital using the same value-benefit analysis and investment assessment techniques that have historically been used to evaluate investments in physical capital.

2.3.1 Training

The relationship between educational progress and economic potential is well understood, and it is one of the reasons why many nations have shifted to market-based education models. More duties have been delegated to the school level, it has become clear that principals required training and development to carry out their new obligations and drive academic achievement was the view carry out by Tony Bush and Joy Chew in 2006.

MacDuffie and Pil, has point out that raising labor force skills is considered as vital in helping to development of "high-skill" work practices and so enabled better productivity growth from a human capital perspective. Too many firms expect that their employees would simply rise to the occasion when a new product is released or that will adjust to changes in functional

position when a new project is introduced. There is unlikely to have a major influence on company performance without training. The abilities and behaviors of an organization's employees determine its performance, and one of the most important factors in this is how they will be developed, including training employees get.

2.4 Employee Performance

According to Sandeep K. Sood, performance appraisal of employees in the workplace is done manually, which leaves room for prejudice. It has been discovered that employing the omnipresent sensing capabilities of Internet of Things (IoT) devices to monitor industrial personnel may effectively remove manual employee assessment systems. None of the writers, however, have been using IoT data to automate employee performance review systems. As a result, this study provides a game theoretic framework for evaluating IoT-based employee performance in the workplace. Using the MapReduce approach, the system infers meaningful insights regarding employee performance from data acquired by the sensory nodes. The data gathered is then utilized to generate automated decisions for workers based on game theory. The system is theoretically and empirically examined. The suggested system is compared to various data mining and decision-making strategies in the experimental assessment. The findings reveal that the suggested approach effectively measures employee performance and outperforms alternative methods. The mathematical analysis reveals that the system's right appraisal of employees efficiently inspires people to work in the industry's favor. As a result, the suggested solution automates the industry's staff assessment system and choice process effectively and efficiently.

According to Rivai (2004), performance refers to a person's overall result or success during specific periods of duty as opposed to the work standard, the standards or criteria that have been established in advance and agreed upon. According to Rivai, performance is influenced by skills, abilities, and personal qualities and is related to job satisfaction and pay. In other words, an employee's environment, motivation, and aptitude all have an impact on their performance. Several personal characteristics have an impact on employee performance. In this increasingly competitive and globalised environment, companies unquestionably demand excellent performers.

2.5 Relationship Between Influence of IoT Toward Industry Sector's Employee Performance.

2.5.1 The Relationship between Data Analysis and Employee Performance

By collecting daily performance data of employee, able to analysis performance of employee during work. The data analysis able to increase performance of employee by analytic and finding best solution to improve employee performance. With the precisive data collection and analysis able solve the performance problem face by employee.

2.5.2 The Relationship between Electronic Monitoring and Employee Performance

Upper manager able to use electronic monitoring to control employee performance. With effective of technology, manager able use smart phone to monitor employee's performance during work and able to make decision immediately when something happened. With the immediately decision making able to increase efficiency and effectively of employee in performance.

2.5.3 The Relationship between Human Capital and Employee Performance

Human capital emphasises each employee's specific skills, which they bring to the table and are necessary for, and which will lead to greater economic value contributed to all areas of the firm and may be considered as invested capital. Through affecting employee abilities, attitudes, and behaviours, human capital practises can indirectly affect company performance. The interaction of staff members' abilities, attitudes, and behaviours determines the success of the organisation.

2.6 Theoretical Framework

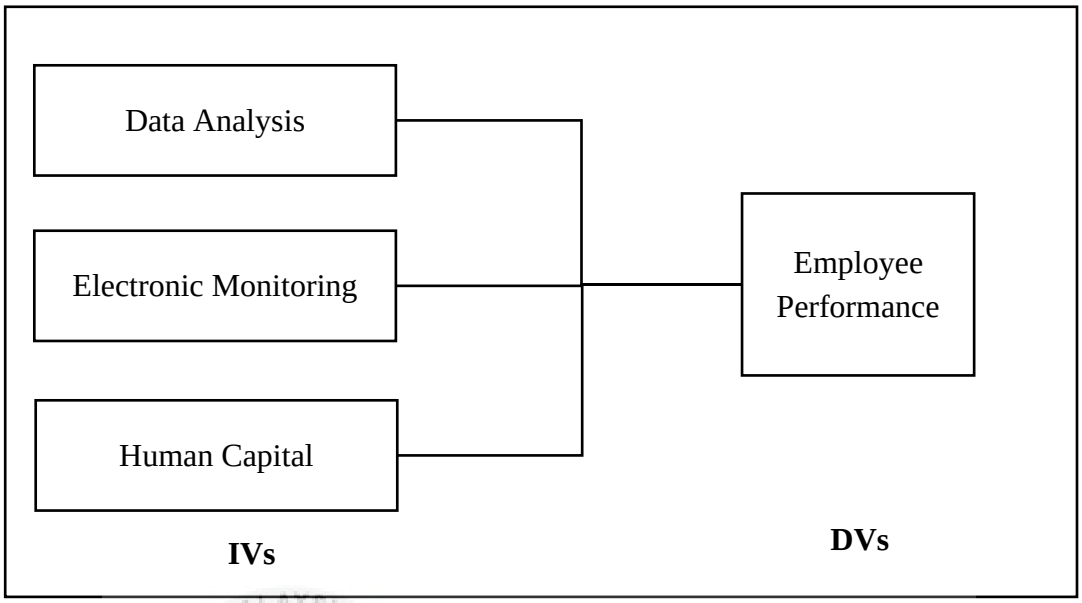

Figure 1: Theoretical Framework for Research

2.7 Hypotheses

2.7.1 Data Analysis

H0: There is no significant relationship between Data Analysis and employee performance.

H1: There is significant relationship between Data Analysis and employee performance.

2.7.2 Electronic Monitoring

H0: There is no significant relationship between Electronic Monitoring and employee performance.

H1: There is significant relationship between Electronic Monitoring and employee performance.

2.7.3 Human Capital

H0: There is no significant relationship between Human Capital and employee performance.

H1: There is significant relationship between Human Capital and employee performance.

2.8 Summary

In Chapter 2, the research is introducing the literature review of independent variables which are Data Analysis, Electronic Monitoring and Human Capital. Next, this chapter also explain the dependent variable which is the employee performance.

The relationship between influence of IoT in industry sectors and employee performance also be stated to know the link between the independent variables and dependent variable. Lastly, the theoretical framework has been displayed to show the structure that can hold research.

Chapter 3: Research Methodology

3.0 Introduction

The research methods will be covered in this chapter. Every stage of the research process—including the population, population framing, and interview sample strategies—will be covered in this chapter. Finally, this chapter provides a detailed explanation of the data collection process and analytic strategy chosen. The study flow of this study is depicted in the graph below.