



Integrating Artificial Intelligence and Sustainable Innovation in Thailand's Hospitality Industry

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Abstract- Thailand's hospitality industry is super important to the country's economy and brings in tourists from all over. But it's been hit hard by the COVID-19 pandemic. Now that things are picking up again, using Artificial Intelligence (AI) and going green are key. This paper looks at how AI, like chatbots and robots, can make hotels work better and give customers a better experience. It also talks about how important it is to be sustainable to cut down on waste, use resources wisely, and meet global standards. By looking at real examples and what's happening now in Thailand's hotels, it shows that not many are using AI yet. It also points out some problems with being sustainable, particularly with smaller hotels. The paper says that combining AI and sustainability can really change things for the better. If Thailand's hotels do this, they can stay competitive, bounce back easier, and be good to the environment.

Keywords - Artificial Intelligence (AI), Sustainable Innovation, Hospitality Industry, Hotel Technology, Thailand Tourism, Service Robotics, Digital Transformation, Environmental Sustainability, Boutique Hotels, Smart Hospitality Systems.

I. Introduction

Thailand's sandy beaches and yummy food make it Asia's most visited country. The tourism business is a big help to Thailand's economy. About 40 million tourists came in 2019. But then COVID-19 made things tough, and in 2020, the number of tourists dropped to less than 6 million. This messed up almost everything. As the world gets used to COVID-19, the tourism business should get better and may even grow in 2022. But things won't just go back to how they were before. People now think differently about what they want from business. So, the tourism businesses need to be ready for new trends and use new tech to do well after COVID-19. One big thing that's happened since COVID-19 is that AI is getting more popular. It's been around for a while, but it's getting better fast. Now, it's in lots of businesses, making them work better and giving customers better service. With big data, AI is changing how businesses work and how they connect with each other.

Some tourism companies are using AI to give customers better service. They have robots that greet people in hotels, airports, and restaurants. There are apps that make it easier to get food delivered. Some hotels let people stay without seeing any staff. You can use your voice to order food, book a table, see the menu, and get things delivered. AI also helps with security at the door and stops bad smells from spreading. AI helps companies give better service by doing some



things automatically or helping people do their jobs. Other companies break down what they do and let customers create their own service or product. AI helps customers connect with the company's information to do this.

Thailand is a great place for tourists from other countries and from Thailand. The tourism business has lots of options, like fancy hotels, resorts that focus on health, farm-stay hotels, and cool homestays. Plus, there are tons of places to eat. But since Thailand is the most visited country in Asia, it needs to pay more attention to how the tourism business is run. Right now, not many tourism businesses are using AI and online tech.

Ananeva (2019) says that the tourism business is huge, with lots of different services like hotels, events, theme parks, transportation, and cruises. It's not just about hotels; it includes anything people use when they travel. Every year, about \$3.5 trillion is spent in the tourism business, which is about 8-10% of the world's money. It's also getting bigger fast. From 2015 to 2020, it was expected to grow to about \$3.6 trillion in the US and \$17.5 trillion around the world.

Hotels are part of the tourism business. They give people a place to stay, food, and other services. In the last ten years, phones and the internet have changed the hotel business a lot. Now, hotels can use machine learning, big data, and AI to understand problems and find solutions. AI is like the internet – it can change everything and create new opportunities for businesses.

Hotels are one of the first businesses that AI is expected to change in a big way. Some people think that AI will be used a lot in hotels in the next 5-10 years. But some reports say that AI might not change boutique and lifestyle hotels as much. These hotels focus on making things personal and creating a unique experience for people who want to stay in a special place.

AI can see things in lots of different ways and can help make tourism better. For example, it can teach what customers like and can even tell if someone might fall. AI is already used in travel and airlines to book, change, or cancel trips and find the best routes. Now, AI is being used more to help people in the tourism, like virtual assistants that help travelers during their stay. It usually costs a lot to start using AI, but companies that are ahead of the curve, like big hotel chains and tech companies, are doing it. The most popular AI programs are chatbots, recommendation systems, and systems that use your face to book and check in. Luxury hotels and airlines use the most advanced AI, while regular customers are more interested in basic AI features. If people know more about AI and see that it's useful, they might be more likely to use it.

There are three things to consider about AI: how good the AI is, how secure and ethical it is, and how easy it is to use. Big hotel chains are doing well with AI, but other tourism businesses could also use it. Some people think that the chatbots that are available now aren't very good. Chatbots need to be improved so they can give better service, answer questions well, and be ready for anything. There's also



room to make them better at booking requests. Some people have different ideas about how safe and transparent AI is.

AI can help hotels do things like transport luggage and guide guests. Robots can greet guests, plan the best route to their room, and even take them there.

AI is getting better fast, and it's being used in more businesses. In the hotel business, machines work with people. But employees think that making things personal will still be done by humans. AI is becoming more popular, and people are talking about it increasingly. This raises questions for the hotel business. AI is about doing things automatically and being able to adapt. AI is being used in lots

of areas, including hotels. It helps employees do their jobs, analyze information, and understand what guests want so they can make their stay better.

AI is changing the markets it enters. With data tech, AI is already changing hotels. By looking at big data, AI can learn what guests might want and tell them about it before they even arrive. Hotels can also suggest the right services. AI predictions depend on the data that's available. In wellness areas, AI can help collect, transfer, store, and evaluate health records.

AI systems can tell hotels how full the saunas, pools, and fitness studios are. This information can be used to suggest wellness services to guests. AI used to just be for talking to visitors, but now it can do much more to make the guest experience better. But just having AI isn't enough; you need to understand what users want.

There are lots of ideas about AI in hotels, like replacing workers and having AI that's as good as a real person. AI assistants could even become the face of the restaurant and create a relationship with visitors. Using AI can save money by reducing the number of employees. However, hotels weren't designed for these robots. Employees still need to communicate with guests and help them with their problems.

II. Sustainable Innovation in Hospitality

When we talk about sustainable innovation, it means making sure that a company's strategies mesh with what consumers will need down the road. This involves thinking about all sorts of resources— money, ideas, people, the environment, and society—when figuring out what kind of creative path to take. Industries such as transport, hospitality, and hotels are mindful of the environment and place a high priority on integrating sustainability into new service methods. In the hospitality sector, innovations aim to cut down on how much water and energy is needed, and they put emphasis on using new and efficient appliances. Businesses take advantage of environmentally conscious and sustainable creative approaches to gain an advantage over others. Hotels are aware of how sustainability considerations affect their impact on society, the economy, and the environment. They try to improve how they handle customer demand, stick to environmental guidelines, and meet the expectations of their visitors. Money put into eco-friendly, green, and pleasant environments leads to increased sustainable innovation for hotels (Alzyoud et al., 2017).



Innovations that focus on sustainability make customers more aware and willing to spend extra on their rooms to get privacy, comfort, and ease. Sustainable tourism centers on maintaining long-term viability while providing economic, agricultural, and natural benefits to people living in the area. Hotels that put money into service features that save on utilities and raise property values encourage the creation of innovative strategies. New tech and changed usage patterns alter the service environment. Memorable experiences that stir up human emotions pave the way for creative business approaches (Ananeva, 2019). Expanded sustainable innovation results and service improvements from what's already there mean we need to get how firm strategy is created based on sustainable service setups. Changes in the roles, insights, skills, tech, and understanding of risks and gains for clients are a must for hotel service innovations. AI methods have an effect on new sustainable innovations that are being developed or coming up with planning and business methods to develop lasting innovation results. In creating sustainable innovations, AI techniques replace usual service resources.

2.1. What is Sustainable Innovation?

Recently, people have been paying more attention to how innovation affects our environment. Sustainable innovation isn't something drastic; it's more about how companies become more environmentally friendly. This means tangible changes to a product with companies becoming more sustainable. Innovations are considered sustainable when they involve new or greatly improved products, processes, or ways of doing things that reduce how much of Earth's resources an organization uses and how much contamination it causes.

So, the panel talks about and outlines what direction future investigations should take in the context of hospitality. The survey of hotel managers shows the biggest issues for innovation and sustainability, plus it looks at what's stopping hotels from adopting and putting sustainability into practice. Employees' ongoing experimentation and gradual, everyday changes in hotel procedures are noted. How innovation is adopted in hospitality is discussed regarding current technology, skills, and who owns what. The agents and systems are trying to make new technology 'professional' in hotel work environments. Most hospitality managers feel good about sustainability and think it's vital for governments to get involved to speed up sustainability at hotels. Things like whether a hotel participates in sustainability groups or is involved in local communities play a part in choosing sustainable practices. Visual things, routines, and personal opinions are used to make sustainability happen and make sense.

In the hospitality world, sustainable innovation means hotels plan, create, and sell new products and services that aim to boost quality of life. Sustainability is looked at from three angles: financial, environmental, and community based. Innovations are called sustainable when they are new or greatly enhanced items, procedures, or ways that make life better. This piece sees sustainable innovation in hospitality as meaning hotels plan, develop, and sell new offerings that focus on quality of life. Community-focused innovation through products and services



has created the least expensive products and better info. There are participatory procedures with engagement, co-creation, and discussion. Authenticity is pinpointed as a key dimension of sustainability. Education implications and suggestions for what to research later point to highlighting the community side of sustainability in hospitality.

2.2. Stories of Sustainable Practices

There's an early study that looks at how five-star hotels in Bangkok deal with sustainability in their food supply chains. Sustainable steps are a way of thinking focused on mankind's basic need to increase life quality without hurting the world for those who come later. The hospitality field is one of the most reluctant ones to respond to this way of thinking. This investigation checks out a gap in what we know about hospitality management regarding sustainable procedures used by five-star hotels with their food supply chain management. Content analysis was done on what's in the reports of corporate social responsibility, sustainability, and/or environmental matters posted on the websites of 33 five-star hotels in Thailand. The results of coding led to categorizing sustainable procedures into general sustainable procedures, building and grounds-related sustainable procedures, and food

supply chain management-related sustainable procedures, as well as 15 sub-procedures. Hospitality management literature involving sustainable procedures applied with food supply chain management of five-star hotels is expanded academically and practically focused on growing human resource skills with hotel employee food supply chain management skills through hotel management. Artificial intelligence is disruptive innovation in the hotel business: a look at Finnish boutique and lifestyle hotels. AI is now a trending topic. AI is getting involved and supports many fields, including hospitality and hotels. However, what exactly is it, and how can it support hotels and the hospitality field? Boutique and lifestyle hotels haven't been looked at by researchers much. The unique setting, top-tier personal service standards, and human interaction importance are key to what sets boutique accommodations apart.

It's not clear how this creativity is seen and potentially used among boutique-style hotels while AI development is actively happening elsewhere. This investigation aims to find out how new AI tech can change how boutique and lifestyle hotels manage and serve. The Kamp Collection Hotels hotel chain served as the group to study. Interviews needed to be arranged and carried out one-on-one, face-to-face. Content analysis was used to analyze the data based on the qualitative intention. The research showed that AI hasn't come to the Finnish boutique and lifestyle hotels in the study yet. People saw the tech as interesting and potentially helpful for management and service. Possible limits in guest-host interactions and hotel importance were also recognized as concerns.

III. Why AI And Sustainability Matter

AI and sustainability have turned into something important and a chance for hotels in Thailand. So, the tourism and hotel industries need to head towards



sustainability and improve lasting creativity in operations. Those in the hospitality-linked industry can get ready for digital changes and improve their digital skills. The mix of AI and a Sustainability Innovation Strategy is key for hotels in Thailand. Investigating connections among AI, creativity, and sustainability to fill holes in past research is a way this investigation sets original direction. Employees will likely use AI helpers in their work. For successful AI changes, the hospitality field needs to redefine what human employees and AI do at work and who owns AI algorithms.

The tourism industry has kept more distance with AI, but many firms are starting to apply AI more because of competition. Knowledge on AI disruption in the hospitality service field is lacking. In focusing on Finnish boutique and lifestyle hotels, this investigation examined AI deployment's power and phrase, exploring what's expected from AI use in hospitality services and what blocks its progress, discussing why boutique hotels are more resistant to AI disruption. Ultimately, this investigation suggested things for AI development broadly and hospitality companies with management.

3.1. Getting Ahead with Innovation

Innovation is the most crucial thing, giving hotels a leg up. Although others in accommodation can get similar supplies and info, or be inspired to create, innovation lets hotels reel in new customers or keep old ones. Customers' needs for new offers are growing, and so are the innovations of others, creating a tough playing field for hotels when it comes to both prices and fresh offerings. This way to compete could hurt or help hotels: it could challenge profit and survival, and it could open doors to new competitors who come up with new ways of doing business and radical innovations (Alzyoud et al., 2017). New items and ways of service might get people to talk about hotels, sparking big rivalry. So, innovation in everything new is a strategic tool enabling hotels to survive and do well in a competitive setting. Innovation is everything new that's brought into a business that has business, community, or public goals. Generally, hotels need to make new products and services to grab clients. Fresh products build up what customers experience, making them stay at hotels longer and more loyal to them. These innovations, usually huge and multi-faceted, involve more than just tech. They also need big changes to institutions and how people act. Process innovation means bringing in new tools and/or making new production methods. These innovations usually happen because of money put into equipment and special know-how, and possible users need to first get past seeing if these tech methods are worth it. But, in accommodation, process innovation can either make spending more efficient or cut down on employees but not necessarily build up service quality.

3.2. Goals for Sustainability in the Long Run

It's increasingly obvious that using tons of fossil fuels to make energy and for transport is a big reason for environmental contamination and climate change. Nations are pushing back against storms, droughts, floods, rising sea levels, and



heatwaves from global warming. So, they need to cut out consuming unnecessary resources and move to replacements for fuels that can stay.

Thailand has set long-term transformation goals and strategies to shift from the current energy situation to one that is more able to last, is resistant to climate change, and doesn't need fossil fuels. The key long-term sustainability goals for energy are upping how well the end-use sector uses energy, splitting up energy sources for safety, growing clean renewables for energy independence, and trimming down greenhouse gas emissions.

The goals that are a top priority are those where changing actions will provide the biggest benefits (seeing limits to the amount of energy one can use). For national energy safety, widely accepted views say nations must have an energy self-sufficiency index of at least 50% from sources that can last. Fossil fuels carry risk: fuel prices are rising suddenly, over-dependence on foreign supplies that change, more costly worries with energy demand being destroyed from supply being cut.

There is a shift around the world towards sustainable innovation. With the Agenda for Sustainable Development and the Agreement on climate change, countries are taking action to meet big roadblocks. They are shifting to hit the Sustainable Development Goals as a plan for a brighter and more sustainable future. Nations are changing their money, science, creativity, and info to back up putting their promises and linked strategies into motion. Public money has grown, and there is rising interest across industries to put money into research and creativity for lasting expansion.

IV. Implications For General Managers

For hotel general managers (GMs) in Thailand, skills in business, tech, and finance are super important right now. The Thai hotel business is facing some tough times, so GMs really need to know their stuff in these areas to deal with the crisis and bounce back. Since these skills are related, hotel owners, management companies, teachers, and HR managers should pay attention to the study's suggestions. To get good GMs who have these skills, you need good hiring, training, and review processes. Hotel companies should be clear about the skills they want for each job, so applicants know what's up.

Besides hiring new GMs, you can also find current GMs who need to improve and figure out how to help them. This also goes for GMs who are new to the job but don't have great leadership skills. They might need extra training. For planning who will take over in the future, hotels could find younger managers who could become GMs. Then, they can create programs to get them ready for the role. Regular reviews and on-the-job checks are needed to seriously improve. GMs can really make or break a hotel, so these skills are key for success. (Weerakit, 2007)



4.1. Leading with AI

Getting an AI Mindset. Hotel leaders should push for a digital culture and talk about new AI stuff, which processes should be automated, and what's needed to make it happen (Ananeva, 2019).

Finding AI People in Thailand. Many countries are having trouble finding AI talent, and Thailand's the same. Hotels should focus on retraining their staff with help from universities and schools to build up their data skills. Getting Tech Going. Hotel operators and owners should team up to form a group to push for tech in Thailand's hotel industry.

4.2. Practices for Staying Sustainable

Thai hotel managers need to think about these eight things for running things in a sustainable way: staff practices, training, waste disposal, energy use, community involvement, respecting the environment and culture, supplier relationships, and buying policies. Hotels have realized how important social obligations are for keeping quality. They've been teaching locals in their own languages so they can get good workers who know Thai culture. Waste disposal is also key. Most hotels are trying to reduce waste and using tech to handle it better. Some green hotels have even set up food waste systems created by Thai experts. The waste becomes fertilizer for the gardens. Because tourism involves local culture, hoteliers respect local traditions to create tourist spots for guests. Hotel relationships with suppliers are handled according to agreements. Most hotels do a bidding process every year to stick to the rules. Each item needs bids from at least two vendors. Most sustainable practices are based on hotels caring about the environment (Rowe, 2018). Hoteliers see their suppliers as construction companies, food suppliers, linen companies, and tourism businesses. All of them are the hotel's main customers. Food suppliers are extra critical since hotels need fresh food on time to keep service top-notch. They have solid relationships with suppliers built on agreements and trust. Good purchasing involves having set rules, good goods, fair prices, and solid relationships.

V. Marketing Plans With AI And Sustainability

These days, AI is changing the hotel business by helping companies handle customer data better and run things more smoothly. AI is starting to help hotel workers by coordinating tasks and giving real-time feedback. This research looks at which AI tech is being used in hotels and how it affects operations and customer experience. Experts interviewed people from Finnish hotels about AI (Ananeva, 2019).

AI is being used for recommendation systems and chatbots. Soon, speech recognition will change these tools, too. With AI, hotels can leave the basic stuff to teach and focus on building real relationships with guests. Switching to AI tools means setting up new rules for digital responsibility.

AI can change how customers experience hotels by getting to know them, reading their moods, and changing how they react. Hotels will know guests well



enough to suggest services they'd want. AI will create emotions with customers. However, AI tools will automate many repetitive tasks. These AI tools could be used even more if people learn how to use them.

5.1. Targeting Eco-Friendly Customers

A lot of hotels in Thailand are trying to attract eco-friendly customers. Many of them built Green Hotels or Eco Hotels. These hotels are both rated as International Star Hotels and certified as Green Hotels. They must meet at least fifty-three standards set by a Thai organization (Kasim, 2004). They are evaluated based on a questionnaire and committee review. Green hotels are eco-friendly in terms of their policies, how they manage things, and performance (Dowpiset, 2015). Hotel customers in Thailand are tourists and locals. Over the last few decades, Thailand's hotel business has made a big push to catch up. Some fancy hotels have policies for protecting the environment. They're careful about resources and the environment. These hotels know about saving water, not using chlorine in pools, using solar water heaters, replanting trees, and building fishponds. While protecting nature, these hotels have also spoken against destroying habitats for necessary protection since such actions could affect wildlife.

5.2. Using New Digital Marketing

This paper is about how AI and sustainability can be added to the Thai hotel industry. To understand this, it looks at the rise of AI in hotels, trends in hospitality, adding AI and sustainability together, and what kind of marketing is most useful. The hotel industry is still changing because of digital and tech advances. People think the hotel business will see changes after the COVID-19 pandemic. Things like climate change, pandemics, digital, and sharing economics hurt hotels. To stay in the game, hotels focus on service and price, and the building itself. Lifestyle hotels are different from old-fashioned hotels and go for a home away from home design with lots of tech and social media.

The hotel industry is important for the economy and society. It offers benefits. In developed countries, hotels are more than places to sleep and affect the economy (Ananeva, 2019). Being welcoming is key to hotels. Welcoming guests has always been a competitive edge for every hotel. With digital, hotels can be reached by everybody anytime and everywhere. There are competitors who aren't even local. So, the quality became hard for clients to know.

VI. Revenue Management And Financial Implications

New Ways AI and Revenue Management Can Work Together

Revenue management (RM) has grown past just using models to find the best prices for hotel rooms to get the most money at one level. Hotels are now realizing that they need to view RM, pricing, and how they sell rooms as a whole strategy for all their money-making activities, assets, and procedures. People say that RM and pricing should be connected by using data and models well. They agreed that how RM is done now needs big changes to include a better understanding of costs and how customers are involved, especially when it comes



to pricing. It was understood that fitting AI models into the less controlled parts of RM could be hard because one model might not work for every situation. Current modeling methods might need a big overhaul to include many sources of data, like text.

How AI Decisions Affect Finances

In general, revenue management in the hotel business is getting more complicated and might lead to pricing plans that aren't as clear. This makes it hard to manage revenue forecasts, and price changes in one place where rooms are sold might cause unexpected results in another, like a chain reaction. IFTDE has tools that turn company decisions into full explanations of how rooms are sold and general yield management plans. This lets hotel companies' study how price changes might affect customer groups or sales channels, or the overall effect on hotel prices.

Pricing for hotel rooms also needs to be more specific. Room prices often change every day or even every hour, but restaurant prices usually only change once a quarter, and drink prices hardly ever do.

AI in Pricing Plans

Hotels today use many different pricing plans for their rooms. One plan is dynamic pricing, which sets the price for a product for a certain time. Pricing rules are a set of rules that set a price range for customers. Pricing plans that have been looked at include last-minute deals, prices for local customers, and prices for groups. The pricing plans are all set before the time. Hotel room pricing decisions are based on a demand number that comes from past data. Not many papers study pricing plans that include revenue management and data study. Dynamic pricing and booking class prices for airline extras are created with a simultaneous second-price auction and a non-linear pricing function. The pricing plans developed offer a lot of background theory. (Shukla et al., 2019) A pricing plan that depends on both the current time and the customer's browsing habits hasn't been studied. Pricing rules have some say in how pricing plans turn out, but they can't decide how customers will react to the price set by the rules. Pricing plans are dynamic pricing, which sets a product's price for a time based on when the plan is running, and pricing rules have been made.

Dynamic pricing is added to the pricing plan first to create the overall pricing plan. A customer behavior model based on data has been created to guess how people will browse in the future based on their past browsing data. This model is combined with a dynamic programming algorithm to create a feedback dynamic pricing plan that can handle customer behavior that isn't certain. A pricing plan is created and used at a hotel in Thailand, and data is collected for six weeks to see if the plan works, which shows that it could be used. (Ananeva, 2019) A three-level pricing model is suggested to let online travel sites set dynamic prices for many hotels and the best price structure for different sellers together. A pricing plan that sets the price for each product for the next time based on past demand data that includes discounts offered by hotels is presented.



Investing Money in Sustainability

The hospitality business is important to the economy and social lives of many communities all over the world. It's a big part of the economy that not only offers jobs and social connections but also helps a country grow financially. The services that hotels offer are mostly intangible. So, the hotel environment mainly has many service interactions between customers, employees, equipment, materials, and the building itself. With all these things, hotel services are more complex and varied than other service businesses. Servicescape is the feeling of a service place or the first impression it gives. In hotel businesses, customers make choices before they get there, mostly based on the feeling of the place or how they've seen it marketed in the media. Customers form their opinions and expectations before they even experience the service. So, servicescape will affect how they judge the service before they use it. Thailand is growing quickly and moving toward a bio-circular-green economy.

Hotel investments in sustainability need organized actions to make sure things are done right when it comes to managing water and energy, reducing waste, buying sustainable products, talking to stakeholders, and pushing for sustainable ideas. When it comes to helping sustainable hotel investment, goals should be set, and operations should be checked using a sustainability assessment matrix collected from hotels. The Hotel Sustainability Assessment Matrix that was investigated mainly gathered three sustainability things from papers on measuring sustainability performance, papers on how customers and guests see things, papers on businesses opening in hotels measuring performance, and papers on service quality at hotels. Comparing the sustainability things of hotel sustainability, performance sends signals to show how hotels are actually working on sustainability to see how well they invest in it. So, the Hotel Sustainability Performance Segmentation groups sustainability scores and penalty functions to be used for rating sustainability performance based on the goals set by hotel investors.

VII. Human Resources And Workforce Growth

The hotel business is a key part of Thailand's economy, making up nine percent of its GDP in 2017. The hotel sector has been, and will keep being, changed by all parts of AI and robots. Some innovators are way ahead in welcoming a tech future in the hotel sector, but adding AI to traditional hotel chains is just starting. So, it's important for traditional hotel chains in Thailand to create a long-term AI plan to close the gap in the hotel sector and jump ahead of the big investments that start-ups are making now.

Job losses and unemployment are a worry, especially in the hotel sector, which is known for needing a lot of workers. Training focuses on adapting as tasks are automated, with human skills like creativity, ethics, social behavior, empathy, and emotion being encouraged. Change management tries to shift the culture from a top-down structure to a more level one, where leaders are coaches, focusing more on employees getting better. It's important to teach employees and customers about what AI and robots can do. Because teaching machines ten



intelligence skills like animal skills is slow and costly, few companies will find a social-learning robot that locks learning. Overall, AI and robots should help human tasks, not try to do them better.

Human intelligence can be created as AI helps. Thailand's worker shortage makes it a good place for AI to help run things, understand the local language, and be easily approved. AI software can be made with affordable company-specific changes using natural language. AI also encourages loyalty and helps teams focus on bigger project management. If people watching don't get the full picture, it can cause misunderstandings. Attracting still avatars instead of ways of understanding human images does the opposite. AI should start in jobs that are less hard first, while robots should be better for tasks with few unclear choices to avoid awkwardness. AI is built on humans, but IOT spreads itself, thinking about all parts of life for better business. Adding cameras and tokens everywhere, and doing recent high-speed financial predictions, has greatly lowered these costs for leaders. Control systems are more needed when buying raw materials, where theft is common. Kidnapping or blackmail of staff does happen, so systems that notice changes in task patterns should start studies as human bodies might be stolen.

Training in AI Skills

Digital tools and AI are a big chance for the hotel and travel business in Thailand. The pandemic sped up the use of digital tools and made business events more sustainable and newer. There is still a gap in how it's used in hotels and travel businesses. The need to invest in growing AI and digital skills has become key to surviving, staying sustainable, and renewing business (Ananeva, 2019). Hotel education is seen as a must-have investment by the industry for growing human resources for sustainable growth of digital tech, AI, green tech, and sustainability. Creating a network between schools providing knowledge, like formal hotel education providers, and other education providers, internships, and NGOs in the same area would help set up a platform for educational growth. Stakeholders in the hotel business should partner with schools to create a 'one network of tourism knowledge' and see leaders at different levels of hotels and travel businesses as the target group for this skill growth plan, addressing what they need. Focusing on guiding tours, stakeholders talked about hotel and restaurant owners' worries about digital changes, AI, and green tech, as well as a lack of knowledge about tour guiding education. Teachers said that digital changes and tech growth are more important than ever in changing hotels and travel businesses and growing their knowledge of competency-based education and training (CBET). Together, these results cover wider worries of stakeholders in the hotel business and education providers, which this skill growth model handles.

Growing a Sustainable Workplace Culture

Successful hotel companies grow a creative spirit and a welcoming, sustainable workplace culture to get employees to grow and share emotional, intellectual, and practical skills with AVA. These companies create and keep a meaningful mission to attract and keep people affected by it (Alzyoud et al., 2017). They design workplaces to make new ideas possible and doable, including regular



informal group discussions to let stakeholders freely talk about new ways of viewing problems and possible answers. They spend money on making changes to match changes in AVA and help users figure out what way is best by knowing how financial irresponsibility keeps AVA in check. They offer rewards related to AVA and help grow personal connections. To fix problems with AVA, hotel companies and product makers spend time and money-making memories last longer and decide who owns the work. These companies also regularly question what the company stands for by re-visioning, which asks people to figure out what the company is all about and let them set basic ideas through discussions that everyone in the company agrees on. They also accept big accidental groups with makeup work, including start-ups, who miss out on changes to make local details more visible and experience growth together, feedback loops that become part of the AVA offered.

To offer a full view of the different ideas related to new ideas in hotels, frameworks are created to grow the hotel's new idea. In addition to saying what things like new ideas are, easy-to-understand visuals are created that group new ideas by how they're grouped. Discussions include making things

clear, like the uncertainty about the differences between AI, new techs, and digital shift, sustainable new ideas in hotels, who is innovating in hotels, and setting a plan for study. The three-pillar model of sustainable new ideas is addressed, focusing on new ideas from inside the company, its growing system, and chances for publicly funded start-ups. This part also asks the hotel business to keep growing sustainable new ideas related to the hotel experience itself. This part also asks the hotel business to keep growing sustainable new ideas related to the hotel experience itself.

Investor Perspectives on AI and Sustainability

Climate change is a real problem for everyone's future. Recent climate change events have made investors more aware of sustainability risks (Xu, 2024). Even though nearly 200 countries signed the Paris Agreement on Climate Change in 2015, it doesn't seem like much has been done since. At the same time, the media has been covering extreme climate change events, like the heat wave in Europe. Big investment firms are starting to include ESG (environmental, social, and governance) factors in their investment plans. Still, how ESG is used differs a lot between firms. Investors need plenty of data and varied ESG metrics to make smart investment choices.

Usually, when new information spreads, it happens fast, which can cause worries about liquidity. But how do investors' traits impact their decisions? This study looks at a debated topic: how foreign institutional ownership affects how smoothly stock prices react to ESG news. Using data on institutional ownership by investor type, location, and ESG risk, the study found that information spreads less quickly in companies with foreign institutional ownership. Unlike domestic institutional investors who tend to copy each other's trades, foreign institutional ownership disrupts this pattern.



Foreign investors are less likely to follow domestic institutions, so differences in stock prices are bigger when things are uncertain. The tendency to follow other institutions is also much stronger in domestic markets than in foreign ones. These results suggest that owner characteristics matter in asset-pricing models and that we need a flexible way to share information. This study's findings help us understand how political ties and ownership characteristics impact how stock prices react, but there's still much to learn.

VIII. Investment Trends In Hospitality

- Investment trends in hospitality depend on rules from authorities and actions that affect investment decisions in that sector. In Thailand, laws exist to protect foreign investors, like the Investment Promotion Act of 1977, the Foreign Business Act of 1999, and the AEC Treaty of 2010. These explain how foreigners can do business in Thailand (Ananeva, 2019). But because of bureaucracy, investors need time and knowledge to get started.
- Some investment patterns in Thailand's tourism and hospitality sectors include:
- More investment in hospitality businesses, especially in the 4-star and higher range.
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- Growing investment in smaller cities as hotel chains enter new markets.
- Developers with long-term plans in the high-end and luxury segments can expect higher returns, while 5-star developments in major cities may see lower returns.
- Developers who want to sell quickly may find better returns in secondary markets.
- Leased properties will remain common in Bangkok, but operators gain more control with leasehold properties that are built and operated as such.
- Investments in tourism projects in Thailand come from two main sources:
- Thai banks, private equity, and foreign banks, that mainly fund three- and four-star hotels.
- Thai and foreign real estate investment trusts fund profitable 4- and 5-star hotels. Foreign banks sometimes fund construction costs with Thai property as collateral.

IX. Evaluating ROI On Sustainable Practices

Sustainability is now a standard for the long-term success of the hospitality and tourism sector. Hoteliers need to adapt quickly while staying competitive. Thailand's hospitality industry should carefully add AI and digital services for sustainability to avoid issues like rising costs and energy use. Collaboration is needed because hoteliers can't guarantee success alone; without it, advanced technology won't be fully used.

Sustainability efforts need money. To be genuine, Thailand's hospitality industry should see how well sustainability initiatives are paying off. Climate change awareness pushes businesses to act, and hotel chains in Thailand have started



environmental policies (Huff, 2019). However, these policies often lack tracking, which makes it hard to measure the full impact and meet goals. Knowing the return on sustainability plans is key to investing correctly. There are practical and theoretical ways to do this.

The hospitality sector was initially slow to adopt AI but is now using it a lot, especially for customer service like chatbots. AI is helpful in internal operations as well, with wider use planned in the future. For Thailand's hospitality sector to boost tourism, AI and tech firms must work with hotel operators. Tech companies can give AI to help firms create customer value. AI provides better customer engagement across sectors and employee experience. AI-powered chatbots can also improve employee efficiency. Despite the potential, the ethical concerns must be ensured that it does not outweigh the benefits for growth in the tourism sector overall in Thailand's hospitality sector.

X. Academic Contributions And Research Opportunities

AI is changing the hospitality industry, offering insights into practice, theories and technology compared to other sectors. The theories and research methods used haven't been discussed much in hospitality yet, more research is welcome. Hotel managers were suggested to use social robots instead of humanoid robots. Items that are still improving have room for future research, like booking engines and smart keys. Technologies like digital stress, AR glasses, and digital nomads have limited use and open research opportunities.

AI can impact automation in the hospitality industry for customer and back-office services (Ananeva, 2019). But it is not easy to determine the impact of AI on revenues and customer service quality based on what customers perceive and experience from the adoption of AI. Airlines started using self-service kiosks and baggage robots to cut labor costs and increase revenues. AI can also help against security issues, crowds, and pandemics. The most efficient use of AI services in big cities and countries is still not clear.

Innovation cases in the hospitality industry, reception efficiency, and customer service quality are studied, and the AI adoption of the chatbot reception method is measured. AI can still learn languages, assess receptionist conversations, and use facial recognition for safety. AI makes guests check-in, check-out, and pay quicker. It may not improve the perceived service quality in both check-in and check-out processes. Thus, a two-sided regulation of reception officers is provided. AI drives innovation in multiple sectors. Automation of hotel service has a global impact on revenue, costs, employees, and customer views on service quality. How AI will be adopted by hotels for customers or back-office services is still unknown. The long-term potential of AI applications and policy is yet to understand for the fast recovery from Covid-19.



XI. Research On AI In Hospitality

Literature Review on Integration of Artificial Intelligence in the Hospitality Industry

AI is a popular topic in the hotel industry. This research stream says AI impacts hospitality services and advances positive customer experiences while improving operational efficiency and helps to make advanced predictions and gain competitive advantage (Ananeva, 2019). Hospitality scholars thought tourism and hospitality were a low-tech industry that did not combine well with advanced technologies. However, today AI technologies are used in many hospitality sections and will be used more in the future. AI is being adopted to contribute positively to the enhancement of customer experience, improvements to operating efficiency and help big data for future predictions, gain a competitive edge in the industry, promote the country brand image, and have a positive effect on tourism development.

It is vital to understand AI as disruptive technology in hospitality, as benefits will be highlighted internationally for hotels with AI adoption. The study aims that hotel managers get valuable insights from a review of the literature and is secondary materials will boost academics with studied hospitality branches and data regarding AI operating today and future.

The study shows that AI has changed various processes, functions, and services in the hotel industry. It states that AI is in use for specific hotel functions and services. A further understanding and acknowledgment of AI in hotels is presented, as well as benefits following AI adoption in the hospitality sector described from the perspective of hotel managers.

XII. Study Of Sustainability

Schools are starting to see how important being sustainable and using new tech is for hotels. To keep up with what's happening in the hotel business, many schools have started research programs. These programs look at how new tech in hotels affects how well they run, how eco-friendly they are, and how happy guests are (Ananeva, 2019).

These studies usually check out things such as buildings that use less energy. They also examine tech like smart rooms, guest systems that use AI, fast check-in/out, and using the Internet of Things in hotels. By seeing how well these things work and what issues they bring, schools help connect what they teach with what happens in real life.

Since Thailand's hotel scene is always changing and very competitive, schools need to keep their programs up to date. Schools in Thailand should change what they teach and focus on studies that can be used to make hotels more sustainable and use more tech. This could mean group projects that include business, science, tourism, and tech. That way, hotels can find ways to pollute less and make guests happier. Teaming up schools with hotels, tourism groups, and tech companies can help come up with new ideas. It also makes sure students and researchers help



make things more sustainable. These teams can create green programs, tourism models, and tech systems that fit what Thailand needs.

To wrap it up, schools in Thailand can really help the future of hotels if they put sustainability studies into their programs and work with the hotel business. They can help make tourism more responsible and use more tech.

XIII. Challenges And Barriers To Integration

Disruptive innovation can create issues for hotels. For example, a hotel might want some fancy new tech but can't afford it or runs into rules that stop it. Also, AI is still not that well understood. This can make it hard to get it going, as people might find the tech confusing. And, if a hotel is new, it might not have enough info to make the AI work well (Ananeva, 2019).

Small, independent hotels face certain problems that big chains usually don't. Stuff like old tech, sensors that aren't great, weak computers, and old booking systems can slow down AI. On top of that, if no one at the hotel is really in charge of the new tech, if different parts of the hotel don't share information, or if there are just too many people involved, it can mess up how the tech all works together.

Workers can also be a problem. If they don't trust machines, don't speak the right language, don't know what to expect, or if the tech is just too hard to use, it can cause issues. You might need to train people on computer stuff they don't usually deal with. Also, AI stuff can be too fancy, so regular workers can't use it without an IT team. Different AI systems might not work well together, and people might not think about how updates can mess with things.

XIV. Tech Problems

While places in Europe have been working with AI in hotels for years, Thailand is just getting started, sometimes just using older tech from other countries. Plus, Thailand's tech isn't as good as some of its neighbors. Some companies might get ahead by having good products early on. But these products might have to wait for everything else to catch up. Also, it's hard for Thai companies to beat out the competition from nearby countries (Ananeva, 2019). Startups might get a boost from bigger companies that help them get into the market, so they can focus on their product. But later, these startups might become too dependent on the bigger companies, as they usually can't produce stuff as fast. For these startups to offer services, they must wait for the market to get big enough. This can cause problems and mean they must wait for big investments. So, any cool new tech will have to wait for the right market conditions to appear. For Thailand, like other developing countries in Asia, finishing a product based on what's already known can be super expensive and only useful for a short time. This means they might lose their advantage. Most Thai businesses probably think AI won't change their jobs much in the next five years, except for a few small things. Specifically,



they don't think AI will do much to help with getting customer data, using that data, making choices, talking to customers, handling bookings, or advertising.

People Don't Like Change

We've seen lots of progress in global markets lately. AI is changing the hotel business as these technologies appear. You see this in hotels with things like chatbots, robot workers, self-check-in, smart rooms, and AI booking systems becoming more common (Ananeva, 2019). But just because these things are being made or tested doesn't mean Bangkok hotels are ready for them.

The hotel business has been badly hurt, with income dropping and businesses needing to prepare for less demand. In Bangkok, lots of hotels might have to close. Because there aren't many tourists, hotels are making big changes, like closing floors, cutting back on food, and using more tech. In a crisis, you must change. But things are uncertain, especially in the hotel business, which usually doesn't change quickly.

This research wants to figure out how AI will enter the Bangkok hotel market. Specifically, what should hotels do to lead this change instead of just reacting to it? We need to figure out these questions fast to avoid problems later. AI and big data can give you good information. But AI is basically just software and computers that can use lots of info, make choices, and do things automatically. There are three types of AI systems that do different things. Most hotels only use narrow AI, which does one specific task, like chatbots or recommendation systems.

XV. Future In Hotels

The hotel business is always changing to meet what customers want and deal with things like energy use, waste, and the environment. Also, AI is supposed to make big changes in the hotel industry. We'll look at how automation might affect jobs in different types of hotels and restaurants in developing countries (Ananeva, 2019). New automation in hotels will probably start with simple tasks in services that don't need to be personalized. Machines will help people first, not replace them. People will start doing harder jobs that need more skill. High-end hotels probably won't use much AI yet because it will change what people do, and it takes time to find companies that can provide good solutions. Budget hotels will probably have self-service options, but not fully automated services. Local restaurants might use robots for fun, mostly for advertising. AI research usually looks at smart machines and machine learning, while hotel research focuses on service and customer happiness. This makes it hard to know how AI can be used in hotels and stops further progress. In hotels, robots can help by making the hotel better and making customers happy. They can help with questions, room service, and entertainment, and gather info about what customers like so the service can be personalized.

New Technologies

We're in a new tech wave with AI leading the way, along with things like bioengineering, nanotechnology, and robotics. The biggest tech companies are growing because of AI. In just a few years, AI has changed the internet and



affected businesses, including hotels. New technologies help people do things better. They're not robots trying to take over the world. They help us with things like controlling smart homes, predicting weather, and making customers happier in hotels (Ananeva,

2019). Using new technologies can give you an edge. The most common technologies in hotels are business intelligence, big data, chatbots, and semantic web apps.

Big data and business intelligence help hotels analyze info in different ways. Hotels try to understand what guests like and use that to improve service. This way, they can see how guests are reacting and change the service for them. Before booking, hotels can try to figure out what type of guest they are and change things based on that.

Chatbots and other robots are becoming more advanced. Chatbots help on booking platforms by getting and using info. Robots can speak different languages, control things in the room, and monitor health. A good semantic web can increase bookings and upgrades, not just answer questions.

Changing What Customers Want

AI is a big innovation for the hotel business, and there are lots of ways to use it to make hotels better for customers and the environment. There's also been lots of talk about it in schools (Ananeva, 2019). AI is changing hotels, but it still needs to be adopted in a way that meets what the market wants.

To help understand the good and bad of using AI in Thailand's hotels, we suggest using a "Human- Centric AI" approach. This means designing, building, and testing AI-powered hotel tech based on "Responsible AI" principles. Hotels should use AI as part of their business and to improve how they compete through market share or customer support. AI can help improve service and make guests happier. Since the hotel business cares about sustainability, AI should be used to be green, helping the environment and having a positive impact on society.

Strategic Roadmap for Implementation

To get AI and sustainable changes working in Thailand's hotel business, we need a plan that includes rules, support, and teamwork. To make it happen, suggestions should be made for a group that will handle putting them into action, keeping the budget and time in mind for each study result.

Here's what the plan should cover: How to handle things, rules, a test project, an AI platform for different uses, a center to test AI for sustainability, an AI ethics center, rules to stop AI problems, an AI research group, ways to use results, support, talking about who gets what profit, an AI and innovation website, a fund for sustainable AI and innovation, school support, job change rules, keeping knowledge and data in check, and putting ideas to work. A detailed action plan with deadlines is needed. It can be broken into 6 groups to make talks and arrangements easier. During the process, the committee can make changes when needed and assign smaller teams to direct the work based on the plan. The first



group should focus on pilot projects that are most important. There should be regular reports with feedback from different people and an independent party to ensure fairness. The results should be made public and used to make things better in the future. Studies on AI and sustainable changes, especially in Thailand's hotel business, are not common. This study tries to explain the ideas and practical steps for sustainable changes around the world and in Thailand.

Step-by-Step Integration Plan

Today, hotels are trying to find better ways to house, feed, and entertain guests while using less energy. With AI, they can quickly handle problems. Also, if used right, AI can create and study large

amounts of data in real-time. This helps predict what guests want, their needs, money, and other things that affect their stay. Hotels that know what guests want will have a big edge. Breaking down AI processes into steps is important for success with lower costs. The main goal of this study is to break down the steps for hotels in Thailand that want to use AI. The author used research, company analysis, interviews, and group work with experts. The plan has been refined to meet the goals of this type of informal company.

XVI. Measuring Success and Impact

To see if this tourism research is worth doing, we need a good way to measure what happens, both right away and later. We should look at numbers and ask people what they think to get a full picture of who's paying attention, how far our message is going, and how much of an impression we're making on different groups.

- **What the Numbers Say:**
We'll keep an eye on things like how many people visit our website, what they do on social media (how many followers we have, likes, shares, and comments), and how often our research reports are being the number of research reports. These numbers will give us an idea of how much people care about what we're doing and how well we're getting the word out online. This can show us if people in the tourism business, students, and the public are looking at the stuff we're putting out.
We'll watch our social media to see if our audience is growing and how much they're talking to us. We'll also look at our website to see how long people stay, what pages they look at, and if they leave quickly. This will help us figure out what content people like the most. The number of research reports is helpful, but we'll also need to look at other things to really understand how much of an impact we're making.
- **What People Tell Us:**
Besides numbers, we'll also use things like surveys, interviews, and group discussions to get feedback from people in the tourism industry, schools, government, and the local community. We can learn how happy they are with what we're doing, if they think it's valuable, and if it's helped them understand things better, make smarter choices, or feel more excited about tourism.



- Events and Getting the Word Out:
- We'll keep track of who comes to our tourism events, like online meetings, conferences, and workshops, and how involved they get. This will help us understand who we're reaching and if we're sharing knowledge well with different groups.

- Doing Things the Right Way:

All our surveys and ways of collecting info will ask about people's worries about privacy, AI ethics, and using technology responsibly. This will make sure we're following the rules and that people trust us.

To really know if we're doing a good job, we'll use a mix of numbers, feedback from people, and make sure we're doing things ethically. This will give us a solid idea of how well we're doing and help us make things even better in the future when it comes to sharing tourism research and making an impact.

XVII .Conclusion

The hotel business is super important for Thailand's money flow. It helps the country earn, gives people jobs, and makes travel fun. But things are getting tough because of the world changing, what people want, and new tech. Hotels really need to go green and find new ways to stay in the game and make guests happy.

That's where Artificial Intelligence (AI) comes in as a game-changer. Putting it in hotels can really help things go greener, make work easier, and give guests a better, personal experience. AI can help save resources, make smart choices with data, and guess what's coming next. Even with all the good stuff, there are still worries about doing what's right, like keeping data safe, being careful with computers, and people losing jobs to robots.

To really make going green work, we need to get what it means to protect the earth, use resources wisely, be fair, and be honest. AI can make that easier by spotting green ideas, getting everyone involved, making work smoother, and always trying to get better.

Here is five ways AI can help hotels go green:

- Finding Info: AI can look at data in real-time and help people see green problems and chances.
- Working Together: Platforms can help hotels and guests come up with new ideas together.
- Seeing Value: AI can guess what will happen down the road and point out where things can get better.



- Checking Impact: Tools make sure green ideas match what people need and work.
- Watching the World: AI can keep up with what's happening in business, spot dangers, and give tips.

In addition, AI stuff like secret reporting systems, bots that read feelings, and tools that find junk can make things more honest in hotels. That builds trust and doing things right, which is key for going green. What the government does also matters a lot. Good rules, rewards for being green, and money for computer stuff can make hotels use AI and go green faster. So, the future of hotels in Thailand depends on being green and using tech. But we can't forget about people. If we can mix AI with doing what's right, getting everyone involved, and having good leadership, then the hotel business will be strong, new, and green.

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