NEAR EAST UNIVERSITY
INSTITUTE OF GRADUATE STUDIES
DEPARTMENT OF TOURISM MANAGEMENT

EVALUATING THE EFFECTS OF ARTIFICIAL INTELLIGENCE ON JOB SATISFACTION IN THE HOSPITALITY INDUSTRY

M.Sc. THESIS

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Nicosia

July, 2022

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MASTERS THESIS

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July, 2022

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We certify that we have read the thesis submitted by Samuel Blessing Olugbade titled **"Evaluating the effects of Artificial Intelligence on Job Satisfaction in the Hospitality Industry"** and that in our combined opinion it is fully adequate, in scope and in quality, as a thesis for the degree of Master in Tourism Management.

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Declaration

I hereby declare that all information, documents, analysis and results in this thesis have been collected and presented according to the academic rules and ethical guidelines of Institute of Graduate Studies, Near East University. I also declare that as required by these rules and conduct, I have fully cited and referenced information and data that are not original to this study.

Samuel Blessing Olugbade

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Samuel Blessing OLUGBADE

Dedication

This thesis is dedicated to the Almighty God, my Families, and my Lecturers.

Abstract

Evaluating the effects of Artificial Intelligence on Job Satisfaction in the Hospitality Industry

Artificial intelligence has made its way into virtually every sector of the economy in the twenty-first century; some companies have fully integrated artificial intelligence into their operations, while others, particularly in the service industry, such as the hospitality industry, are still hesitant, one of the main key factors of slow adoption is job satisfaction. The humorous fear that artificial intelligence will take on the jobs in the hospitality industry. The study looks into the impact of Artificial Intelligent in the hospitality industry with review of comparable literatures that have addressed similar issues but diverse subjects. Nigeria was used as the case study, due to the factor that the data for this study was gathered from employees in the Nigerian hospitality industry, and it revealed four factors that describe the study's issue.

The study used 151 respondents as the sample to analyze the effect of artificial intelligence on the hospitality industry. The study evaluate whether artificial intelligence might eliminate human employment and lead to dissatisfaction in the hospitality industry. The descriptive variance, correlation, and independent T tests were used in the IBM SPSS statistics version 26 for data analysis. Artificial Intelligence is a technology that will have a significant impact on job satisfaction in the hospitality industry if it is correctly implemented and adapted to assist people and reduce workload.

Keywords: Artificial intelligence, job satisfaction, hospitality industry

Öz

Konaklama Sektöründe Yapay Zekanın İş Doyumuna Etkilerinin Değerlendirilmesi

Yapay zeka, yirmi birinci yüzyılda ekonominin hemen hemen her sektörüne girdi. Bazı şirketler operasyonlarına yapay zekayı tamamen entegre ederken, diğerleri, özellikle konaklama endüstrisi gibi hizmet endüstrisinde hala tereddüt ediyor, yavaş benimsemenin ana kilit faktörlerinden biri iş tatmini. Yapay zekanın konaklama endüstrisindeki işleri üstleneceğine dair mizahi korku. Çalışma, benzer konuları ancak farklı konuları ele alan karşılaştırılabilir literatürlerin gözden geçirilmesiyle yapay zekanın konaklama endüstrisindeki etkisini incelemektedir. Bu çalışma için veriler Nijerya konaklama endüstrisindeki çalışanlardan toplanmıştır ve çalışmanın konusunu tanımlayan dört faktörü ortaya çıkardığı için vaka çalışması olarak yürütülmüştür.

Çalışma, yapay zekanın konaklama endüstrisi üzerindeki etkisini analiz etmek için örneklem 151 katılımcıdan oluşmaktadır. Çalışma, yapay zekanın insan istihdamını ortadan kaldırabileceğini ve konaklama endüstrisinde memnuniyetsizliğe yol açıp açmayacağını değerlendirmektedir. Veri analizi için IBM SPSS 26 istatistik sürümü tanımlayıcı varyans, korelasyon ve bağımsız T testleri için kullanılmıştır. Yapay Zeka, insanlara yardımcı olmak ve iş yükünü azaltmak için doğru şekilde uygulandığı ve uyarlandığı takdirde konaklama endüstrisinde iş tatmini üzerinde önemli bir etkiye sahip olacak bir teknoloji olduğu görülmketedir.

Anahtar Kelimeler: Yapay zeka, iş tatmini, konaklama endüstrisi

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CHAPTER 1

INTRODUCTION

Artificial Intelligence is application of machine to perform tasks that could be carried out by human, it has become paramount in the 21st century and it is adopted by almost all the industry including Transportation, Automotive engineering, manufacturing and other sector. The introduction of Artificial Intelligent in other sector has been fully adopted but till date the hospitality industry is still faced with the challenge of adoption. Artificial intelligence and service robots have the potential to boost customer satisfaction. Robotics and quickly advancing technology, such as artificial intelligence, present opportunities for a variety of advances that could alter the level of service provided by the hotel business (Marković et al., 2020). and it as being the subject matter by expert and researchers in the hospitality industry. For instance, the Henn-na Hotel in Japan, which Guinness World Records recognizes as the first hotel to employ robots, substitutes robots for human workers at the front desk, housekeeping, butler, and room services (Choi et al., 2020).

There is an argument by the employees that the Artificial intelligent will put human employees into extinction. Jasonos & Mccormick (2017), assume Artificial Intelligence can perform tasks such as identifying patterns in the data more efficiently than humans, enabling businesses to gain more insight out of their data. But various studies has been carried to abase this argument that Artificial Intelligence will neither take out human employees nor the jobs away from human, but rather assist and help employees in the hospitality industry and it functions in accordance to the information

input and perform the output, in other word garbage in and garbage out (GIGO). Moreover, the use of AI technologies to deliver services in the hospitality industry has a significant impact on employee productivity (Limna, 2022). However, acceptance of Artificial Intelligence must be exerted, so that there will be a cooperative synergy between Artificial Intelligence and Human Interaction to create job satisfaction instead of Job loss. Though Artificial intelligent and robotics technologies as its own merits and the demerits and there are still conflicting issues on the quality of service provided in the hospitality industry. The technologies are engaged in duties such as accommodation, food, travel and transportation (Kiliçhan & Yilmaz, 2020).

Artificial intelligence is important in the hospitality industry as some hotels have been adopting its usage but will the acceptance of the technology increase or reduce job satisfactory amidst employees in the industry, the most important AI solutions in the hotel services are self-service check-in/check-out and supporting guest's entering or exiting the hotel. Yet, our respondents indicated that the aid of the humanoid robots are still an unattractive facility (Citak et al., 2021). The goal of the study is to evaluate the impact of artificial intelligence on Job satisfactory in hospitality industry. This study seeks to find out the effect of Artificial Intelligence on daily activities in the hospitality industry, and also check the impact on employee job satisfaction. The rate of work satisfaction among hospitality employees will determine whether Artificial Intelligence will be accepted or not. Therefore, if artificial intelligence is to substitute employees then this will be destructive, but if artificial intelligence will assist the employees in carrying out tasks, then there will be job satisfaction.

It is pertinent to note that, the significance of Artificial intelligence in hospitality industry has not been critically explore; hence, this study is set to clearly spell out and establish the roles of Artificial intelligence in the processes of hospitality industry. The study is expected to rest on the empirical review of previous literatures and harmonize scholars' perspectives and it will evaluate the effects of Artificial intelligent on Job satisfaction in the hospitality industry.

1.1 Statement of the Problem

The Keenon robotic spurred me to do this research work, this was from a restaurant in china, According to the Keenon Robotic Co., Limited the company developed this robot, and as the following the robotic technology as a low power high endurance hardware platform monitoring system independently.

Figure 1: Small Body, Huge energy delivery robot T6

Source: Keenon Robotic Co., limited

Kiliçhan & Yilmaz (2020), postulated that in the coming decades, individuals will increasingly use artificial intelligence and robotic technologies in their daily and professional life, based on the chronological expansion of these technologies. The aim of this study is to evaluate the employee's satisfaction in the hospitality industry if the artificial intelligent is fully established. The application of artificial intelligent may have different effects on job satisfaction. From robots at hotel front offices to devices that can grill hamburgers, it's already occurring all over the world. Experts expect that by 2030, robots will account for 25% of the hospitality workforce, posing problems and opportunities for an industry that has been extremely slow to accept new technology in the past (Chris 2019), but Artificial intelligence has absolutely disrupted the hospitality industry by influencing the way that hotels work today. (Willa 2019). If application of artificial intelligent is to substitute employees this may cause dissatisfaction but if Artificial Intelligent will help the workers or employees to serve customers better the acceptance rate will be high. The services or tasks that artificial intelligent in the

hospitality industry are but not limited to welcoming of guest, scanning of documents and sending AI on an errand.

1.2 Significant of the study

This research is significant because it will be specific toward job satisfaction among the employees in the hospitality industry if artificial intelligent is introduced fully to the industry to carryout human task and if the application artificial intelligent may caused dissatisfaction if it substitute employees but if Artificial Intelligent will help the workers or employees to serve customers better the acceptance rate will be high. Although the tourism and hospitality industry was quick to adopt vending machines and self-service kiosks, that was not the case of service robots due to their costs, limited technical capabilities, and the notion that tourism is a 'people's business'(Ivanov et al., 2020)

The research is narrow toward job satisfaction, unlike previous research that combines job satisfaction, Automation and other related topic. This makes the previous research studies general and not in-depth into the satisfaction of jobs in the hospitality industry.

1.3 Research Question

This research work is a quantitative study and the response from respondents was used to obtain data that was used for analysis. The research questions are provided I the questionnaire that is attached in appendix A in the last part of this study. The research questions as outlined in the questionnaire seek to evaluate the effect of artificial intelligent on job satisfaction in the hospitality industry.

This research question on the effects of artificial intelligent on Job satisfaction in the hospitality industry, the hypothesis derived for this study is based on the fact that if Artificial Intelligent can reduced or mutilate job or employee satisfaction in the hospitality industry, and if not properly earnest, could discontinue human employees and it will cause unemployment and dissatisfaction among those employees are relieve of their jobs.

Therefore, various hypotheses were derived to test and know the effects of Artificial Intelligence on job satisfaction in the hospitality industry and to check if Artificial

Intelligence will affect the daily activities, working together with the employee, the effect and the factors that may affect Artificial Intelligent.

1.4 Research Hypotheses:

This section is the shows the hypothesis used for this research

Null Hypothesis 1

Application of Artificial Intelligent will not result in the increase of the overall output of daily activities.

Alternative Hypothesis 1

Application of Artificial Intelligent will result in the increase of the overall output of daily activities.

Null Hypothesis 2

There is no effective relationship between Artificial Intelligent and Job satisfaction amongst the hospitality industry employees.

Alternative Hypothesis 2

There is an effective relationship between Artificial Intelligent and Job satisfaction amongst the hospitality industry employees.

Null Hypothesis 3

There is no working relationship between Artificial Intelligent and employees in the hospitality industry.

Alternative Hypothesis 3

There is a working relationship between Artificial Intelligent and employees in the hospitality industry.

Null Hypothesis 4

Application of artificial Intelligent will not result in the increase of factors that affect Job satisfaction in the Hospitality industry.

Alternative Hypothesis 4

Application of artificial Intelligent will result in the increase of factors that affect Job satisfaction in the Hospitality industry.

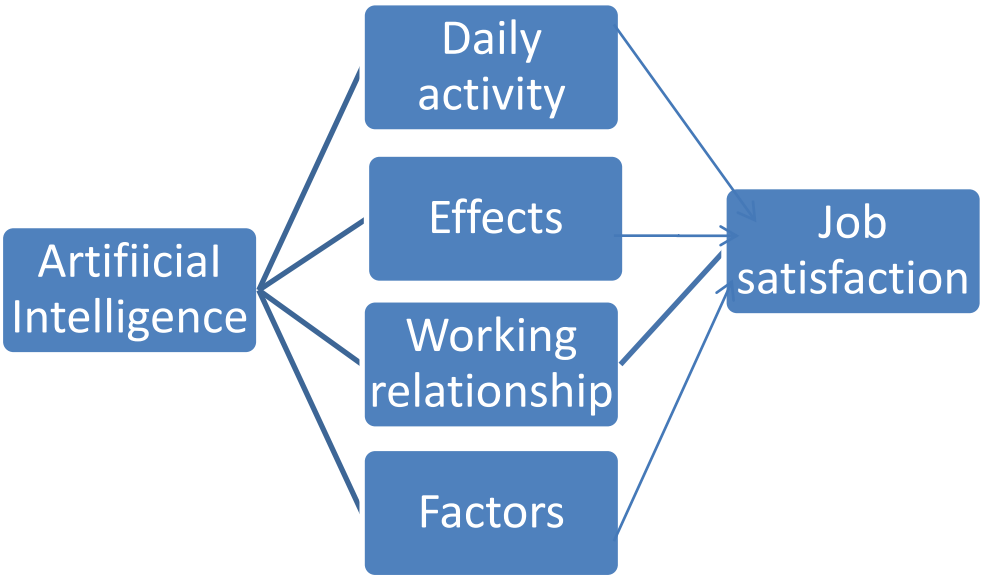
1.5 Limitation of the Study:

The probable limitation to this study was the difficulty to get enormous employees and stakeholders of the hospitality industry in Nigeria, due to the fact that the questionnaire was distributed via the online platform, such as social media. The difficulty due to the Covid 19 pandemic and government restrictions on gathering together in places, also affected the data collection process. Other limitation is there are few researchers that are concern about job/employees satisfactions; they rather explore more on customer satisfaction and neglected the employees of the Hospitality Industry.

The study experience draw back in accessing crucial information, where the respondents are mean in releasing the some information that are useful to the research study. Also due to the nature of distribution of the questionnaires, these prevent a high quality answer which cannot be guaranteed if the respondents understood the questions or not.

1.6 Conceptual frame work:

Figure 2: The conceptual frame work to the study.



CHAPTER 2

LITERATURE REVIEW

2.1 Theoretical Framework

In this section of the study, the research is to review and critically analysis what other researcher had done in various literatures with the regards to the effects of the Artificial intelligent on job satisfaction in the Hospitality industry and relevant study. The literatures help to understand the concept of artificial intelligent in the hospitality industry, but fewer than none as checked and postulated the effect of artificial intelligent on job satisfaction in the hospitality industry. This study will review if artificial intelligence is going to terminate human employee or help the employees to carryout responsibilities.

2.2 Hospitality Industry:

Hospitality industry as being built in human relations that co-exist between different people of different nationality, race and ideology. Hospitality industry is complex and as a wide range of segments. Lashley (2000) Hospitality encompasses and based on the connections between the host and the visitors, and the essential characteristic of this relationship is the frontier where other scope became known. Discovery Hospitality (2015) addressed hospitality an industry that is appealing and

demanding sector to work because it offers direct and indirect jobs and career opportunities. According to Drexler & Lapré, (2019) the hospitality industry in service process and delivery, and it further explain that it is measure through the participation of guests. Tsai et al (2010) defined the hospitality industry as a distinctive service industry. In areas such as production, delivery, and restaurant service, the hospitality business refers to labour services and focuses on manpower. As a result, the hospitality business is mostly service-based. The industry is a service industry that deals directly with satisfaction of human. It is an industry where leisure and welfare is at the top priority and it is also called the relaxation industry. Charrie, (2019) postulated that the hospitality industry is divided into 11 sectors as against some reviewers that divided the Hospital industry is divide into 3, 4, and 5 and it is big and complex, they are the food and beverages, accommodation/lodging, travel and transportation, attractions, tourism, meeting and entertainment, casinos, events, recreation, technology, cruise. For this study the Hospitality will be divided into four sectors but will deliberate more on technology as the fifth sector because it deal directly with the study, The purpose of this research is to see how artificial intelligence affects job satisfaction in the hospitality industry. They're the ones below.

- Food and Beverages
- Travel and Tourism
- Recreation
- Accommodation
- Technology.

Figure 3: Different sectors of Hospitality Industry

Source: Image by Laureate Hospitality

2.3 Food and Beverages Sector:

According to Peter and Griff (n.d.), the food and beverage industry arose from modest beginnings: people had a need or want to eat or drink as they travelled from their homes to their places of business. Others were encouraged to supply food and drink to match the demand and TriStar (2022), defined, the food and beverage Industry is huge, with various, and fully mechanize sector in the hospitality industry. It is one of the aged sectors in the world, an innovative industry. The introduction of technology such as artificial intelligent will improve the effective ways that the food and beverages are processed, as the production technique as to be at a reduction rate in other to produce food for consumer as a high volume at the lowest price possible and still considering the cost of production. According to Frank (2020), the sector has moved increasingly from copying to advancement. Artificial Intelligent is a new technology that drives products which may not sound very appetizing as they are de-composed and then reconstituted.

2.4 Accommodation/Lodging:

Patrick (2020), defined accommodation as a room, building, or housing that provides shelter for a person to stay, sleep, and lives. Accommodation can refer to a

room at a hospitality organization such as a hotel, resort, hostel, and motel. Rebecca (2012), explained the provision of overnight housing for individuals travelling away from home, as well as dining options for those dining outside their homes, is what hospitality is all about. The provision of overnight housing for individuals travelling away from home, as well as dining options for those dining outside their homes, is what hospitality is all about. The accommodation or lodging activities in the hospitality industry will be done by the Hotelier and other forms of accommodation such as guest houses, motels and others. Accommodation is usually for short stay not long stay and now private individuals are coveting into the accommodation aspect of the hospitality industry. Accommodation can be serviced or non serviced accommodation.

2.5 Travel and Tourism:

Travel is the movement of people, with a traveller being someone who journeys between different geographic regions for any reason and for any length of time. Journeys from one area or site to another are referred to as travel. It refers to the movements of people who come to a country for job, residence, education, or enjoyment, as well as those who traverse a country without stopping. Tourism refers to people's transitory short-term movements to destinations other than where they regularly live and work, as well as their activities while they are there. It's important to remember that while all tourism should include some travel, not all travel is tourism. Deloitte (2021), described transportation is becoming leaner, faster, more technologically advanced, and data-driven. Deloitte identifies airline industry trends and offers transportation businesses holistic insights on how to modernize supply chains, track and fine-tune logistics strategies, and be more responsive to customers.

Jean (2022), explain that In the tourism industry, transportation is critical. The demand for worldwide and even national transportation infrastructure indicates that a huge number of people must be transported efficiently, quickly, and affordably. However Revfine (2021), on the other hand defined Moving from one place to another is referred to as travel. Long-distance travel, short-distance travel, international travel, domestic travel, and a variety of other types of travel are all examples of this. Importantly, travel encompasses round trips and one-way excursions, as well as a wide range of travel objectives.

2.6 Technology:

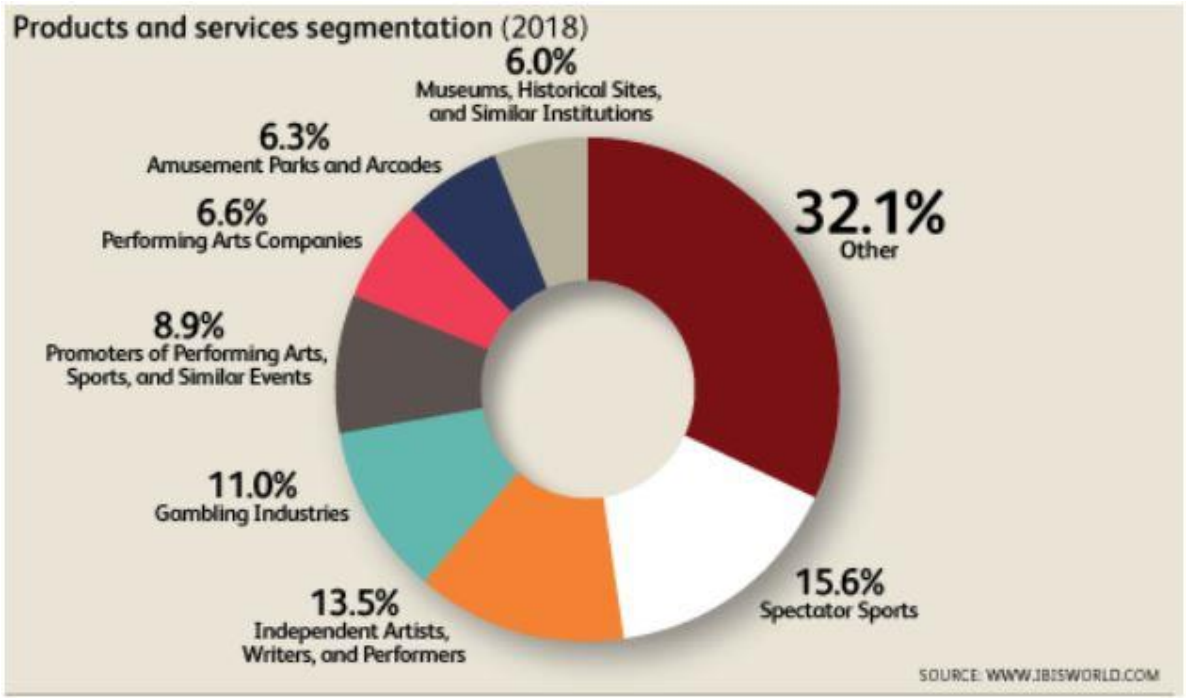
Technology is another trend in the hospitality industry, where by it makes the customers and the hospitality company's easy accessibility to great improvement in rendering customer services. Also technology aids the guest to have access to gadgets connected to the internet. According to Jeff (2021), discussed that Hotels are moving away from the conventional mode of payment and now transacting using the online mode. Also examine the most recent industry trends, such as Wi-Fi infrastructure upgrades, digital conference facilities, mobile communication, and automation. NFC stands for Near Field Communication. Infrared sensors and robots, Keys for smart rooms, There's always something to do, Cloud computing services, Social media feedback, Multiple services can be supported by converged LANs, Integrated, seamless experiences. Alice (2021), concurs that hotel uses technology by leveraging it to boost customer experience, streamline operations and also improve communication between staff and guests.

2.7 Recreation:

This industry exists to meet the cultural, entertainment, and recreational demands of its customers, according to Nate (2021). These efforts have resulted in the production and viewing of public exhibitions, places that provide educational presentations, and establishments that allow their patrons to engage in recreational activities for the sake of entertainment. Recreation is define according (Kement, 2021) to The activities that are done during leisure are referred to as recreation. Recreation is an entertainment or activity that a person engages in for enjoyment or relaxation rather than as a source of income.

This is a statistics of how the products and services are segmented in a study carried out in 2018.

Figure 4: The products and services segmentation (2018)



Cohen, A. (2018) and Nate (2021).

2.8 Job satisfaction in the hospitality industry:

The attitude a person has toward carrying out their given tasks is called job satisfaction. Employee motivation and job happiness in the hospitality industry can have a big impact on management's capacity to raise staff performance. According to the reasoning, increasing employee motivation and satisfaction must come before gratifying customers, and as a result, this may also have an impact on customer satisfaction (Alshamey, 2019). Customer satisfaction serves as a conduit for customer happiness and is crucial to the financial stability and success of hotels. Greater autonomy, decision-making power, flexible scheduling, better working environment, and training are all factors that lead to higher levels of satisfaction. (Borralha and colleagues, 2016) The growth of a hotel is significantly impacted by its workforce. The success of hotels depends on the management and retention of qualified, competent, experienced, and motivated employees (Hakuduwal, 2021).

Hristov and Chirico (2019), assert that using employee satisfaction as a key performance indicator (KPI) will help organizations design sustainable strategies. The possibility

exists that job satisfaction will significantly influence regional and destination-level sustainable development. The workplace atmosphere has a favorable effect on employee job satisfaction. It is critical that businesses recognize the value of a healthy workplace since unfavorable working conditions make it challenging for employees to demonstrate their abilities and realize their full potential.

2.9 Artificial intelligent:

Dobrev (2012) defines Artificial Intelligence as a program that can manage as well as a human in any given situation. Lu, (2019), and Jaya (2019) define Artificial Intelligence (AI) as a machine that creates solutions to problems and also efficiently carryout tasks with the aid of algorithms. Artificial intelligent as made work more digital and easier compare to the conventional ways before its advent. The technology has been used in various sectors such as manufacturing, automobile transport and also the hospitality industry. According to the Kartik et al (2017), the father of artificial intelligence John McCarthy coined this term in 1956 has a branch of computer science associated with making computers think like humans. Machines are made more, smarter and useful with the help of artificial intelligence. Artificial Intelligent as not being so prominent in the Hospitality industry and the operation will be assisting the industry to grow when it is fully adopted.

In recent years there are rapid changes in the ways that organizations perform their tasks, which also apply to the hospitality industry. Today, we're seeing two distinct trends across organizations: first, organizations are in the midst of an artificial intelligence (AI) arms race, and they're looking for ways to use the technology in meaningful ways; and second, organizations are desperately looking for effective, cost-efficient ways to retain their top talent in a tight labor market. (Sushman 2019). The hospitality industry is gradually embracing Artificial Intelligent based system, if fully embraced it will be beneficial to the industry and help develop how tasks will be carried out. Artificial Intelligence was first implemented in the industrial industry, then spread to other areas of society and the economy (Webster and Ivanov 2019). Using Artificial intelligent simply means automation of how tasks are carryout using robotic technology in the hospitality industry, and “Employee satisfaction is considered to be essential, but employee strong effort is a primary factor for having high performance and increase the

level of customer satisfaction even above the satisfaction of employee (Wirtz & Lovelock 2016, 291)".

2.10 History of Artificial Intelligent in the Hospitality industry:

Artificial intelligent came into play in the hospitality industry few decades ago, and it has become the technology that is inevitable for the industry to thrive. However, the industry's players and employees are having difficulty adopting the technology. According to Bunchanan (2005), AI may be traced back to Greek mythology. Since then, there has been a lot of writing about sentient objects, including actual (and false) mechanical gadgets that demonstrate intelligence. As a result, this will check and balance the artificial intelligence's influence, ensuring that employees are satisfied with their positions and work on a regular basis in order to meet the organization's objectives. Artificial intelligence is not widely used in the hospitality industry, and several researchers have disputed the historical claim of artificial intelligence.

Mijwil (2015), argued that learning about the history of artificial intelligence necessitates going back in time Milat. Several concepts for humanoid robots were carried out during the Ancient Greek era, according to evidence. Daedelus, who is said to have ruled over wind mythology, is an example of this, as he sought to create artificial humans.

2.11 The Challenges in the Hospitality industry and Artificial intelligent:

Baum, (2019) stated that Even though many still identify the hospitality industry with long hours, low pay, and exploitation of minorities, it has gone a long way since Orwell publicly criticized and labelled hospitality-related workers as having little social relevance in the 1930s. Furthermore, the hospitality industry is still characterized by high labour intensity, irregular working hours, and low compensation, all of which contribute to a labor shortage and significant staff turnover (Kuo et al, 2016). As a result, a significant challenge in hotel administration is how to successfully improve employee satisfaction, organizational commitment, and work performance (Tsai et al., 2010).

In order to address difficulties in the hospitality industry, increasing AI and robotics integration implies that by supplementing human skill sets with technology, staff will have more time and chances to provide genuine hospitable service. Academics believe that reducing an individual's work and emotional load leads to higher organizational performance and, eventually, guest pleasure (Kuo et al., 2016; Osawa et al., 2017; Drexler & Lapré, 2019). Job satisfaction in the hospitality industry will be achieve and proportional to the vital role artificial intelligent plays. Advancement in technology should be embraced and not to fear the change in the hospitality industry. The rise of the machine is seen as an opportunity not to be afraid of the future not only in the hospitality industry but in all facet of life. (Drexler and Lapré, 2019).

Fast and Horvitz (2017) addressed that Artificial Intelligence may evolve to the point where it not only replaces human workers, but also becomes so complicated that no human intellect can govern it. Therefore, Artificial intelligence, robotics, the internet of things, automation, and technology to replace old jobs or create new ones differ per industry (Ivanov 2017). Regardless of the job type, employees' exposure to technological implementation and increased task complexity employing novel technology improves job satisfaction (Axtell et al. 2002).

2.12 Implication of artificial intelligent on job satisfaction:

Artificial Intelligence has already automated many operations previously handled by individuals in the travel, tourist, and hospitality industries, and this trend will continue (Ivanov and Webster, 2019a) where Artificial intelligence allows robots to have human-like perception, coordination, decision-making, and feedback skills, (CAICT 2018). Intelligent industrial robots, intelligent service robots, and intelligent specialized robots are the most common types of intelligent robots in terms of application. They will have a major impact on a number of vocations by automating mundane activities and rendering a variety of human talents obsolete. Because Artificial Intelligent can do tasks that previously required human judgment, the consequences of Artificial Intelligent-enabled automation differ from those of earlier technologies because they now impact knowledge workers for the first time (Davenport 2005). As a result, travel, tourism, and hospitality industry will not use RAISA to replace human employees on a broad scale (at least not in the near future), but rather to boost

productivity and serve more customers with the same or slightly fewer personnel (Ivanov & Webster, 2017).

According to this notion, employees who are content with their occupations are more inclined to believe they can deliver good service. It's also suggested that happy or content people at work would show positive emotions and be more likely to share their good ideas with clients (Grandey, 2000). Customers may reject robotic appliances due to the intangible and customized nature of service delivery, stressing the need to understand the human-robot interaction.

Automation has both replacement and augmentation effects on jobs, as Ivanov and Webster (2019b) shown. Automation has a substitution effect on occupations when it replaces people in tasks that they now perform. According to Bowen & Morosan (2018), a firm that implements Artificial Intelligent and robotics by the 2030s will have a major competitive advantage over competitors that have not implemented the technology. It also highlights how the hotel industry will keep the word "hospitality" when human personnel are replaced by robots. Artificial Intelligence was considered as a negative move by them since it reduced job rotation and teamwork possibilities, as well as career options (Findlay et al. 2017).

2.13 The Artificial Intelligent impact on human employees:

The impact of artificial Intelligence cannot be overly emphasis but the it may have both the positive and the negative impact on employees in the hospitality industry, but there are some acts such as negotiation, persuasion, social perceptiveness, and caring for others, as postulated by Frey and Osborne (2013), are more difficult to automate compare to data input, and improving employee happiness. These are crucial since it boosts long-term staff productivity and keeps lucrative customers. Customer retention will not be seen until high levels of employee satisfaction are achieved (Kurdi et al., 2020). Satisfaction is influenced by the value of services provided by happy, loyal, and productive employees. In compared to other industries, the hotel industry's most important feature of management is employee pleasure (Ažić 2017). Therefore, machines are trustworthy in the sense that they only do tasks that are within their capabilities, but they may lack a mechanism in their design to prevent the spread of a

little error. Tourism and hospitality industry are by their very nature humane and service-oriented industries (Kilichan and Yilmmaz 2020). When businesses figure out what kind of mood or attitude they want to create, they make a list of skills they want their employees to have. The combination of two factors: ambience and workers, creates an environment in a certain location (Ažić 2017).

According to Ivanov & Webster (2017), artificial intelligence may be able to reduce some of the issues associated with hiring and firing people, particularly seasonal workers and also the legal administration of labour contracts and the threat of lawsuits if a contract is cancelled is one of the driving reasons behind the usage of robots by enterprises. Consider that most models make two simplifying assumptions, (Camilo et al., 2020). If robot adoption is uniform across firms, implying that once a task becomes feasible and profitable to complete using only capital rather than labour, all firms immediately reassign that task to capital; and (ii) robot adoption is permanent, implying that once a firm completes a task with robots, it will do so in the future. Drexler & Lapré (2019), stated that employees were educated to do these diverse duties in order to reduce the company's human staffing needs and because of the unique relationship between the customer and the employee, the service experience with workers separates one service business from another (Prentice, 2019).

2.14 Artificial intelligent application in the Hospitality industry:

Despite the fact that stakeholders in the tourism and hospitality sectors continue to struggle to find trained human resources, they are having trouble integrating technological improvements. On the one hand, a large number of people work on theoretical and practical development of unmanned technologies are being created at a rapid rate to replace these employees in such a human-centred industry. Unlike human employees who become tired of tedious, repetitive, and cognitively unchallenging occupations, they could complete this task thousands of times without complaining or forgetting to do it (Ivanov & Webster, 2017). Artificial intelligence and robotics are likely to be recognized as important characteristics that assist rather than replace tourism personnel, and may even fill new professional responsibilities. But the application of artificial intelligent may cut across several aspect of the hospitality industry from hotel, tourism and travels.

2.15 Working relationship: Artificial intelligent and human employees to attain the job satisfaction:

Artificial Intelligence (AI) uses computers, robots, and machines to act like people and execute cognitive activities in order to achieve stated objectives and tasks. AI is based on automation, big data, and machine learning (Kaplan & Haenlein, 2019). Some scholars have even advised that marketers consider robots as potential clients (Ivanov & Webster, 2017). Humans and artificial intelligence can collaborate to play a key part in the design, development, maintenance, installation, and management processes. Gale (2017), on the other hand, believes that rather than striving to replicate human work with robots, we should consider the benefits that humans and technology may provide when employed together. As a consequence of the automation of operations, the working environment has changed, working conditions have improved, and worker safety has improved. Despite the difficulty of automating the process, the system may be constructed in such a manner that machines aid the employees, therefore altering the entire environment (Mishev 2006), but there are challenges that Abadicio (2019) stated, It should also be emphasized that locating key employees with the required academic background or marquis experience in artificial intelligent development in all of the firms was a challenge. While the future is uncertain, robots, artificial intelligence, and service automation will have a big impact on the travel, tourism, and hospitality sectors, including how customers are served, how human employees are employed, and how corporate cultures are affected (Ivanov & Webster, 2017). Danaher (2019) goes even farther, stating that, while technology will ultimately replace human employees, people should embrace automation and the abolition of labour since work is inherently detrimental and prevents people from experiencing happiness and meaningful life.

2.16 Factors that affect Job satisfaction in the Hospitality Industry:

AI-enabled performance management tools and methodologies also offer a variety of opportunities for organizations and individuals. For instance, an employee evaluation that is fair results from the use of a fuzzy multi-attribute decision-making technology. Notably, this technique assists in identifying employees that require additional improvement in certain areas as well as the scope of those improvements (Manoharan et

al., 2011., Budhwar et al., 2022), and the relative importance of the other four factors infrastructure, work environment, job activity, and salary was also rather obvious. Leadership by superiors is crucial to employees in businesses that prioritize their workers. The participants expressed a need for more options for participation, but were otherwise pretty content with this (Heimerl et al., 2020).

The company's success is fueled by its human resources, which are dependent on the commitment, aptitude, and caliber of work of each employee. When an employee is dissatisfied with their position, they frequently move employment. A variety of things could alter a worker's degree of job satisfaction. The employment of AI and robotics in the hotel business is anticipated to result in a mismatch between employees and their jobs (Arambepola & Munasinghe, 2021). Employees with AIRA may attempt to revert to the appropriate condition through task planning and active learning. Employees can regain control over their tasks and prevent a negative outcome only when they are in a state of suitable work (Wang et al., 2022).

Other factors that affect job satisfaction are work load, working hour, infrastructure, and management style.

2.17 Related Research:

There are need to look into the empirical study of various research in the field of hospitality and has it related to artificial intelligent, though most researchers in the previous years have not done much on Job satisfaction, they are concern with customer satisfactions. This study will check out for the related study because there are limitations to previous research. Therefore, the empirical study will look at the methodology, findings and the study gaps. These will help in critical findings of some literatures.

According to the study by Kurdi (2020), the findings showed that employee’s satisfaction is the key role in an organization and for the customer retention and profit maximization. The research was undertaken in Jordan, and 425 employees in service organization are the respondents, PLS-SEM (Partial Least Squares-Structural Equation Modelling) was used for data analysis. Kurdi (2020) proposed that the relationship with employee satisfaction and customer’s satisfaction is causal. Ažić (2017), in another study in Croatia with sample size of 266 respondents, questionnaires were used for

collections of data, The key findings of Ažić (2017) pointed to the motive for supporting exemplary behaviour among workers is good working relationships (often expressed in business culture). Therefore, to have employee's job satisfaction there must be a good working relationship with the parties involved, such as the artificial intelligence and employee relationship.

Some studies as shown that Artificial intelligence is gradually incorporated into the hospitality industry and there are fast growing. Kirtil, and Aşkun (2020) in their study Turkey established to show the progress of artificial Intelligence thematic evolution analysis must be used and after 2017, there appears to be a growing interest in AI, according to the findings. Kirtil, and Aşkun (2020) used 102 papers that were collected from Scopus database and key bibliometrics method.

Vitezić (2015), studied hotel general managers and management representative in Croatia, applied the qualitative data collection method using Semi Interview. The findings indicated that emphases is the necessity of high-quality service, which is aided by inventive efforts, and this will contributes to a better knowledge of innovation and innovation types in the hospitality industry. Another study of Ivanov et al (2020), the results believed that using robots would reduce the quality of service and that they were not ready to deploy them. Furthermore the respondents stated that in the hotel and tourist business, talented and well-trained personnel were more useful and appropriate than robots. This was carried out Bulgaria constituted 79 questionnaires and 20 managers using the mixed method of quantitative and qualitative data.

Brougham et al (2019) who made use of online survey with 60 employees in New Zealand, found out that, people in the same area of work have various degrees of knowledge and perspectives regarding automation and how it may affect their careers, according to the study. According to Kumar Bisoi1 et al, (2020), stated that one of the most significant advantages of digital technology is that they generate a massive amount of data for travel firms. To get contextual insights from their interactions with present and future customers, many firms are combining data-driven technology and advanced analytics into their corporate solutions. But Ivanov (2020), have a different point of view with his study done in Bulgaria, stated that some tourist and hospitality jobs may be

eliminated, while others will have their roles changed and new employment created. This means that businesses that use automation technology will see changes in their service procedures as well as their personnel job needs

In a study in Garda Lake, Northern Italy, with 400 rooms, one home, and a variety of facilities including a wellness centre, two restaurants, and four swimming pools. Mingotto et al (2021) studied a humanoid social service robot called (the robot "Pepper") with a supervised machine-learning AI system has been adopted by an Italian resort. The findings demonstrate that this technology may operate as an augmentation force, and that FLEs' roles can grow primarily into enabler - of customers and technology, innovator, and coordinator, with customers taking on the position as technology enabler first and foremost. Also, Prentice et al (2020) in another study in Portugal using the departure guests that in various hotels, where survey was conducted. And the research results contributed to the field of artificial intelligence and client loyalty. The conclusions of this study have financial ramifications for hotels and give information on how to use resources efficiently,

The main aim of the employers in the Hospitality industry with the use of artificial intelligence is not to dissatisfy employees but to meet and exceed customer expectations, placing them ahead of the competition. Pradhan et al, (2018). Furthermore, Lu, (2019), with the study carried out in Vietnam, at Hotels in Ho Chi Minh City. The tourists who stayed in hotels or used hotel services were the target audience. According to Lu (2019), applying artificial intelligence is a contemporary trend to pursue, according to greed. Responders emphasized the importance of on-call service, easy access to care, and cleanliness. Many respondents stated that they would rather interact with employees than with artificial intelligence machines. Kilichan, Yilmaz (2020), postulated that due to the nature of the tourist and hospitality industries, any service supplied without a human touch will always fail to meet the demands and wants of customers.

Below is the table that shows the summary of the empirical findings of literatures.

Table 1: Findings of some related literatures and contributions.

Authors / Years	Country	Participants	Methods	Findings
Ažić (2017)	Croatia	A sample of 266 respondents	Questionnaires	The key motive for supporting exemplary behavior among workers is good working relationships (often expressed in business culture).
Ivanov et al (2020).	Bulgaria	79 questionnaires and 20 managers interview	Quantitative and Qualitative	The results believed that using robots would reduce the quality of service and that they were not ready to deploy them. Furthermore, the respondents stated that in the hotel and tourist business, talented and well-trained personnel

				were more useful and appropriate than robots.
Kirtil, Aşkun (2020)	Turkey	102 papers were collected from Scopus database. Key	Bibliometrics method	Thematic evolution analysis was used to depict AI progress. After 2017, there appears to be a growing interest in AI, according to the findings.
Pradhan et al, (2018).	India		SERVQUAL scale	The major purpose of the idea is to match customers' expectations and come up with ways to exceed them, placing them ahead of the competition.
Brougham et al (2019)	New Zealand	60 employees,	Online questionnaire	People in the same area of work have various degrees of knowledge

				and perspectives regarding automation and how it may affect their careers, according to the study.
Belias, Varelas (2019).	Greece		Critical review of current literature.	The finding in the study is the effect is positive towards customer satisfaction. Then towards job satisfaction, robot does not have adverse effect.
Lu, To Linh (2019)	Hotels in Ho Chi Minh City, Vietnam	Tourists who stayed or used hotel services in Ho Chi Minh City were the target respondents.	Quantitative research	Applying AI is a contemporary trend to pursue, according to greed. Responders emphasized the importance of on-call service, easy

			access to care, and cleanliness. Many people said they would rather interact with humans than AI technology.
Kilichan, Yilmaz (2020)	Turkey	Conceptual study	Due to the nature of the tourist and hospitality industries, any service supplied without a human touch will always fail to meet the demands and wants of customers.
El Hajal & Rowson (2020)	Netherland	Review of existing literatures.	The study proposed that Artificial Intelligence, automation, and robotics will eliminate many of today's employment, while new

			professions with new skill sets will emerge.
Ivanov (2020)	Bulgaria		Some tourist and hospitality jobs may be eliminated, while others will have their roles changed and new employment created. This means that businesses that use automation technology will see changes in their service procedures as well as their personnel job needs.
Kumar Bisoi1 et al, (2020)	India	Review of literatures	One of the most significant advantages of digital technology is that they generate a

				massive amount of data for travel firms. To get contextual insights from their interactions with present and future customers, many firms are combining data-driven technology and advanced analytics into their corporate solutions.
Prentice et al (2020)	Portugal	The departure guests that in various hotels in Portugal	Survey was conducted.	This investigation contributed to the existing of knowledge in the field of artificial intelligence and client loyalty. The conclusions of this study have financial ramifications for hotels and

				give information on how to use resources efficiently.
Vitezić (2015)	Croatia	Hotel general Managers and Management representative.	Qualitative data using Semi Interview.	This study also contributes to a better knowledge of innovation and innovation types in the hospitality industry, emphasizing the necessity of high-quality customer service, which is aided by inventive efforts.
Mingotto et al (2021).	Italy	Garda Lake, Northern Italy, has 400 rooms, one home, and a variety of facilities including a wellness centre, two restaurants, and four swimming pools.	A humanoid social service robot (the robot "Pepper") with a supervised machine-learning AI system has been adopted by an Italian resort. The	The findings demonstrate that this technology may operate as an augmentation force, and that FLEs' primary responsibilities can include enabling

				customers and technology, innovating, and coordinating with customers taking on the position as technology enabler first and foremost.
Kurdi (2020).	Jordan	425 employees in service organization.	PLS-SEM (Partial Least Squares-Structural Equation Modelling	The study contributes to the facts that employee's satisfaction is a key role in profit maximization and customer retention. Customer satisfaction and employee satisfaction have a causal relationship.

In spite of various literature reviewed in the study, there are little or no research studies that provided in-depth study on the effect of Artificial intelligent on job satisfaction in the hospitality industry. As a result, in a series of review of literatures, Azic (2017) postulated that the motive for exemplary behaviour among worker is a good

working relationship. Azic literature express that if employers want good workings condition with employees such employer should create a good working relationship. Likewise a study by Ivanov et al (2020), expressed that robot will not increase the quality of service if they are not appropriately used, in other word, robot will increase the quality when personnel are proper trained to effectively use the technology. Another study shows that there is high acceptance of Artificial intelligent, but they are geared to word customer satisfaction as postulated by (Belias Varelas 2019). The same study also postulated using robot will have a positive effect.

On the other hand, artificial intelligent as it own effects on the job satisfaction in the hospitality industry, if it will substitute employees it may cause job dissatisfaction, but if artificial intelligent will help the employee to serve customer better it will cause high level of job satisfaction.

CHAPTER 3

METHODOLOGY

3.1 Research Design:

This research seeks the effect of artificial intelligent on Job satisfaction in the Hospitality Industry. This research is design to use quantitative analysis to address key objectives of the research. The use of well structured questionnaire will be design and distributed to the employees in the hospitality industry and key stakeholders. The survey was carried out in Nigeria including the hotels employers and employees as well as travels and tourism Agencies. It also includes the employees and employers that provide indirect service to the industry. The study used the quantitative data using the 5 Likert scale ranging for 1 for strongly agree and 5 for strongly disagree.

3.2 Participants/Population & the Sample / Study Group:

The study populations that will be used consist of the employees and key stakeholders in the hospitality industry. The Snowball Sampling Strategy and purposive sampling will be used.

The Purposive Sampling Strategy will be adopted because the selection of respondents must be carefully done so that only those that best fit the purpose, so that survey will be carried out by the hospitality industry experts, employees, and those that

are using the industry. Purposive sampling signifies that sampling as a series of strategic choices about with whom, where and how one does one's research. This statement implies that the way that researchers sample must be tied to their objective.(Palys, T. 2008).

The Snowball Sampling Strategy will also be adopted because the hospitality industry that is the environment that which this research will be carried out is highly sensitive and it's well secured, due to this informants are needed so that identification of the industry stakeholders and other highly placed personalities will be reach by referrers. The most straightforward type of random sampling method is simple random sampling (sometimes referred to as random sampling). Random sampling requires knowledge of exactly who is in the population, with construction of a sampling frame—that is, a list of everyone in the population. (Sedgwick, 2013)

3.3 Data Collection Materials:

The resource materials that we be used for this research will be from academic articles, thesis related to the topic from past researchers, materials sources from the Near East University library.

3.4 Data Collection procedure:

The methods will be used will be design to follow basic techniques. For the research the data collection will be done using the primary sources. The primary sources of data collection will be use of quantitative data sources such as questionnaires. Questionnaires will be sent through online means and devices. The social media will be utmost important here because most employees can be reached though their phones and gadgets.

3.5 Data Analysis Procedure:

The data analysis procedure that will be used in for the research will answer the problems on the effects of artificial intelligent on Job satisfaction in the hospitality industry. The quantitative data that are carried out and collected from the primary sources will be analysis using the some tools such as the IBM Social Package for Social Scientist (SPSS) statistics version 26, Tables, graph, the Microsoft Excel, Microsoft

word, descriptions of statistical methods and other useful tools. Also descriptive statistic and graphical representation and analysis will be use to show the relationship.

3.6 Reliability & Validity / Trustworthiness:

The reason for this research is to study the subject matter. The proper use of information and data will be under strict ethical consideration. The identities of the respondents will not be shared to any third party associations in any form, and following the ethical consideration such as informed consent, voluntary participation, not to harm anyone , confidentiality and anonymity will be strictly adhere to so that the research will fulfil its purpose.

To check if the questions actually measure the questions, a reliability test was conducted. Cronbach's alpha results should give you a value between 0 and 1, although you can also receive negative numbers, according to statistics solutions (2022). If your data is negative, something is wrong; possibly you neglected to reverse score certain items. A Cronbach's alpha of.70 and above is considered good, .80 and above is better, and.90 and above is considered best. The questions are accurate in measuring the research constructs, according to the Cronbach alpha value of 0.907, which was calculated.

Reliability Statistics

Cronbach's Alpha	N of Items
.907	19

CHAPTER 4

FINDINGS AND DISCUSSION

This chapter demonstrated how the data was gathered and analyzed using IBM SPSS statistics version 26 statistics. The biographic data of respondents in the hospitality industry in Nigeria, which includes hotels and tourism agencies, Data are a measure of the people that typically resides in a region and refer to the resident population. The populations of nations with protectorates, colonies, or other territorial holdings abroad are typically excluded. The annual variations in the population brought on by births, deaths, and net migration are known as growth rates (Population et al., n.d.), the data was analyzed using descriptive statistics, and out of the proposed 200 respondents, 151 respondents had completely filled and returned their questionnaire which was used as sample size for the analysis.

4.1 Descriptive statistics and attributes of the Employees (N=151):

Demographic variables

The descriptive statistics in the form of mean scores and standard deviation are shown in Table 2

Table 2: Table showing Demographic Variables

Demographic Variables	*Mean*	*SD*
Age	1.62	0.729

Gender	1.40	0.492
Experience	1.27	0.702
Education	3.98	0.140
Marital	1.15	0.361
Country	1.03	0.161
Familiar AI	3.01	1.519

4.2 The Age Group:

In Table 4.2 shows that the statistics of respondents in term of their age. The total respondents to the survey are 151. They are from age under 25 years of age and they constitute 75 respondent and these constitutes of 49.7% of the total sample that was used. 63 respondents out of the 151 respondents constituting 41.47% of the total sample were aged between 26 to 34 years old. 10 respondents constituting of 6.6% of the sample were aged between 35 to 44 years old. 2 respondents constituting of 1.3 % of the sample were aged between 45 to 54 years old. 1 respondents constituting of 0.7% of the sample were aged between 55 to 64 years old. Unfortunately No respondents was 65 above. When describing young and adult people, social allusions are frequently used; however, they are not present when categorizing children and the elderly. Age is undoubtedly an important factor in identifying and categorizing people (at least for young people), especially in the two poles of the lifespan (Roselli, 2018).

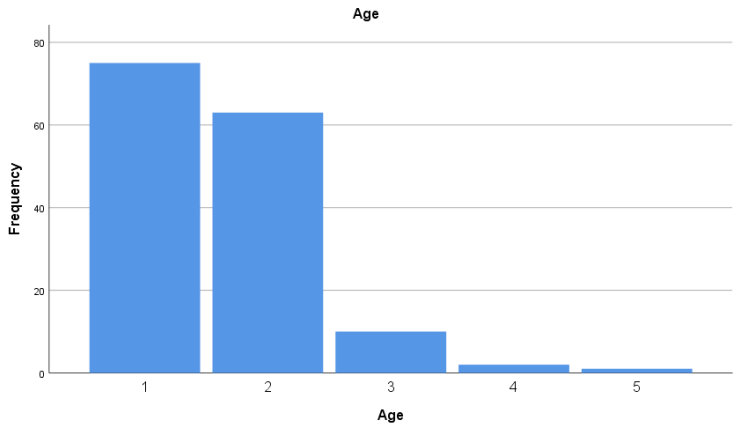
In this study as illustrated in table 4.1.2, 151 respondents that constitutes of 49.7% and 41.7% of the total sample were aged Under 25 years and 26 to 34 years respectively. Therefore it can be argued that almost respondents were young and mid age.

Table 3: Table showing Age groups

Demographic Variables		*F*	*%*
	Under 25	75	49.7
	26 - 34	63	41.7

Age	35 – 44	10	6.6
	45 – 54	2	1.3
	55 – 64	1	0.7
	65 and above	-	-
	Total	151	100

Figure 5: The Bar Chart showing Age group



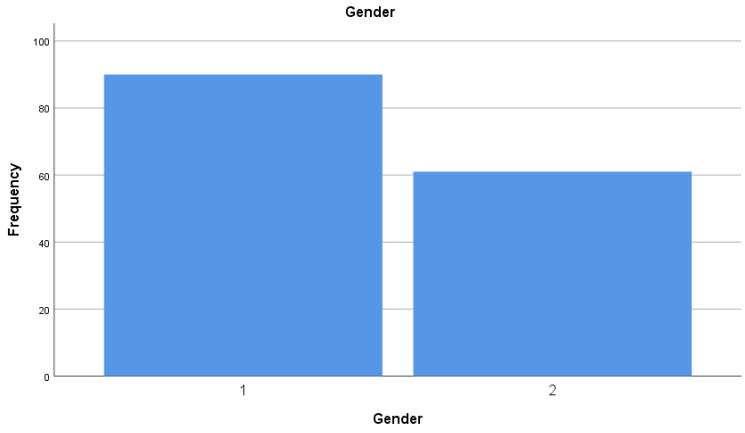
4.3 Gender:

In table 4.3 of this study shows that 151 respondents from the hospitality industry that includes hotel and Tourism agencies were male, 90 respondents constituting 59.6 % of the total sample and 61 were female who constituted of 40.4 % of the total sample. According to the report, there are more men working than women. When it comes to their motivations for participating, sex and age matter to a greater or lesser level (León-Guereo et al., 2020). It is frequently believed that permanent disparities in abilities and dispositions between males and females result from biological distinctions between the sexes (Gunn, 2012).

Table 4: Table showing Gender

Demographic Variables		*Frequency*	*%*
	M	90	59.6
Gender	F	61	40.4
	Total	151	100

Figure 6: The Bar Chart showing gender



4.4 Educational Level:

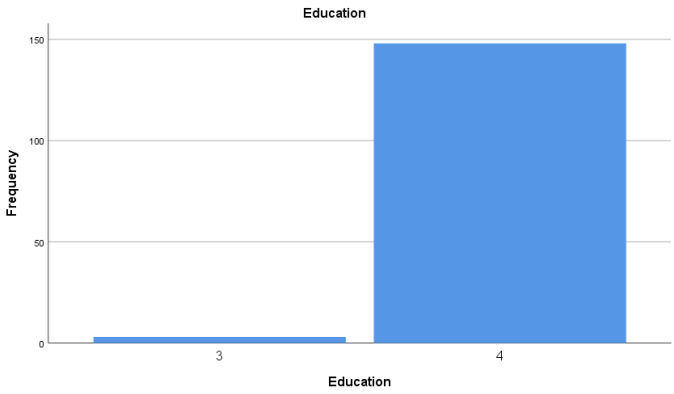
In this study table 4.1.4 below shows the educational respondents. It can be noted that 3 of the respondents attended only Secondary education constituting 2.0%. The remaining 98.0% of the respondents had a Tertiary education or more.

Table 5: Table showing Educational groups

Demographic Variables		*F*	%
	Secondary	*3*	2.0
Education	Tertiary	148	98.0

	Total	151	100

Figure 7: The Bar Chart showing Educational groups



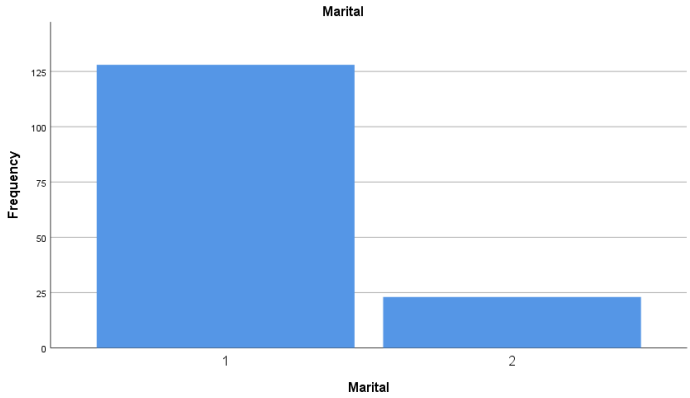
4.5 Marital Status:

In table 4.5 of the study below provides that the respondents constituted of 84.8% single people and 15.2% married. The study shows that the majority of employees in the hospitality are single. The difference between research using cross-sectional data and that utilizing longitudinal data when examining changes in marital status and living arrangements in later life has been a crucial factor (Robards et al., 2012).

Table 6: Table showing marital status

Demographic Variables		*F*	*%*
Marital	Single	128	84.8
	Married	23	15.2
	Total	151	100.0

Figure 8: The Bar Chart showing marital status



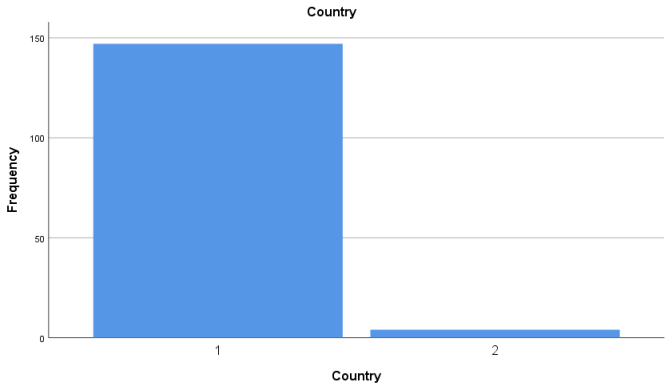
4.6 Countries of respondents:

In table 4.6 of the study below provides that the respondents constituted of 96.7% Nigerian and 2.6% other countries. Therefore, most of the respondents are from Nigeria. A typical demographic tool is population forecasts, which show expected future changes in population size and structure. They serve as a foundation for additional statistical projections (Population et al., n.d.)

Table 7: Table showing Countries of respondents

Demographic Variables		*F*	*%*
Country	Nigeria	147	97.4
	Other Countries	4	2.6
	Total	151	100.0

Figure 9: The Bar Chart showing Countries of respondents



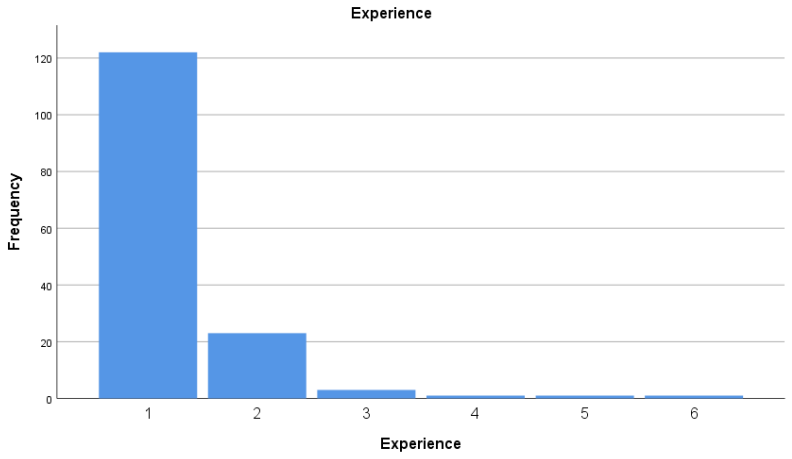
4.7 Level of Experience:

In addition to the study, table 4.7 shows that most 80.8% of employees in the hospitality industry had 0 to 5 years experience, while 6 to 10 years of experience accounted for 15.2%. 2.0 % of the respondents had 11 to 15 years experience. 0.7 % accounts for the age group of 16-20 years, 21-25 years and 26-30 years of work experience. Therefore, the table shows that most employees in the hospitality industry had 0 to 5 years of experience.

Table 8: Table showing level of Experience

Demographic Variables		*F*	*%*
Experience	0-5	122	80.8
	6-10	23	15.2
	11-15	3	2.0
	16-20	1	0.7
	21-25	1	0.7
	26-30	1	0.7
	31 and Above	-	-

Figure 10: The Bar Chart showing Experience



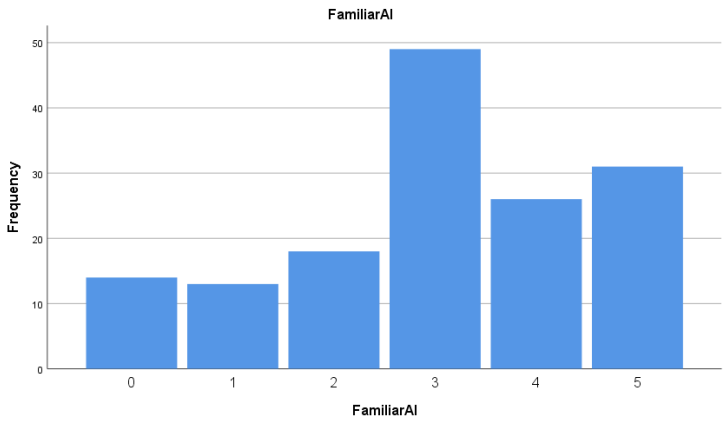
4.8 Familiarity with AI:

In the study 4.8 of this study, the results shows that 14 respondents constituting 9.3% are not familiar with Artificial Intelligent, 13 respondents constituting 8.6% are somewhat not familiar with Artificial intelligent, 31 respondents constituting 20.5% are familiar with Artificial intelligent.

Table 9: Table showing Familiarity with AI

Demographic Variables		***F***	***%***
	Not familiar		
	0	14	9.3
	1	13	8.6
Familiarity with AI	2	18	11.9
	3	49	32.5
	4	26	17.2
	5	31	20.5
	Extreme Familiarity		

Figure 11: The Bar Chart showing Familiarity with AI



4.9 Descriptive Statistics for Research Question 1:

In table 4.9 titled Effects Artificial intelligence on daily activities was measured using four items for Descriptive statistics for the Effects Artificial intelligence on daily activities reveals an overall mean score of 2.5149 (SD = 1.07169). This shows a positive perception of the Effects Artificial intelligence on daily activities amongst the lists. Daily routine as the highest mean value indication that Artificial Intelligent as effect on Job satisfaction.

Table 10: Table showing research question one

	Minimum	*Maximum*	*Mean*	*SD*
Increases output	1	5	2.38	1.366
Daily routine	1	5	2.70	1.165
Major changes	1	5	2.62	1.259
Tasks timely	1	5	2.36	1.343
SECB	1.00	5.00	2.5149	1.07169

4.10 Descriptive Statistics for Research Question 2:

Impact of Artificial intelligent on Job Satisfaction measured using six items for the descriptive statistics for the Effects Artificial intelligence on daily activities reveals an overall mean score of 2.7649 (SD = 0.80191). This shows a positive perception of the Impact of Artificial intelligent on Job Satisfaction amongst the lists. Disruption job as the highest mean value indication that Artificial Intelligent as effect on Job satisfaction.

Table 11: Table showing research question two

	Minimum	*Maximum*	*Mean*	*SD*
Employment shortage	1	5	2.60	1.471
Threat to employee	1	5	2.64	1.388
Remove redundancy	1	5	2.68	1.168
Increases motivation	1	5	2.90	1.290

Disruption job satisfaction	1	5	3.15	1.145
Work together	1	5	2.63	1.225
SECC	1.17	5.00	2.7649	.80191

4.11 Descriptive Statistics for Research Question 3:

Artificial Intelligent and employees work together to achieve the organization goal was measured using four items for the descriptive statistics for the Effects Artificial intelligence on daily activities reveals an overall mean score of 2.6675 (SD = 0.85600). This shows a positive perception of the Artificial Intelligent and employees work together to achieve the organization goal amongst the lists. Discontinue human as the highest mean value indication that Artificial Intelligent as neutrality on Job satisfaction.

Table 12: Table showing research question three

	Minimum	*Maximum*	*Mean*	*SD*
Extent do you agree	1	5	2.62	1.088
Enjoy working	1	5	2.58	1.229
Employee attitude positive	1	5	2.63	1.141
Retraining new technology	1	5	2.48	1.326
Discontinue human	1	5	3.03	1.311
SECD	1.00	5.00	2.6675	.85600

4.12 Descriptive Statistics for Research Question 4:

Factors that artificial intelligent contribute to the job satisfaction was measured using four items for the descriptive statistics for the Effects Artificial intelligence on daily activities reveals an overall mean score of 2.5762 (SD = 0.90646). This shows a positive perception of the factors that artificial intelligent contribute to the job

satisfaction amongst the lists. Streamlining repetitive tasks as the highest mean value indication that Artificial Intelligent as neutrality on Job satisfaction.

Table 13: Table showing research question four

	Minimum	*Maximum*	*Mean*	*SD*
Positive lifestyle	1	5	2.56	1.105
Improve productivity	1	5	2.38	1.221
Hamper innovation	1	5	2.76	1.284
Streamlining repetitive tasks	1	5	2.60	1.167
SECE	1.00	5.00	2.5762	.90646

4.13 Presentation of data analysis results for the study:

Table 14: The general uniqueness of the variables are summarized in the table below:

	Minimum	*Maximum*	*Mean*	*SD*
Daily activities	1.00	5.00	2.5149	1.07169
The effects of AI	1.17	5.00	2.7649	.80191
Working together	1.00	5.00	2.6675	.85600
Factors	1.00	5.00	2.5762	.90646

Independent Samples Test One

H1: There is a significant difference in AI familiarity between Male and Female respondents.

Table 15: Group Statistics that shows significant difference in AI familiarity between Male and Female Respondents.

	Gender	*N*	*Mean*	*SD*	*Std. Error Mean*
Familiar AI	Male	90	3.31	1.304	0.137
	Female	61	2.57	1.707	0.219

Independent Samples Test

		Levene's Test for Equality of Variances		*T-test for Equality of Means*						
									95% Confidence Interval of the Difference	
		F	*Sig.*	*t*	*Degree of freedom*	*Sig. (2-tailed)*	*Mean Difference*	*Std. Error Difference*	*Lower*	*Upper*
Familiar AI	Equal variances assumed	7.841	0.006	3.005	149	0.003	0.737	0.245	0.252	1.222
	Equal variances not assumed			2.855	105.669	0.005	0.737	0.258	0.225	1.249

An independent sample t-test was conducted that show the familiarity of respondents to artificial intelligent in term of gender, male and female. There were significant differences (t (105.669) =2.855, p = < 0.05) in the scores for Male (*Mean* =3.31, *SD* =1.304,) was higher than and Female (*Mean* =2.57, *SD* = 1.707,). The magnitude of the difference in the means (mean difference = 0.737, 95% Cl: 0.225 to 1.249) was very small. Hence, H1 was supported.

Independent Samples Test Two:

H1: There is a significant difference in AI familiarity between Age, young and old Respondents

Table 16: Group Statistics that shows significant difference in AI familiarity between Young and Old Respondents.

	Age	*N*	*Mean*	*Std. Deviation*	*Std. Error Mean*
FamiliarAI	Young	75	2.53	1.473	0.170
	Old	63	3.40	1.443	0.182

Independent Samples Test

		Levene's Test for Equality of Variances		*T-test for Equality of Means*						
									95% Confidence Interval of the Difference	
		F	*Sig.*	*t*	*df*	*Sig. (2-tailed)*	*Mean Difference*	*Std. Error Difference*	*Lower*	*Upper*
FamiliarAI	Equal variances assumed	0.059	0.808	-3.462	136	0.001	-.863	0.249	-1.357	-.370
	Equal variances not assumed			-3.468	132.812	0.001	-.863	0.249	-1.356	-.371

An independent sample t-test was conducted that show the familiarity of respondents to artificial intelligent in term of Age, young and Old. There were significant differences (t (136) =-3.462, p = >0.05) in the scores for Young (*Mean* =2.53, *SD* =1.473,) was higher than Old (*Mean* =3.40, *SD* = 1.443,). The magnitude of the

difference in the means mean difference = -0.863, 95% Cl: -1.357to -.370} was very small. Hence, H1 was supported.

4.14 Correlation Analysis:

Analysis of correlation results of employees (respondents) in the hospitality industry

In table 4.16 of the study, the correlation results of respondents Age, Gender, education, experience, marital status, country and familiarity with Artificial Intelligent.

Pearson product correlation result shows that Age and Gender was found to be very low negative correlation and statistically significant ($r=-0.271$, $p<0.001$) hence this shows that an increase in Age would not lead to an increase Gender.

Pearson product correlation result shows that Age and Education was found to be very low positive correlation and statistically non-significant ($r=0.121$, $p<0.140$) hence this shows that an increase in Age would lead to an increase Education.

Pearson product correlation result shows that Age and Experience was found to be low positive correlation and statistically significant ($r=0.336$, $p<0.000$) hence this shows that an increase in Age would lead to an increase Experience.

Pearson product correlation result shows that Age and Marital status was found to be low positive correlation and statistically significant ($r=0.478$, $p<0.000$) hence this shows that an increase in Age would lead to an increase Marital status.

Pearson product correlation result shows that Age and country was found to be very low positive correlation and statistically significant ($r=0.144$, $p<0.0078$) hence this shows that an increase in Age would lead to an increase country.

Pearson product correlation result shows that Age and familiarity with Artificial intelligence was found to be low positive correlation and statistically significant ($r=0.306$, $p<0.000$) hence this shows that an increase in Age would lead to an increase familiarity with Artificial intelligence.

Pearson product correlation result shows that Gender and Education was found to be low positive correlation and statistically non-significant ($r=0.112$, $p<0.152$) hence this shows that an increase in gender would lead to an increase education.

Pearson product correlation result shows that Gender and Experience was found to be low negative correlation and statistically significant ($r=-0.185$, $p<0.023$) hence this shows that an increase in gender would not lead to an increase experience.

Pearson product correlation result shows that Gender and Marital was found to be low negative correlation and statistically significant ($r=-0.199$, $p<0.014$) hence this shows that an increase in gender would lead to an increase marital status.

Pearson product correlation result shows that Gender and Country was found to be negligible negative correlation and statistically non-significant ($r=-0.052$, $p<0.528$) hence this shows that an increase in gender would not lead to an increase in country.

Pearson product correlation result shows that Gender and Familiarity with Artificial Intelligence was found to be low negative correlation and statistically significant ($r=-0.052$, $p<0.528$) hence this shows that an increase in gender would not lead to an increase in familiarity with Artificial Intelligence.

Pearson product correlation result shows that Education and Experience was found to be low negative correlation and statistically significant ($r=-0.216$, $p<00.008$) hence this shows that an increase in Education would not lead to an increase in Experience.

Pearson product correlation result shows that Education and Marital status was found to be negligible positive correlation and non-statistically significant ($r=0.060$, $p<0.462$) hence this shows that an increase in Education would lead to an increase in Marital status.

Pearson product correlation result shows that Education and Country was found to be negligible positive correlation and non-statistically significant ($r=-0.023$, $p<0.775$) hence this shows that an increase in Education would not lead to an increase in country.

Pearson product correlation result shows that Education and Familiarity with Artificial Intelligence was found to be low negative correlation and non-statistically significant

(r=-0.030, p<0.714) hence this shows that an increase in education would not lead to an increase in familiarity with Artificial Intelligence.

Pearson product correlation result shows that Experience and Marital status was found to be very low positive correlation and statistically significant (r=0.231, p<0.004) hence this shows that an increase in Experience would not lead to an increase in Marital status.

Pearson product correlation result shows that Experience and Country was found to be negligible negative correlation and non-statistically significant (r=-0.064, p<0.435) hence this shows that an increase in experience would not lead to an increase in country.

Pearson product correlation result shows that Experience and Familiarity with Artificial Intelligence was found to be very low positive correlation and statistically significant (r=0.228, p<0.005) hence this shows that an increase in experience would lead to an increase in familiarity with artificial intelligence.

Pearson product correlation result shows that Marital status and Country was found to be negligible positive correlation and statistically significant (r=-0.160, p<0.050) hence this shows that an increase in Marital status would lead to an increase in country.

Pearson product correlation result shows that Marital status and Familiarity with Artificial Intelligence was found to be low positive correlation and statistically significant (r=-0.313, p<0.000) hence this shows that an increase in marital status would lead to an increase in familiarity with Artificial Intelligence.

Pearson product correlation result shows that Country and Familiarity with Artificial Intelligence was found to be negligible positive correlation and non-statistically significant (r=-0.053, p<0.518) hence this shows that an increase in education would not lead to an increase in familiarity with Artificial Intelligence.

Table 17: Correlation results of employees in the hospitality industry

Correlations

		Age	*Gen*	*Educ*	*Exper*	*Marit*	*Count*	*Fami AI*
Age	Pearson Correlation	1						
	Sig. (2-tailed)							
Gender	Pearson Correlation	-.271**	1					
	Sig. (2-tailed)	0.001						
Education	Pearson Correlation	0.121	0.117	1				
	Sig. (2-tailed)	0.140	00.152					
Experience	Pearson Correlation	0.336**	-0.185*	-0.216**	1			
	Sig. (2-tailed)	0.000	0.023	00.008				
Marital	Pearson Correlation	0.478**	-0.199*	0.060	0.231**	1		
	Sig. (2-tailed)	0.000	0.014	0.462	0.004			
Country	Pearson Correlation	0.144	-0.052	0.023	-0.064	0.160	1	
	Sig. (2-tailed)	0.078	0.528	0.775	0.435	0.050		
Familiar AI	Pearson Correlation	0.306**	-.239**	-0.030	0.228**	0.313**	0.053	1
	Sig. (2-tailed)	0.000	0.003	0.714	0.005	0.000	0.518	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Since we didn't know the direction or relationship of the results, we used a correlation matrix of significant of two tails for these studies. This study in Table 4.6.1 shows the correlation of employees in the Hospitality industry with respect to their age, gender, marital status, education level, familiarity to artificial intelligent, experience and country used as demonstrated.

Table 4.16, illustrates that there are positive correlation relationship between age and experience, age and marital, age and country, age and familiarity with artificial intelligent, experience and marital, experience and familiarity with artificial intelligent, and marital and familiarity with artificial intelligent and they are statistically significant.

The table also shows that age and education, gender and education, education and marital, and education and country are positive correlation relationship and are statistically not significant.

Looking at the age and gender, gender and education, gender and marital status, gender and country, gender and familiarity to AI, education and experience, experience and country, they are negatively correlated and statistical significant. Furthermore, gender and country, education and familiarity with artificial intelligent, experience and country, and country and familiarity with artificial intelligent are negatively correlated and not statistically significant.

Table 18: Decision table for research question

	Hypothesis	**Results**
Ho:	Application of Artificial Intelligent will not result in the increase of the overall output of daily activities.	**H1** hypothesis is accepted
H1:	Application of Artificial Intelligent will result in the increase of the overall output of daily activities	

Ho:	There is no effective relationship between Artificial Intelligent and Job satisfaction amongst the hospitality industry employees.	**H1** hypothesis is accepted
H1:	There is an effective relationship between Artificial Intelligent and Job satisfaction amongst the hospitality industry employees	
Ho:	There is no working relationship between Artificial Intelligent and employees in the hospitality industry.	**H1** hypothesis is accepted
H1:	Application of artificial Intelligent will not result in the increase of factors that affect Job satisfaction in the Hospitality industry	
Ho:	Application of artificial Intelligent will not result in the increase of factors that affect Job satisfaction in the Hospitality industry	**H1** hypothesis is accepted
H1:	Application of artificial Intelligent will result in the increase of factors that affect Job satisfaction in the Hospitality industry.	

CHAPTER 5

CONCLUSION, DISCUSSION AND RECOMMENDATION

5.1 Discussion:

This chapter discuss the results and brings together the findings of the research study on the evaluating the effects of artificial intelligent on job satisfaction in the hospitality industry, Having reviewed several research study by experts on similar related topic, it is imperative to note that artificial intelligent is crucial to job satisfaction in the hospitality industry. Therefore to get the deep understand of the study data were collected using the online goggle form that was share using the internet and social media platforms.

The research study was conducted with most of the respondents are from Nigeria, and the respondents were the sample population of the employees in the hospitality industry that includes the hotels and travel agencies. Purposive sampling was used to select the sample. The questionnaire was coded using Likert scale (Strongly agree, Agree, Neutral, Disagree, Strongly disagree), and quantitative research was used using the statistical tools Excel and SPSS in analysing the data such as mean, standard deviation, percentages, Pearson correlation coefficient.

The main aim of the research was to establish whether the effect of Artificial Intelligent on Job satisfaction in the hospitality industry. This research work focused on the employee of the hospitality industry. The result highlights what effect does Artificial

Intelligent have on carrying out daily activities in the hospitality industry, the impact on the employees on job satisfaction, the most effective ways that artificial intelligent and employees can work together to achieve the organization goal and the main factors that artificial intelligent contribute to the job satisfaction of employee in the hospitality industry. The speed of implementation of the solution may be significantly faster with service automation, since machines can take over many duties that many humans today do very quickly, and the biggest issues encountered in the adoption of the automated solution will be resistance from workers and some consumers. (Webster & Ivanov, 2020). The empirical finding reveals that the effect of artificial intelligence on job satisfaction in the hospitality.

5.2 Conclusion:

This research study is significant because it is specifically geared toward job satisfaction among the employees in the hospitality industry if artificial intelligent is adopted fully to the industry to carryout human task but Cvent (2020), argued that while AI robot concierges, room service delivery, and cleaning machines have the potential to replace 25% of today's hospitality workers, initiatives like Japan's Henn na Hotel (which had a 100% AI staff of 243 robots) have generally failed. As a result, it's unlikely that AI will be able to entirely replace hotel employees. However, in the coming years, there may be a considerable increase in robotic assistance. and if the application artificial intelligent may caused dissatisfaction if it substitute employees but if Artificial Intelligent will help the workers or employees to serve customers better the acceptance rate will be high, as Jaya and Jobi (2020), argued to satisfy the demands of the job, employees in the field of information technology work longer hours. The working climate is extremely competitive, and employees are held to a high standard

This study provides that Artificial intelligence as the effect on Job satisfaction in the hospitality Industry. This because artificial Intelligent is very crucial in the Hospitality industry, and it will be needed in the future for improvement. This study is timely because most hotels have not fully adopted the use of Artificial intelligent but it will be adequate that the Hospitality Industry should inculcate it into the system not to affect the employee. In a prior study Kamal and Gurudatti (2017), the most essential variables of Job Satisfaction, according to the employees, are communication, interest in

job responsibilities, and recognition, and it is the employer's obligation to guarantee that these aspects are available. Employers, it is thought, should prioritize JS to attract and keep talented workers in a tight market and struggling economy.

In the study the age group of the employee are in the young and the mid age individual and non gender based the male are constitute the large population than the female population. Meanwhile Fry (2018), examined the post-Millennial generation's eldest members (those born after 1996) are now of working age. Last year, 9 million post-millennial (those between the ages of 16 and 20 who have reached working age) were employed or searching for work, accounting for 5% of the labor force.

Education status of respondents shows that employees have attended higher institution of learning, which includes first degree, masters and PhD. The marital status shows that there are more singles than married employee in the hospitality industry. There are more male employees than female in the hospitality industry and Nigeria is the case study use in this research work.

According this study there is positive perception on the AI having effects on the increasing daily activities. the impacts' of this is that when AI is used effectively it will increases the output, the routine, major changes and the rate at which duties are carried Sunil (2019), unlike humans, we can use AI to make machines work 24 hours a day, seven days a week with no breaks, and they don't get bored, we this assertion artificial intelligent can still foster better relationship with employees in the hospital industry. The indicator show that AI will not cause employee shortage on the long run but it will not be a threat to the employee in the hospitality. If proper earnest it will increase motivation but may cause disruption on job satisfaction on the other side.

Furthermore, the extent to which AI and employee work together cannot be over emphasis and this because the study shows that there is positive extent of agreement between employees and AI working together, also the employee attitude to AI is positive, that show that if the AI is fully adoption they will be greater relationship. But the fare that human employee is still on a neutral basis, because the adoption of AI might discontinue or have effect on the employee which might be little or much.

In addition, there are factors to check if AI contributes Job satisfaction Mingotto et al.,(2021), postulated that All AI supervisors were given specialized training for the new tasks, which included encouraging them to watch customer-robot interactions whenever feasible in order to improve the quality of knowledge and resolve or prevent potential misunderstandings in human-machine interactions. The study shows that positive lifestyle improve production are part of the factor that might leads to the job satisfaction even when AI is used in the Hospitality industry.

In short this research argue that the effect of AI as positive perception on job satisfaction in the hospitality industry, The Economist (2016), AI will not result in mass unemployment, but it will accelerate the current trend of computer-related automation, upsetting labor markets in the same way that technical progress has in the past and requiring people to learn new skills at a faster rate than in the past.

5.3 Recommendation:

Artificial Intelligence was created to improve the hospitality business, as well as a variety of other industries, by improving how jobs are completed in order to reduce redundancy and increase productivity. Because AI is still in its infancy, the hospitality industry has yet to fully embrace it. In contrast to the hospitality business, where AI has been fully adopted, it has replaced employees in several industries. If artificial intelligence is utilized to replace personnel, it may generate dissatisfaction; but, if Artificial Intelligence is used to assist workers or employees in better serving consumers, it will be well received. Artificial Intelligent might take on the repetitive and the day to day work, Artificial Intelligent cannot carry out most complex activities that are left for human to use their imitative to deal with complex activities

The study recommend that the hospitality industry should invest in AI to support and help the human employee not to discontinue or take over the employee so as to build or foster greater relationship between AI and employee that will lead to job satisfaction not job dissatisfaction. In the future, it’s recommended for future study should carryout research on employee satisfaction, because previous research discusses more on customer satisfaction and neglecting employee satisfaction. Another study can also do similar study in different country around the world. By doing this research it will provide the over a fairly representation of the global world.

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APPENDICES

Appendix A

Questionnaire

Evaluating the effects of Artificial Intelligence on Job Satisfaction in the Hospitality industry

Participant information sheet and informed

Consent Form

Dear Participant,

The research study we are exploring is done to understand how artificial intelligent affect employee satisfaction on job in the hospitality industry, the data collected through this questionnaire will be used check the effect of AI on employees and their job satisfaction. By responding and filling this questionnaire, you agree to participate in the study.

Participating in the study is voluntary; you have the choice to participate and not to participate. Therefore, your personal information is under strict confidentiality and will not be used for any other purpose other than for academic research purposes only and may be presented at the national/international academic conferences and/or publications and also shared with the research team. If need be to quit participating in this study at any time you can contact us. If you opt out of the study, your data will be deleted from our database and will not be included in any further steps of the study. In case you have any questions or concerns, please contact us using the information below.

Thank you very much for making out time to fill out the survey.

Demographics Data

Section A

(1). Age: Under 25 ( ), 26 – 34 years ( ), 35 – 44 years ( ), 45 – 54 years ( ), 55 – 64 years ( ), 65 above ( )

(2). Gender: Male ( ) Female ( ) Prefer not to say ( ).

(3). Educational Level: Non-formal ( ) Primary ( ) Secondary ( ) Tertiary ( ) Other ( )

(4). Years of Work Experience: 0 – 5 years ( ) 6 – 10 years ( ) 11 – 15 years ( ) 16 – 20 years ( ) 21 – 25 years ( ) 26 – 30 years ( ) 31 and above ( )

(5). Marital Status: Single ( ) Married ( ) Divorced ( )

(6). Nationality .....

(7). How familiar are you with artificial intelligence (AI) as an employer/employee?

Not at all familiar 0 (_) 1 (_) 2 (_) 3 (_) 4 (_) 5(_) Extreme Familiar

(8). Based on your intuition as an employer and employee, Please tick the appropriate box as your opinion.

		Strongly Disagree	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
B	**Daily Activities**					
	Applying Artificial Intelligence increases the overall output of daily activities					
	Artificial intelligence carry out daily routine effective than human employee					
	Artificial Intelligence bring major changes in the hospitality industry					
	Artificial					

	Intelligence will execute tasks in a timely manner compare to employee					
C	**Effect of AI**	**Strongly Disagree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
	If fully adopted Artificial Intelligent will cause employment shortage					
	Artificial Intelligence will be a threat to employee workforce					
	Artificial Intelligence will remove redundancy					
	Artificial Intelligence increases employee motivation					
	Artificial Intelligence cause major disruption on job satisfaction					
	Artificial Intelligence and employee will work together effectively					
D	**Working Together**	**Strongly Disagree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
	To what extent do you agree that Artificial Intelligence should be employed in the hospitality					

	industry					
	I will enjoy working with Artificial Intelligence as an employee					
	Employee attitude toward artificial intelligent will be positive on job satisfaction					
	Retraining of employees to adapt to the new technology of artificial intelligent will be crucial					
	Artificial intelligent discontinue human employee					
E	**Factors**	**Strongly Disagree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
	Artificial Intelligence helps employees to make positive lifestyle					
	Artificial intelligent help employees to improve productivity					
	Artificial intelligent will hamper innovation in the hospitality industry					
	Automation of activities leads to streamlining					

	of repetitive tasks					

Appendix B

Informed consent form

Evaluating the effects of artificial intelligent on Job satisfaction in the Hospitality Industry.

Participant information sheet and informed Consent Form

Dear Participant,

The research study we are exploring is done to understand how artificial intelligent affect employee satisfaction on job in the hospitality industry, the data collected through this questionnaire will be used check the effect of AI on employees and their job satisfaction. By responding and filling this questionnaire, you agree to participate in the study. Participating in the study is voluntary; you have the choice to participate and not to participate. Therefore, your personal information is under strict confidentiality and will not be used for any other purpose other than for academic research purposes only and may be presented at the national/international academic conferences and/or publications and also shared with the research team. If need be to quit participating in this study at any time you can contact us. If you opt out of the study, your data will be deleted from our database and will not be included in any further steps of the study. In case you have any questions or concerns, please contact us using the information below. Thank you very much for making out time to fill out the survey.

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By signing below, you agree to take part in this study

Full Name _____

Signature _____ Date_____

YAKIN DOĞU ÜNİVERSİTESİ

BİLİMSEL ARAŞTIRMALAR ETİK KURULU

18.11.2021

Dear Samuel Blessing Olugbade

Your application titled **"Evaluating the effects of artificial intelligent on job satisfaction in the hospitality industry"** with the application number NEU/SS/2021/1080 has been evaluated by the Scientific Research Ethics Committee and granted approval. You can start your research on the condition that you will abide by the information provided in your application form.

Assoc. Prof. Dr. Direnç Kanol

Rapporteur of the Scientific Research Ethics Committee

Direnc Kanol

Note: If you need to provide an official letter to an institution with the signature of the Head of NEU Scientific Research Ethics Committee, please apply to the secretariat of the ethics committee by showing this document.