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Emerging Technologies in Hotels and Restaurants

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ABSTRACT

In Industry 4.0, the emerging trends including artificial intelligence (AI), virtual reality (VR), augmented reality (AR) and mobile applications the way of interacting with the customer in hotels and restaurants have changed completely. These technologies can impact the customer experience, operational efficiency, customer engagement and interaction, data collection and analysis. Theoretical frameworks including the Technology Acceptance Model, Customer Relationship Management Theory and Experience Economy Theory are utilized to understand how these innovations influence business operations and strategies. Despite the high initial implementation cost, these technologies offer long-term cost reductions and competitive advantages. This paper highlights the emerging technologies used in hotels and restaurants, theories that will shape the use of these technologies and the impacts of the emerging technologies.

1. Introduction

Most of the economic sectors had integrated with technologies for a change as our world entered Industrial Revolution 4.0 [1]. According to Rotolo *et al*., [2], emerging technologies refer to a new and rapidly growing technology that is consistent over time and has the potential to significantly impact the society and economy by transforming how people, institutions and processes interact. For instance, FoodPanda uses mobile application technology to provide its users with the convenience of ordering food delivery services during the pandemic Covid-19 in Malaysia as most restaurants do not provide walk-ins [3]. Other than that, another common usage of emerging technologies is the RFID card which is used in the hotel industry for functions such as self-check-in and out and opening doors [4]. According to Lindner [5], 76% of hotels are investing in implementing contactless technology while only 57% have successfully deployed Internet of Things devices to provide customized customer experiences. As a result, these implementations of technologies not only foster continuous business operations but also ensure the safety of customers by minimizing physical interactions with employees [6]. Additionally, emerging technologies are also found to have a

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significant influence on the customer decision-making process therefore highlighting the value of emerging technologies in the hospitality sector [7]. The purpose of this paper is to deeply research the types of emerging technologies that are used within hotels and restaurants and their impacts on the transformation of how businesses operate and interact with their customers.

2. Literature Review

The hospitality industry has been reshaped by emerging technologies such as AI, virtual reality and mobile applications in the restaurant and hotel industry [8]. The rise of digital innovation has caused most hotels to undergo digital transformation to ensure their competitiveness in the hospitality market [9]. This literature review will analyse the types of emerging technologies used in the hotel and restaurant industries while highlighting their benefits and competitive advantages to provide a complete understanding of how they enhance customer experiences and operational efficiencies.

2.1 Definition of Emerging Technologies

Emerging technologies are advancing innovations or developments that can significantly modify how we live and work [10]. Based on the study by Rotolo *et al*., [2], it was mentioned that emerging technologies have five characteristics which are radical novelty, relatively rapid growth, coherence, significant impact and uncertainty and ambiguity. Emerging technologies are radical novelty because different innovative methods are created to achieve the same purpose while emerging technologies also show rapid growth speed compared to non-emerging technologies [11]. Subsequently, Litvinski [12] stated that the coherence in technologies can help recognise technologies that are becoming identified and gaining momentum from those which have still not yet fully emerged. Lastly, emerging technologies are uncertain and ambiguous because the possible outcomes and uses are unknown which might be unintended and unwanted and the varying interpretations and meanings for different social groups that use a certain technology led to a lack of clarity about its purposes and implications [13].

2.2 Theories to be Applied

2.2.1 Theory of Technology Acceptance Model

Davis Fred Davis brought forward the Technology Acceptance Model (TAM) in 1989 to understand the reasons the technology users accept or reject the technology [14].
TAM suggest that a person's Attitude Toward Use is influenced by their Perceived Usefulness and Perceived Ease of Use which in turn also affects their Behavioural Intention to Use the technology and finally determines the Actual System Usage [15]. The point to which a user expects technology to be effortless to use is known as Perceived Ease of Use whereas Perceived usefulness is the extent to which a user thinks utilizing the technologies will improve their performance at work [16]. Additionally, additional constructs also had been added to TAM such as the subjective norm, perceived enjoyment and compatibility to better understand the complexities of technology adoption [17].

2.2.2 Customer Relationship Management Theory

The Customer Relationship Management (CRM) theory involves analysing and managing the relationship between businesses with their current and potential customers [18]. CRM focuses on understanding customer needs, preferences and behaviours through data collection from various touchpoints of the business such as sales records, customer service interactions and social media [19]. For further elaboration, there are three main components of CRM which are Operational, Collaborative and Analytical which makes use of automation to increase operational efficiency while all communication channels and customer engagement touchpoints are managed and integrated by the collaborative CRM and customer data are analysed by the analytical CRM [20]. Additionally, Law *et al*., [21] stated that an effective CRM implementation requires smooth integration of the key components of people, processes and technology.

2.2.3 Experience Economy Theory

Experience Economy theory describes that it is a new way of generating value in the modern economy and businesses should be creating memorable events for their customers [22]. Pine and Gilmore [23] in their study state that experience economy theory focuses on four categories of experiences which are entertainment, educational, escapism and aesthetic. These categories reflect different ways that experiences can be created to engage customers on different levels as the experience economy theory posits that consumers increasingly search for immersive and distinctive experiences rather than just products or services [24]. Additionally, the key elements for determining which categories of experience economy include absorption, passive participation, active participation and immersion as shown in Figure 1 below.

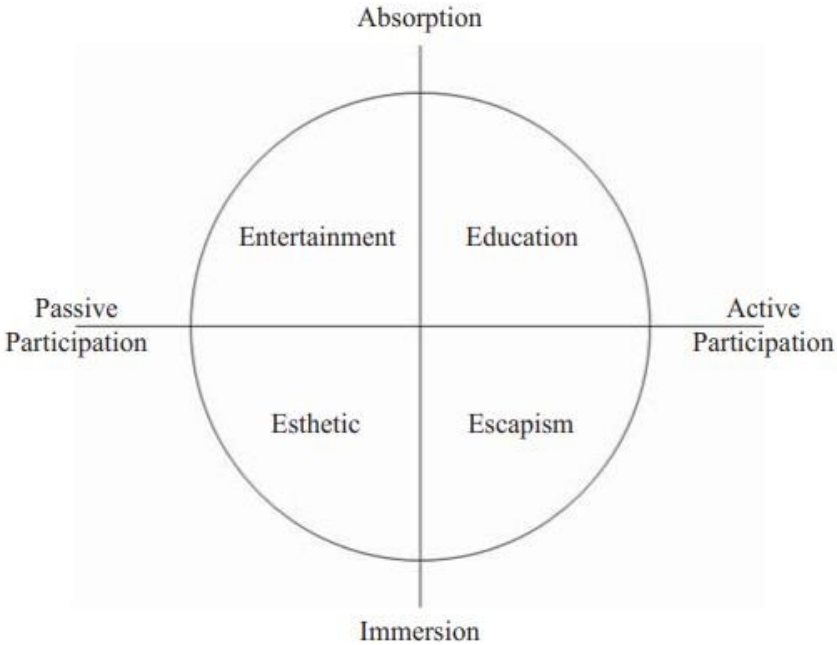

Fig. 1. Extended Experience Economy model

2.3 Definition of the Types of Emerging Technologies

Emerging technologies can reshape the hospitality industry and enhance how businesses operate and interact with their customers [25]. The continuous evolution and adoption of these technologies in businesses allow a wide range of advancements to be integrated into various aspects of operations to fulfil the changing preferences and expectations of modern customers [26]. Therefore, artificial intelligence, virtual and augmented reality and mobile applications will be further discussed.

2.3.1 Artificial Intelligence

Artificial Intelligence (AI) is the machines that are capable of imitating human intelligence processes which include learning, reasoning and self-correction [27]. The AI consists of a wide range of advanced computational methods such as automated learning systems, natural language processing, image recognition systems and robotics [27]. These technologies allow machines to carry out tasks that usually need human intelligence through training on huge volumes of data with high processing speed and capabilities [28]. For instance, machine learning can assist better in analysing large amounts of customer data quickly and accurately to offer personalized recommendations to increase customer satisfaction [29]. Besides that, AI can also be implemented in hotels to improve pricing strategies through dynamic pricing models to ensure the business can maximize revenue while ensuring its competitiveness [30].

2.3.2 Virtual Reality and Augmented Reality

The next emerging technologies are Virtual Reality (VR) and Augmented Reality (AR). Virtual reality refers to simulation generated by computers in which the user can interact within an artificial 3D environment through gadgets such as VR headsets and motion controllers [31]. The VR immerses users in a virtual world by providing sensory experiences including sight, sound and sometimes touch [32]. This immersive experience enables users to explore and engage with virtual surroundings that can be highly engaging and realistic [33]. As an example, potential customers can take virtual tours of hotel rooms and facilities to allow them to experience the environment and amenities before making a reservation [34].

Besides that, AR refers to digital information such as images, videos and 3D models to be superimposed to the physical objects and environments in reality [35]. AR can be implemented through electronics such as smartphones, tablets and AR glasses. Among the most well-known applications of AR is the mobile game Pokémon GO where the digital creatures appear in real-world locations [36]. Besides that, AR also has many applications in the retail sector that enable consumers to explore products from their own devices before purchasing while navigation applications can provide real-time directions and information superimposed on real-world views [37].

2.3.3 Mobile applications

The software programmes that are created specifically for smartphones, tablets and other mobile devices are known as mobile applications [38]. Due to the growing popularity of mobile devices, mobile applications have become an essential part of daily life, offering a variety of features ranging from productivity and business tasks to communication and entertainment [39]. Mobile apps have transformed all aspects of life and business by providing new ways to interact, work and play. For instance, mobile apps such as WhatsApp, Facebook and Instagram have revolutionized the way

people communicate and connect by offering instant messaging, video calling and social networking features that enable people to maintain contact with family and friends while enabling users to share experiences and interact with the global community [40]. Mobile apps have also changed the way people shop through the introduction of e-commerce applications such as Shopee and Lazada that provide convenient online shopping experiences for customers to explore, buy and track orders through their mobile devices.

2.4 Impacts of Emerging Technologies

2.4.1 Customer Experiences

Customer Experiences (CX) are important to customers as well as businesses [41]. Customer Experiences refer to the customer's sensory, affective, behavioural and social reactions when engaging with a business's products or services [42]. These experiences are shaped by each touchpoint the consumer has with a business starting with their awareness and engagement to post-purchase support and feedback [43]. Additionally, the customer experience can also be fostered through factors such as the quality of products or services also plays an important role as high quality service can increase customer's emotional responses and satisfaction, high efficiency of transaction processes can provide customers with a smoother experience and providing personalized interactions and recommendations can let customers feel acknowledged and appreciated [44,45].

2.4.2 Operational Efficiency

Operational efficiency is the capability of a business to provide goods or services in the most cost-effective form while ensuring high quality [46]. This involves optimizing resources, streamlining processes and reducing waste to efficiently maximize the output while minimizing the costs [47]. Operational efficiency also aims to achieve a competitive advantage by enabling businesses to offer better value to customers through faster delivery services while maintaining higher quality products or services [48]. Other than that, operational efficiency is important for businesses to offer consumers more competitive prices as it will influence a business' performance [49].

2.4.3 Customer Engagement and Interaction

Customer Engagement focuses on the continuous interactions between businesses and their customers to create a deeper and more meaningful relationship. Rane *et al*., [44] stated that it involves actively involving customers with the brand through various touchpoints and channels such as through personalized emails and social media platforms to keep the customers constantly informed. Engagement can be categorized into three different types; cognitive which refers to thoughts such as concentration and strategizing, emotional which refers to feelings such as desire, enjoyment and curiosity and conative which refers to actions like attending events or interacting on social media [50].

2.4.4 Data Collection and Analysis

Through various types of data collection methods such as surveys, transaction records, web analytics and IoT devices, businesses can gather huge amounts of data that can be used with advanced analytical tools including machine learning and statistical software to uncover the patterns, relationships and trends behind the data [51]. On the other hand, data analysis can be done through

four types of analytics techniques including descriptive, diagnostic, predictive and prescriptive analytics [52]. The main usage of data collection and analysis is to gain an understanding of the business, identify the current trend and solve business problems through data-driven decision-making [53]. As an example, surveys or questionnaires allow businesses to capture direct reviews from their customers which can provide a clear understanding of their preferences, degree of satisfaction and areas for advancement [54].

3.Discussion

3.1 Comparison between CRM Theory and Experience Economy Theory

3.1.1 Customer Relationship Management Theory

Customer Relationship Management theory focuses on maintaining and building customer relationships through four main activities: identify potential customers, acquire new customers, retain, and develop [55]. For example, Talón-Ballestero [56] stated that hotel businesses can leverage emerging big data technologies to identify factors such as ethnicity, age, gender, duration of stay and sales channels as these categories are highly relevant to hotel CRM so that the businesses can identify the clusters of customers and their needs. Other than that, a case study by Sofi *et al*., [57] on hotels found that a higher level of CRM integration across various departments within a business will lead to a higher level of employee commitment to achieve customers' expectations.

3.1.2 Experience Economy Theory

On the other side, the Experience Economy theory focuses on customers who are looking for unique experiences whether from products or services [58]. A study by Sipe and Testa (2018) states that businesses can create meaningful and long-lasting experiences through the combination of constructs, service and experience.

Table 1
Comparison between robots services and human services on experience economy, attitude and brand loyalty

		Types of Service Providers			
		A Restaurant Where Robots Provide Services	**A Restaurant Where Humans Provide Services**	***t*-Value**	***p*-Value**
Experience economy	Education	5.31	4.30	10.516	0.000 ***
	Entertainment	5.70	5.46	3.428	0.001 **
	Esthetics	5.65	5.48	2.268	0.024 *
	Escapism	5.57	5.10	6.037	0.000 ***
		A restaurant where robots provide services	A restaurant where humans provide services	*t*-value	*p*-value
Attitude		5.87	5.69	2.433	0.015 *
		A restaurant where robots provide services	A restaurant where humans provide services	*t*-value	*p*-value
Brand loyalty		5.62	5.35	3.564	0.000 ***

Besides that, customer experiences also can be created by offering experiences that aim to excite cognitive responses and emotional responses [59]. According to a case study by Hwang et al., [60] stated that the Experience Economy in terms of education, entertainment, aesthetics and escapism can be significantly increased by the implementation of robotics in restaurants and able to slightly increase the attitude and brand loyalty of their customers compared to human provided services as shown in Table 1 above.

3.2 Impacts of Emerging Technologies

3.2.1 Customer experience

The emerging technologies contribute significantly to enhancing the customer experience by offering personalized and streamlined services in hotels and restaurants [61]. These technologies are transforming customer interactions by making them more engaging and tailored to individual preferences. As an example, a VR projector is used in a restaurant that can project the name of the dish onto the table which allows customers to confirm their orders [62]. This innovation is found to save time and minimize human errors such as taking down incorrect orders which can increase the customer experience [62]. Other than that, a case study by Pitchayadejanant *et al*., [63] found that the main reason for the high usage of Agoda, a mobile application for users to find hotels with certain criteria is because of the high information quality and fast responsiveness which contributes significantly towards better customer experience. However, Kulcsár *et al*., [64] also mentioned that even though VR and AR can view the environment of the restaurant, the dining atmosphere will also be affected by the attitude of the staff and the behaviour of other customers as well, therefore, the customers' experiences might be affected.

3.2.2 Operational efficiency

The emerging technologies are known to remove employees' mistakes, improve service efficiency and increase service standards which can improve the hotels' and restaurants' operational efficiency and performance [65]. For instance, many hotels have switched to contactless check-in and out and bookings to improve safety while increasing operational efficiency and reducing costs due to the Covid-19 pandemic [65]. For example, the automation of hotel procedures such as check-in and out and ordering services for the studied hotel reduced the employees needed from 40 to 16 while it also found increased efficiency and communication of employees while lowering operation costs [66]. Besides that, a case study by Shimmura *et al*., [67] on a restaurant highlights the increase in operational efficiency after the implementation of automated guided vehicle (AGV) was found to reduce the working hours as shown in Table 2 below and increase the sales of the restaurant as shown in Figure 2 below.

Table 2
Restaurant staff working time before and after implementing AGV

	Service		Catering		Conveyance	
	Before	After	Before	After	Before	After
Dining room	230	260	55	30	281	228
Aisle	269	232	293	242	232	259
Kitchen	71	16	458	547	46	57
Service station	92	115	2	2	86	78
Pantry	112	137	19	2	56	50
Reception	75	77	2	0	4	6

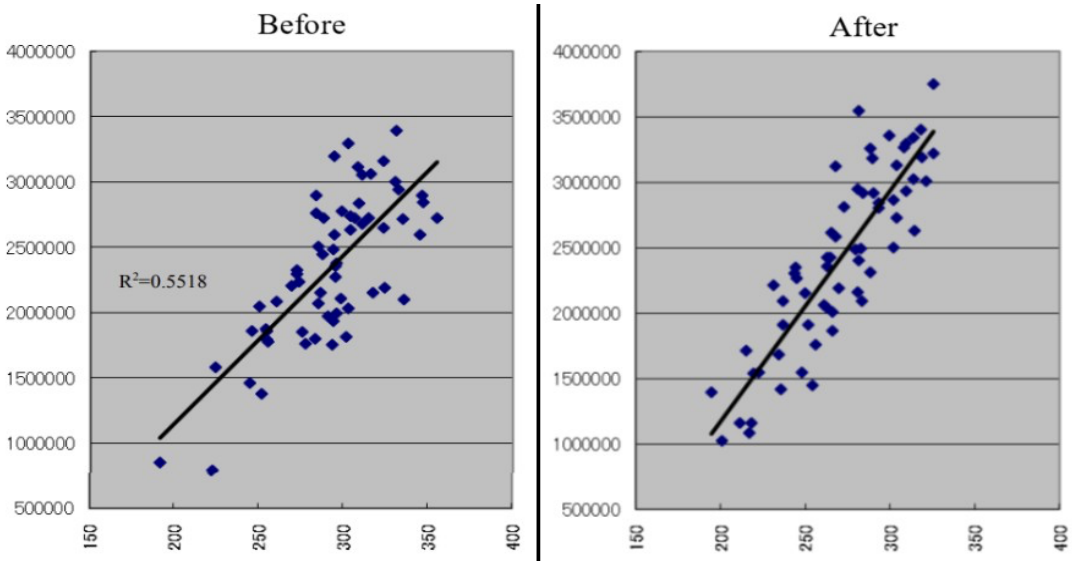

Fig. 2. Sales (X) and Work Hours (Y) before and after implementing AVG

However, some hotels have faced challenges in enhancing their operational efficiency as employees often struggle to recognize the true value of robots even after they have been successfully adopted [68]. This leads to the Technology Acceptance Model (TAM), which suggests that the successful implementation and full utilization of technology depend on the usage intention of the user, which means if the users do not perceive the technology as beneficial and user-friendly, its potential benefits cannot be fully utilized [69]. On the other hand, it was found that 77% of restaurants that implemented technologies can enhance productivity, 61% agree that there is a lesser strain on employees, 35% lowered their expenses and 33% generated higher income [70].

3.2.3 Customer engagement

Various methods for businesses to interact with their customers have been innovated to enhance customer engagement. As an example, the restaurant "Le Petit Chef" uses AR to project animation onto the dining table where a little virtual cook will prepare the dishes virtually in front of the customers to interact with the customers [71]. Batat [71] in his study also found that the implementation of AR in the restaurant will affect the customer experience and through the interviews, it was found that AR can significantly increase customer immersion and engagement especially when the technology is efficient and effortless for them to use. On the other hand, the usage of VR and AR in hotels also can enhance customers' engagement while increasing the customers' booking intentions customers are also willing to pay more for hotels that use VR and AR as the customers can view the hotel amenities and environment before booking through their devices as they can be better informed and save time as shown in Table 3 below [72,73].

Table 3
AR-enhanced hotel booking

Latent variable	Items and indicators	Loadings	Indicator reliability	Composite reliability	AVE
Performance expectancy (PE; Venkatesh *et al.*, 2012)	Enhance effectiveness (pe1)	0.886	0.786	0.967	0.786
	Increase efficiency (pe2)	0.895	0.801		
	Support fast decision-making (pe3)	0.849	0.720		
	Enhance room information (pe4)	0.886	0.785		
	Better value from room booking (pe5)	0.880	0.774		
	More accurate hotel selection (pe6)	0.898	0.806		
	More effective for hotel choice (pe7)	0.898	0.806		
	Believe VR is useful (pe8)	0.900	0.811		
Effort expectancy (EE; Venkatesh *et al.*, 2012)	Learning to use is easy (ee1)	0.865	0.748	0.937	0.789
	Interactions with VR is clear (ee2)	0.878	0.771		
	Find it easy to use VR for rooms (ee3)	0.902	0.813		
	Easy for me to become skillful (ee4)	0.907	0.823		
Social influence (SI; Adapted from Venkatesh *et al.*, 2012)	Important people to me (si1)	0.938	0.881	0.966	0.905
	Influencing people to me (si2)	0.954	0.910		
	People whose opinion I care (si3)	0.962	0.925		
Utilitarian motivation (UM) (Kim *et al.*, 2010)	Try and find new views (rum1)	0.874	0.763	0.932	0.774
	Be better informed (um2)	0.900	0.811		
	Increase my knowledge (um3)	0.894	0.799		
	Save time (um4)	0.851	0.724		
Hedonic motivation (HM; Kim *et al.*, 2010)	VR is fun (hm1)	0.822	0.675	0.914	0.726
	VR offers new content (hm2)	0.893	0.798		
	Enjoy liking the use of VR (hm3)	0.896	0.803		
	Enjoy more aspects of hotel (hm4)	0.793	0.629		
Perceived value (PV; Sirdeshmukh *et al.*, 2002)	VR is value for money (pv1)	0.855	0.731	0.936	0.786
	VR is beneficial (pv2)	0.901	0.813		
	VR is worthwhile (pv3)	0.906	0.821		
	VR is good value overall (pv4)	0.882	0.778		
Intention to use VR (IN; Venkatesh *et al.*, 2012)	Intention to use VR (in1)	0.917	0.842	0.943	0.806
	Intention to try VR (in2)	0.885	0.784		
	Recommendation to other (in3)	0.875	0.766		
	Favorite technology to use (in4)	0.912	0.831		
Willingness to pay more for room (WPM; Laroche *et al.*, 2001)	10% for more expensive hotel (wpm1)	0.890	0.792	0.930	0.815
	10% more for hotel offering VR (wpm2)	0.919	0.845		
	Spend +10 US$ for VR content (wpm3)	0.899	0.808		

3.2.4 Data collection and analysis

Through the implementation of big data analytics and AI, hotels and restaurants can extract meaningful insights to enhance decision-making and increase profitability [74]; [75]. As an example, Bera [75] in his study had created a model that can be used by restaurants to predict the sales revenue and by analysing the data, the business can carefully plan the required resources that are needed to avoid issues such as poor turnover as in Figure 3 below.

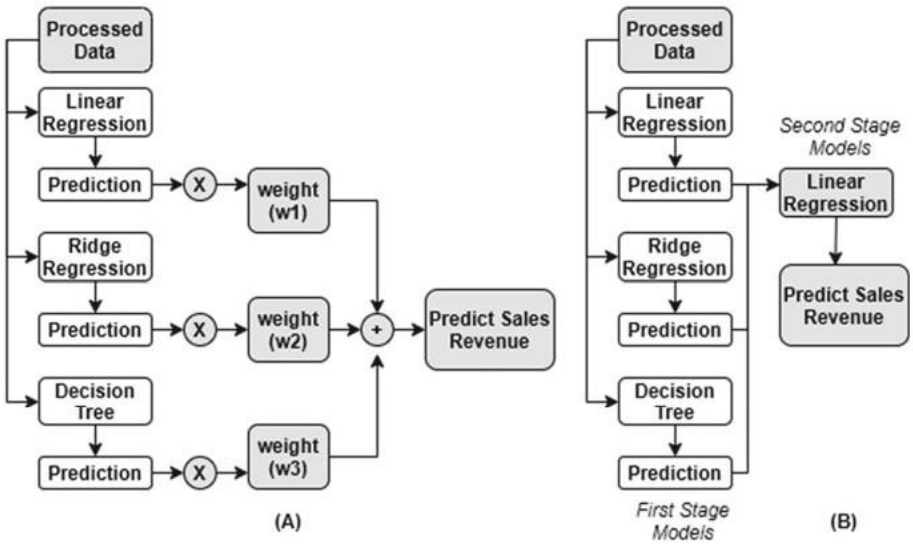

Fig. 3. Sales revenue prediction model for restaurant

Besides that, the data also can be used for data visualization to view the performance of the business and support decision-making as visual representations are simpler and easier to understand as shown in Figure 4 below.

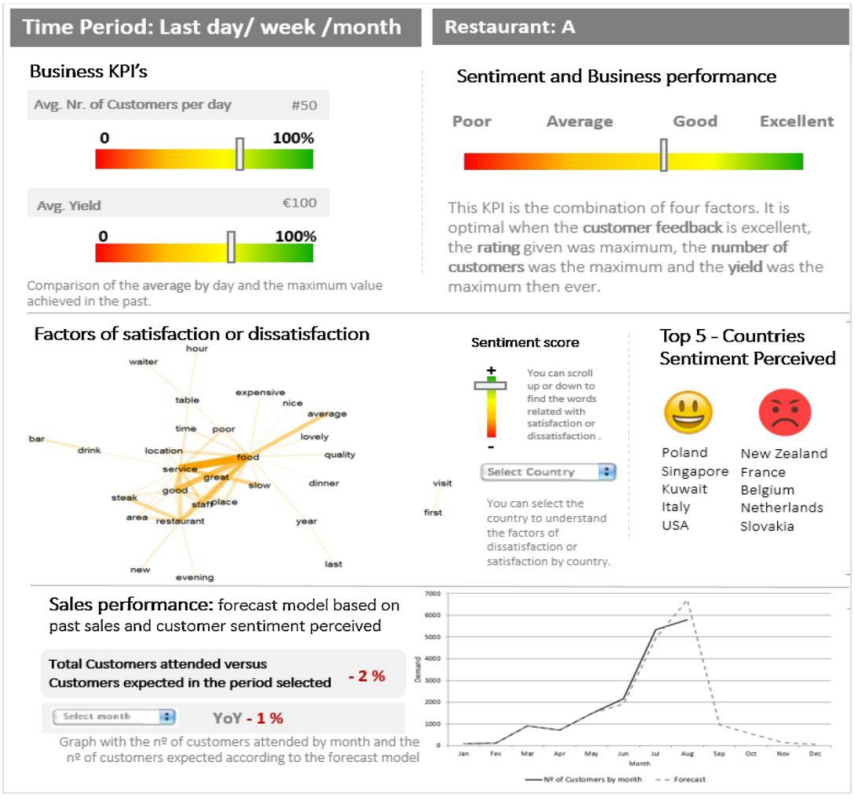

Fig. 4. Visualization of analytics of restaurant's performance [76]

On the other hand, Cohen [77] mentioned that data analysis enables hotels to increase the effectiveness of marketing campaigns by analysing past customer behaviour to design and send targeted promotions based on the likelihood of acceptance and the ideal time of the year. Another study by Arici *et al*., [78] demonstrates that customer responses can be collected and analysed by which words had been used the most in their reviews to determine their satisfaction levels which then allows business owners to identify and address specific issues more effectively as shown by Table 4 below.

Table 4
Counts of satisfaction level of customers in different sector of hotel

Satisfaction		Dissatisfaction		Moderate	
Themes	Counts	Themes	Counts	Themes	Counts
Staff	33072	Room	2578	Hotel	4279
Room	32286	Time	2421	Room	2998
Pool	30137	Hotel	2366	Pool	2906
Hotel	28154	Daily	1413	Staff	2424
Water	15453	Water	1039	Day	2184
Restaurant	13587	Pool	868	Food	1723
Lovely	7167	Food	717	Night	1699
Trip	5194	Better	593	Water	1397
Shows	975	Pay	571	Better	641

3.3 SWOT Analysis of Marriott International

Strengths

Marriott International is one of the largest hotel chains in the world with about 8900 properties in 141 countries in 2024 while also providing fine dining restaurants in which every restaurant has its unique style and environment [79]. Additionally, Marriott International also have a strong brand portfolio that includes 30 brands that range from luxury to budget accommodations such as The Ritz-Carlton, The Luxury Collection and Marriott Bonvoy [80]. Other than that, Marriott International also has over 200 million members in the loyalty program showing high customer loyalty that supports repeating businesses and high customer retention [81]. For that reason, Marriott International have reported revenues of 23.71 billion USD and a total of 3.083 billion USD of annual net income for 2023 indicating strong financial health after recovering from the Covid-19 pandemic in 2020 as shown in Figure 5 below [82,83].

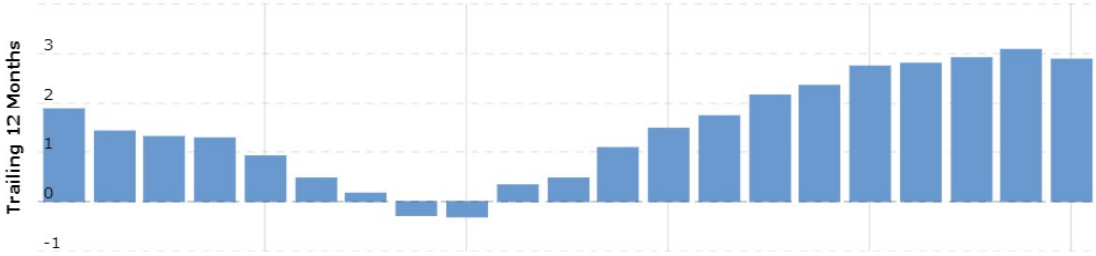

Fig. 5. Marriott International net income statistics

Weaknesses

Despite the strong financial health, Marriott International has a high operating cost of around 19.84 billion USD in 2023 which costs are caused by the need to operate a global network of hotels such as maintenance, staffing and utilities [84]. Besides that, Marriott International is highly dependent on the U.S. and Canadian markets as around 75% of the revenue is from both countries thus making the business vulnerable to risks such as economic downturns, policy changes and market saturation in both countries [85]. Subsequently, Marriott International also has high debts of 11.32 billion USD in 2023 [86]. These debts increase the challenges for Marriott International to invest in growth opportunities as they require huge cash flow for debt servicing, and this will also increase vulnerability to economic downturns [87].

Opportunities

As emerging markets like Asia countries are experiencing rising middle and upper-class populations and significant increases in the tourism sector, the demand for diverse hospitality including hotels and restaurants is constantly increasing thus providing opportunities for Marriott International to expand their business across Asia markets [88]. Additionally, Marriott International also can focus on sustainability practices to attract travellers who prefer sustainable travel. According to Statista [89], it was found that 80% of travellers globally prefer sustainable travel to reduce their carbon footprints. Therefore, Marriott International can increase its sustainability practices such as implementing energy efficient buildings, waste reduction programs and sourcing renewable energy.

Threats

Marriott faces fierce competition from other luxury hotel groups including Hilton and Wyndham Hotels and Resorts as well as alternative accommodation providers such as Airbnb. This intense competition often leads to price wars which will need to increase their marketing expenses and constant innovation to maintain their market share [90]. On the other hand, as Marriott International has operations in 141 countries, it is vulnerable to geopolitical tensions and instability such as war risks, terrorism or political unrest which will heavily disrupt and affect the businesses [91].

4. Conclusion

This study outlined different types of emerging technologies and their impacts on the ways hotels and restaurants operate and engage with customers. Emerging technologies such as AI, VR, AR and mobile applications were found to be able to enhance operational efficiency, customer engagement, overall customer experience and analytics precisions. Moreover, the application of theoretical frameworks including the Technology Acceptance Model, Customer Relationship Management Theory and Experience Economy Theory has shown how these technologies can influence customer behavior and business operations. However, the adoption of these emerging technologies requires high implementation costs but can reduce operational costs in the long term. In conclusion, the emerging technologies present both opportunities and challenges for the hospitality industry. Hotels and restaurants can implement these emerging technologies to adapt to the ever-changing market dynamics to maintain high competitiveness in the hospitality industry. Future research should explore new technological advancements and their potential impacts to further enhance the benefits of emerging technologies in the hospitality industry.

5. Recommendations

5.1 Cost Optimization

To overcome the high operational costs, Marriott International can adopt energy-efficient practices such as investing in sustainable energy solutions like photovoltaic systems and light emitting diodes (LED) to reduce utility costs. According to Barbara *et al*., [92], installing a solar photovoltaic system enables a hotel to achieve a payback period of approximately 1 year and 2 months in high market scenario to about 8 years and 9 months in low market scenario with cost savings ranging from 362 thousand Euro to 96 thousand Euro. On the other hand, Barbara *et al*., [92] also found that for every 364 bulbs changed from incandescent bulbs to LED bulbs, the annual cost is from 10615 Euro to 3908 Euros not to mention that LED bulbs have the same brightness as incandescent bulb. This is because changing from fluorescent lights to LED can reduce energy consumption by 54.7% which can reduce electricity costs [93].

5.2 Partnership and Collaborations

Furthermore, Marriott International also can strengthen its market presence and competitive advantage by collaborating and creating partnerships with other companies. Leveraging predictive analytics in CRM allows businesses to uncover trends, correlations and behaviours through historical data such as their preferred travelling locations, activities and events to increase the engagement level [94]. For example, Marriott International can partner with online travel agents to offer benefits or bundled travel packages. According to Pinto & Castro [95], price (34.1%), online reviews (27.5%) and promotions (25.7%) are the most significant factors for customers to decide on booking a hotel as shown in Table 5 below.

Table 5
Final decision factor for customers to book hotels in online travel agencies

Decision factor in the final purchase of accommodation in OTAs	n	%
Price	113	34.1%
Online reviews	91	27.5%
Promotions	85	25.7%
Photos	33	10.0%
Others	9	2.7%

Therefore, this allows Marriott International to deliver highly personalized customer experiences such as customized room recommendations, tailored marketing campaigns and targeted marketing offers that suit customer needs [96].

5.3 Innovation in Customer Experience

Lastly, Marriott International can invest in innovative technologies and practices in their operations to differentiate themselves from their competitors. According to Hoyer [97], the implementation of emerging technologies allows businesses to create systems like chatbots, virtual assistants and smart robots that can provide unique customer experiences. This solution also aligns with the experience economy theory where customers look forward more towards personalized and unique innovations that can provide memorable experiences [58]. Based on a study by Dampage et al., [98] found that 75% of the respondents are very satisfied with AR video projection when waiting for their dish while 25% are moderately satisfied and none are dissatisfied with this innovation. Therefore, Marriott International can implement VR or AR in their restaurants to provide immersive environments together with exclusive packages or themed events to attract more customers.

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