UNIVERSITY OF LJUBLJANA SCHOOL OF ECONOMICS AND BUSINESS

THE IMPACT OF ARTIFICIAL INTELLIGENCE PRACTICES ON FINANCES IN HOSPITALITY, HEALTHCARE, MANUFACTURING & ENERGY INDUSTRIES

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ULA KANDUČ

AUTHORSHIP STATEMENT

The undersigned Ula Kanduč, a student at the University of Ljubljana, School of Economics and Business, (hereafter: SEB LU), author of this written final work of studies with the title The Impact of Artificial Intelligence Practices on Finances in Hospitality, Healthcare, Manufacturing & Energy Industries, prepared under supervision of Dr. Ichev Riste.

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LIST OF ABBREVIATIONS

sl. – Slovene

AI – (sl. Umetna inteligenca); Artificial Intelligence

EUR – (sl. Evro); Euro

ROI – (sl. Donosnost naložbe); Return on Investment

CAGR - (sl. Sestavljena letna stopnja rasti); Compounding Annual Growth Rate

NPV - (sl. Neto sedanja vrednost); Net Present Value

EaaS – (sl. Energija kot storitev); Energy as a Service

MDPI – (sl. Multidisciplinary Digital Publishing Institute); Multidisciplinary Digital Publishing Institute

SEB LU – (sl. Ekonomska fakulteta Univerze v Ljubljani); School of Economics and Business, University of Ljubljana

BMC – (sl. BioMed Central); BioMed Central

IEA - (sl. Mednarodna agencija za energijo); International Energy Agency

FDA – (sl. Uprava za hrano in zdravila); Food and Drug Administration

1 INTRODUCTION

The introduction of Artificial Intelligence, henceforth referenced using the shorthand AI, serves as the umbrella term for technologies associated with or using AI algorithms or AI-capable software. AI has been increasingly integrated into the financial practices of four key global industries—Hospitality, Healthcare, Manufacturing, and Energy. Its impact has mainly concentrated on operational efficiency, where AI has streamlined operations, reduced manual labour, and automated tasks, thus enhancing productivity and efficiency within all four industries. Additionally, it has streamlined cost management and optimized supply chain management, decreasing maintenance costs and equipment failures, and overall refining the process. Moreover, it is able to optimize revenue using dynamic pricing and advanced data analytics to allow for more efficient real-time pricing strategies.

From self-driving cars to robot waiters' artificial intelligence technologies span across sectors and continents with an ever persistent undercurrent of evolution and development industries must not only yield but pivot to with staggering speeds. AI has monumental consequential reordering effects across all aspects of life chiefly in leading global industries such as the 4.3 trillion EUR¹ hospitality industry (Statista, 2024), healthcare 7,341,38.95 billion EUR2(Healthcare Services Global Market Report, 2023), manufacturing est. 14.8 trillion EUR³ industry (World Bank, 2024) & energy 1.7 trillion EUR⁴ industry (Precedence Research, Report Code 2626). United among all these sectors of human production are the financial practices used for accounting, analysing, and simultaneously evolving with the same processes and value production, which necessitates their need in the first place.

The new age birth of a second wave or evolution of transformative software dynamics and programming enables the transformative power of AI to fundamentally recast and remould the global industries' operational dynamics, financial services, and value creation in the leading global sectors—hospitality, healthcare, manufacturing, and energy. It has not only necessitated an entirely new paradigm shift but also a 5th industrial revolution (Golić, 2020).

The effects of AI in the corporate finance space range from new products and the elevation of older products to sounder financial decision strategies and analysis. This is conducted

¹ (adapted from Bloomberg 17.1.2024)

² (adapted from Bloomberg 17.1.2024)

³ (adapted from Bloomberg 29.1.2024)

⁴ adapted from Bloomberg 17.1.2024)

within newer and not only more accurate and effective but also more innovative solutions and/or approaches in areas such as risk management, cost reduction, revenue enhancement, and simulated business models (Golić, 2020).

According to McKinsey & Company, "generative AI could add between \$200 billion and \$340 billion in value" throughout the corporate investment and banking world (Giovine et al., 2023). As such, it is crucial to develop a technical framework and understanding of how AI influences different industries and economies as a whole.

Thus, the following hypothesis may be synthesized and answered: The adoption of Artificial Intelligence (AI) in the Hospitality, Healthcare, Manufacturing, and Energy industries leads to significant enhancements in operational efficiency, cost management, and revenue optimization, surpassing the improvements achievable through traditional methods.

The thesis focuses on researching the aforementioned relationship by cataloguing secondary research into a research table format detailed below, as well as using McKinsey & Company's Maturity Process Model. The expected results for this study were that the heaviest impact of generative AI would appear in operational efficiency and balance sheet impact in the manufacturing industry. While this expectation was confirmed, it was additionally complemented by the significant impact of AI in healthcare and its minor but not irrelevant effectiveness in management techniques in hospitality. As presented in the Literature Review section, there is no shortage of articles on AI's effect on the finances of companies. However, a study into the comparative effects on different industries has not been conducted. As further expanded on in the conclusions, this field of study should be definitively expanded, especially in academic settings.

2 LITERATURE OVERVIEW

2.1 Definition of AI

The true definition of AI has been widely disputed in the past due to the complexity of its classification (Golić, 2020). However, for the purposes of this paper, AI is defined as a system that processes stored data and is capable of completing tasks that previously required human intelligence. A defining aspect of AI, within the context and timeframe of this paper, is its role as a key driver of economic development, offering potential solutions and improvements.

Moreover, this research reveals that one of the most crucial early adopters of AI is the finance sector (Golić, 2020), due to the data-rich and analytical nature of the financial industry. Importantly, the definition of AI cannot be fully understood without considering both its risks and its benefits. Thus, any discussion of AI must include an examination of the management of specific AI risks and its limitations.

2.2 Trends in The Four Major Industries

This paper necessitates further emphasis on the transformative powers of AI, particularly in enhancing manufacturing processes, services, and customer experiences. It aims to investigate the generated value of AI implementation in practical and business aspects.

An article in the International Journal of Computing Sciences Research on AI and the 5th Revolution takes a similar narrative synthesis and systematic analysis approach toward AI in the hospitality industry (Limna, 2023). Limna analyzed AI as a strategic factor in economic development and identified three crucial uses of AI in the hospitality industry: improved customer service, expanded operational capacity, and decreased operational costs. Additionally, the article suggests that further quantitative analysis on AI adoption in the hospitality industry and other sectors should be conducted to gain a deeper understanding. It can be concluded that AI creates an increasing trend in successful and profitable operations within the hospitality industry.

Furthermore, medical journals from the healthcare industry suggest a "revolutionizing" trend in clinical practices (Alowais et al., 2023), providing a crucial understanding of the complex aspects of AI integration.

Similarly to other papers, an article published on MDPI discusses the Trends, Impacts, and Prospects for Implementing Artificial Intelligence Technologies in the Energy Industry, focusing on both the global and Russian energy markets (Dudnik et al., 2023). Key takeaways for this paper include the development of the Energy as a Service (EaaS) model, which seeks to integrate AI into its core processes.

In creating the research tables for this design, a total of 70 unique sources were used. Approximately 45% were reported by companies in the target industries, and a further 20% were from the official websites of the studied companies, alongside roughly 30% from corporate documents. Out of the 10 to 15 articles and studies I read to find statistical information for the research tables, my interview with Marko Vahen was particularly illuminating. Mr. Vahen provided the most insightful view into Microsoft's opinion on AI expansion and integration. His insights were especially helpful in addressing knowledge gaps related to the failed AI-powered software discussed in the healthcare section and illuminating the sheer scale of costs necessary for AI integration and maintenance.

3 DATA AND METHODOLOGY

The following sections present the methodology used in this study, which encompasses the research design, case study collection, and analysis. This design employs a descriptive case study methodology to analyze the impacts of AI integration and implementation in the four specified industries. Case study methodology is a qualitative research approach that can be

used to estimate trends and percentage effects on an individual basis using case-by-case published data from companies within the industries (see Golić, 2020 and Limna, 2023). The model for this research is commonly adopted at universities (Golić, 2020) when analyzing the general three variables of analysis, namely in this case: Operational Efficiency, Balance Sheet Effect and other Quantifiable Impacts.

3.1 On Methodology

Case study methodology, especially when studying the relatively new phenomenon of AI and AI-powered solutions, meant keeping in mind that most articles and case studies would have to be from somewhere between the post-2016 AI true introduction boom, as defined by Google CEO Sundar Pichai in an interview with Bloomberg, and the post-June 2020 release of ChatGPT (Google CEO Sundar Pichai and the future of AI, The Circuit, 2024).

This bachelor thesis investigates the extent of the effects of the implication of AI in the four industries (hospitality, healthcare, manufacturing, energy) on their finances. For this objective, the following methods were implemented.

3.1.1 Literature Review

A comprehensive review of existing literature on AI integration in the specified industries. Followed by the gathering detailed case studies from companies within the industries to provide real-world examples of AI implementation. Case Study Compiling: Separate by industry, evaluated by the three variables of analysis before specified and stratified into subgroups. Analysing the collected case studies to identify common trends, benefits, and challenges associated with AI integration. Strategic Fit & McKinsey Maturity Model Est. Estimating the percentage effects on operational efficiency, balance sheet impacts, and other quantifiable outcomes based on the qualitative data. Financial Indicator Comparison: NPV, ROI, CAGR. Continued by conducting interviews with industry experts, such as the interview with Marko Vahen, to gain deeper insights into AI integration and its financial impacts.

Due to the wide constraints of different industries, the methodology constructed is divided into its four respective sectors of economic activity. Additionally, the metrics considered and used for analysis are based on the common financial frameworks used by consulting giants like McKinsey, Blackrock, etc. The common economic tools have been modified and applied depending on industry specifics and relevance (IGotAnOffer, 2022).

Consequently, some metrics like the 4P framework are not applicable to industries such as hospitality or healthcare, as its parameters would not aid in the exploration of the effect of AI on the financial practices of the aforementioned industries. Instead, the analysis uses

tailored metrics that align more closely with the operational and financial characteristics of each industry.

3.2 McKinsey's Maturity Process Model

Moreover, it is of vital importance to note how the rankings for Strategic Fit and McKinsey's Maturity Process Model were estimated. Strategic Fit for the four industries was determined based on the potential for AI incorporation within the respective industries. This potential was assessed through pre-existing involvement and usage, which consistently rated high.

Hospitality: 73% of IT decision makers say AI defines their business strategy (Hospitality Tech, 2024).

Healthcare: 86% of healthcare providers report using AI.

Manufacturing: 93% of companies believe AI will be pivotal for manufacturing, with over 60% of factories already using it for predictive maintenance (Deloitte, 2020; Linder, 2024a).

Energy: AI is pivotal and will continue to grow in importance within the industry (Rozite, 2022, as written in the International Energy Agency (IEA)).

McKinsey's Maturity Process Model (Newsum, 2024) is a five-level evaluation tool for defining process maturity levels. The five levels are defined as beginning with 1 Initial or Chaotic stage followed by repeatable, defined, managed and finally optimised. As AI at different stages of process maturity in different industries it demanded a more complex evaluation depending on the following factors: AI's current involvement in the industry, extent of its effects and alignment with the McKinsey's Maturity Process Model levels definitions.

Healthcare evidently exemplifies the use of AI as being in the beginning stages of usage, such as the initial phases of drug development and the preliminary stages of identifying diseases and personalizing treatments. Thus, the healthcare industry could be classified under Level 2 of McKinsey's Maturity Process Model, which is defined as yielding consistently repeatable results. However, because healthcare processes are often over-defined rather than under-defined and require the pre-existence of an operating procedure or predetermined process, it should be classified under Level 3, the Defined process maturity level (Alowais et al., 2023).

Hospitality, however, has proven to be in the early stages of AI integration (Limna, 2023). While some results have been proven from standard practices such as dynamic pricing and revenue management, the process and/or software varies significantly from business model (hotel, theme park, airline, etc.) and brand to brand (Marriott, Hilton, etc.). As such, while

the level of maturity could be described as ad hoc and chaotic, its presence across multiple brands and business models has been proven to provide consistent results (Higginbotham, 2021). Thus, the hospitality industry should be defined under Level 2, the Repeatable process maturity level.

The manufacturing industry has already entered the phase where its operations are being optimized and further developed and implemented in new areas. Processes that use AI for quality assurance, preventative maintenance, etc., have been extensively tested in the manufacturing industry and have the necessary diagnostic tools and feedback loops to improve and further innovate (Deloitte, 2020). As such, it is the only industry that has achieved the 5th level rating in McKinsey's Maturity Process Model, indicating fully optimized processes.

The energy industry, though mentioned throughout all the industry analyses, also scores highly on the process maturity scale. While smaller companies, such as individual buildings, may use a limited version of the AI integration process, larger firms like Siemens and Schneider have demonstrated that their processes can be and are being optimized. Therefore, the energy industry can also be classified under the 5th level of McKinsey's Maturity Process Model.

Further measurement tools used as reported by either company or consultancy were Return on Investment (ROI), Compounding Annual, Growth Rate (CAGR) and Net Present Value (NPV).

4 DEVELOPING & DEVELOPED AI PRACTICES

4.1 Hospitality

The information and cases are summarized by their variable effects, and case details can be found in Table 1: Cross-Industry Financial Metrics & McKinsey Maturity Process Model Evaluation, and Table 2: Case Study: AI Integration and Impact on Operational Efficiency and Financial Metrics in the Hospitality Industry.

The hospitality industry has proven to be a strategic fit for increasing ROI, CAGR, and NPV through both developed and developing AI financial practices. The estimated ROI for incorporating AI in the hospitality industry is an estimate of 30%. The compound annual growth rate, as can be seen in Table 1, is 60%, and while the net present value of the hospitality industry stands at \$4.3 trillion, it has the potential to significantly grow its profit values. The largest impact was observed in cost reduction, indicating that AI financial practices can reduce operational and maintenance costs by anywhere between 20 to 30% through automation software and predictive maintenance strategies. Furthermore, the second

most effective method of cost reduction in the hospitality industry is energy management. By increasing energy efficiency and decreasing overall energy consumption, hospitality companies can achieve significant cost savings and environmental benefits of up to 10%.

One of the biggest developments in the hospitality industry, specifically within the hotel sector, is revenue optimization using dynamic pricing. This method of room and booking management can increase room revenue by approximately 5 to 10% with minimal investment costs by aligning prices with real-time demand and data. Additionally, the hospitality industry can benefit from a 5 to 10% increase in operational efficiency by streamlining processes using AI software, which also reduces manual labor costs. Besides streamlining processes and enhancing revenue generation models, AI can significantly improve customer experience. It can boost guest satisfaction by an estimated 10% through personalized services and efficient guest management systems, with some of the most notable examples found in the operations of the Disney Parks conglomerate.

Additionally, businesses utilizing AI for energy management can achieve direct cash-back incentives from companies demonstrating historical payouts, and data-driven decision making can increase the company's abilities to process and analyze large data sets, thereby enhancing their decision-making accuracy, potentially leading to better financial and operational outcomes. Furthermore, moving forward, it is crucial for hospitality industry companies to innovate and use the competitiveness which brings AI integration. Overall, AI can increase profitability from 2 to 10%, a margin sorely sought after in the hospitality industry.

Additionally, a side problem of the hospitality industry is that AI can help improve asset value through energy efficiency management and by building infrastructure for guest management systems.

Furthermore, hotels are not the only business models within the hospitality industry that can benefit from implementing AI. Theme parks and airlines are also large sectors that can gain from AI integration. For example, a study at a Swiss ski resort demonstrated a 411% increase in sales after using AI for dynamic pricing, which boosted their revenue by 15% per season (Stojkoska, 2024). Disney, for instance, could potentially increase its revenue by 15% through AI integration; given its reported revenue for 2023 was \$32.5 billion, this could represent a significant addition (Blogmickey, 2024). Airlines can also manage their assets more effectively and increase their value by up to 2% using advanced data analysis powered by AI. Furthermore, by decreasing their operational costs by up to 5% and adopting the same dynamic pricing strategies used by hotels, airlines can significantly improve their revenues (Reed, 2024).

Table 1: Cross-Industry Financial Metrics & McKinsey Maturity Process Model

Metric		Industry Average Estimates								
	Hospitality	Healthcare	Manufacturing	Energy						
Return on	30%	40%	50%	30%						
Investment (ROI)										
Compounding	60%	43%	57%	17%						
Annual Growth										
Rate (CAGR)										
Net Present Value	4.3 trillion EUR	7,341,38.95 billion EUR	14.8 trillion EUR	1.7 trillion EUR						
(NPV)										
Strategic Fit	3	4	5	5						
McKinsey's	2	3	5	5						
Maturity Process										
Model										

Source: (WeMarketResearch, 2023); (Zalke, 2022); (Simplilearn, 2023); (Correa, 2023)

AI	Case	Operational Efficiency Impact	B/S Impact	Quantifiable Impact
Application/	Examples			
Integration				
Case				
Electricity	y Siemens "A positive impact on business		Estimated reduction in maintenance costs by	Even a 1-2% improvement in
Management		continuity – with less downtime,	up to 20-30% (preventive measures generally	attraction availability can
		lower costs, and happy visitors" -	are less expensive than emergency ones).	significantly impact visitor
		Toverland Theme Park	Potential reduction in energy consumption by	experience and park reputation.
			5-10%	
	I. SENTR	ON Digital for energy transparency	1	
	Claims to provi	de an increase in system availability, he	lp provide system failures and by providing the cl	ient with accurate real in time data
	to increase ener	gy savings.		
	Dutch theme pa	rk has four attractions using this techno	logy to operate energy efficiently, sustainably and	help avoid unwanted downtime for
	guests.	lealth Deporting		
	Claims to provi	de via its cloud-based service weekly pe	erformance reports with early detection of malfund	tions and downtime which in turn
	allow for perfor	mance enhancements and provide cruci	al transparency for performance optimisation.	
	Enel X	Reduces energy consumption during	Direct cash-back incentives for participation,	Over \$700 million paid out to
		peak times, alleviating grid stress &	improving cash flow. Potential for increased	customers since 2015, indicating
		enhancing energy management	ROI on energy storage and DER investments.	significant financial benefits for
		practices.		participants.
	I. Deman	d Response Programs		
	Claims to provi	de cash-back to larger energy consumer	s (such as large hotels, entertainment parks etc) th	at agree to reduce their demand
	during times of	high stress on the electricity grids. Claim	m of over 700 million dollars paid out to customer	rs since 2015. Mostly present in
	different areas of	of the US.		
	Distributed Fre	o ray Resource Optimisation SoftwareTM	claims it's intelligent software design automatica	lly manages their solutions
	coordinating the	e client's system to maximise savings an	d maximise the economic value of the divided-up	energy resources
	coordinating the	e energy system to maximise savings an	a maximise the economic value of the divided-up	energy resources.

 Table 2: Case Study: AI Integration and Impact on Operational Efficiency and Financial Metrics in the Hospitality Industry

AI Application/ Integration	Case Examples	Operational Efficiency Impact	B/S Impact		Quantifiable	e Impact
Electricity	Heating	Manages electrical	Direct energy cost s	savings contribute to	Reported a 3	4% reduction in monthly energy
Managamant	Ventilation	load and building	operating expense r	reductions. Potential	consumption	for the Holiday Inn Longueuil.
munugemeni	Air	automation efficiently.	increase in asset val	lue due to improved energy	indicating sig	gnificant savings. While specifics
	Conditionin	ng Utilizes AI-powered	efficiency. Investm	ent in smart building	are not provi	ded, Schneider Electric's
	(HVAC)	analytics for system	infrastructure may o	enhance property value.	comprehensi	ve approach to energy management
	Competitor	rs optimization.	Potential for reduce	ed maintenance costs	and AI analy	tics suggests substantial energy and
			through predictive a	analytics.	cost savings	potential.
	I. Bra	ainBox AI				
	Reportedly	has saved energy while reduc	ing equipment runtin	ne after portfolio wide implei	mentation at N	lalls in Australia and can boast hotel
	giant brand	s such as the Holiday Inn chai	n as clients. Claiming	g it reduced the Holiday Inn	Longueui's mo	onthly energy consumption by 34%.
	Claims it h	alos manage electrical load by	uilding automation s	mart cooling and AI powered	analytics by 1	everaging its AI knowledge base
	and EcoStr	ucture TM	and ing automation, si	mart cooling and AI powered	i allarytics by I	everaging its AI knowledge base
		Al-driven dynamic pricing red	uces manual labour	50-million-dollar investme	nt reported	Potential for an estimated 3-5%
	ł	by automating data entry and the	he integration of	5-10% increase in room rev	venues and a	overall increase in profitability due
	d	liverse data sources more effic	cient revenue	similar reduction in related	operational	to optimised pricing and reduced
	Hotels r	nanagement practices across n	najor hotel chains.	costs.		operational expenses.
	I. Mo	ost major hotel chains practise	what is demand base	d pricing to adjust room rate	s in real-time b	based on the variability of occupancy
	rate	es, booking patterns and maint	tenance conditions; th	nus, hotels can aim to maxim	ise their reven	ues based on the aforementioned
	inte	ernal factors and external factor	ors such as competitiv	ve pricing based on rival chai	ns offerings. A	Additional large hotel chains who've
	rep	orted of their use of AI for dy	namic pricing are Hil	ton and the InterContinental	Hotel Groups.	
	II. The	e Marriott International brand	which reached evalue	ations of up to 75 billion doll	ars is notably	transparent of its use of AI for its
	dyi	namic pricing systems. It claim	2015 acquisition to t	-lactor system including weather Marriett brand) Revenue	uner forecasts	to optimise its vast portiono of
	pro Ma	preside and uses Starwoods (a	2013 acquisition to t	a labour and claims to integr	Opulliisilig Sy	external data sources in order to
	IVIA pro	wide real time forecasts and or	ntimised rates ROS	plaims to tackle the two great	est bleeding o	osts and management issues of the
	hot	el industry; staffing and optim	al pricing.	sharing to tackie the two great	est blocding of	sits and manuferment issues of the

Table 2: Case Study: AI Integration and Impact on Operational Efficiency and Financial Metrics in the Hospitality Industry (cont.)

AI	Case		Operational Ef	ficiency Impact		B/S Impact	Quantifiable Impact		
Application/	Exampl	les							
Integration									
Case		L					By layaraging AI for dynamic		
		40 b	illion dollars in	assets increased by	Poter	tial for a 2-10% increase in profitability due to	by levelaging AI for dynamic pricing and operational		
		2%1	using large scale	e data analysis to	optim	nised pricing and cost savings. Revolutionising	efficiencies, airlines can		
		solve	e complexity an	d logistics issues.	the la	bourless way airlines manage their piercing	achieve significant cost savings		
		Effic	ciency improven	nents could lead to a	and, i	in the future, potentially integrating AI assisted	and revenue optimization,		
		3-5%	6 reduction in o	perational costs. AI	filling	g of flights for maximum ROI per flight.	leading to enhanced		
		and 1	machine learnin	g technologies	Curre	ent AI systems already show this potential and	competitiveness and financial		
		strea	mline pricing a	djustments, enhance	their	principles which can be cross applied to	performance in the market.		
		autor	mation, and imp	brove demand	differ	ent industries in hospitality such as the	Overall financial performance		
		forecasting, allowing airlines to respond				mentioned theme park management crowd	improvement by 4-6%,		
	Airling	irlines changes				gement	and cost reductions		
	I	Delta A	irlines		mana	gement.	and cost reductions.		
	As of D	ecembe	er 2023. Delta ai	irlines has implemente	d AI te	chnology to assist in their pricing. According to	the President Glen Hauenstein		
	the inte	gration	of AI allows for	determining acceptab	le custo	omer premium chargers and "streamlines" the co	ompany's ability to move faster.		
	II.	United	Airlines	C I		1 0	1 2 2		
	PROS.A	AI claim	ns United Airlin	es has been able to rea	p the be	enefits of enhanced automation and minimise co	sts of sales. Used by other		
	promine	ent airli	nes like flyDuba	ai and SriLankan Airli	nes.				
	III.	Emirat	es Airlines Mac	hine Learning					
	A good	exampl	le on the proacti	vity of Emirates brand	l as a w	hole is their approach of utilising generative Al	s ability in predicting		
	unconst	rained o	demand coupled	with dynamic pricing	model	s and weather predictors for a more cost effectiv	e and profitable management		
	system.								
	1 / % increase in 1 K 11% increase in K and 10% increase in 8 8% lift in				By ado	nting AI for dynamic pricing and demand mana	gement, hospitality brands can		
		occupa	ncv after	occupancy within	achieve	e notable improvements in revenue and operatio	nal efficiency. This leads to		
		using A	AI	12 months	enhanc	ed competitiveness and financial performances.	Potentially increasing overall		
		Project	efficiency	RevPar increase of	financi	al performance by 10-15%, through combining	revenue increases and cost		
	RM	increas	e by 34%	6.5%	reductions, based on reported outcomes and industry averages.				

Table 2: Case Study: AI Integration and Impact on Operational Efficiency and Financial Metrics in the Hospitality Industry (cont.)

AI	Case Examples	Operational Efficiency Impact	B/S Impact	Quantifiable Impact
Application/				
Integration				
Case				
Revenue	I. Budget Hero			
Management	Claims to offer in real-time price a	djustment based on seasonal events	and competitor prices to maximise o	occupancy, used by companies like
8	Booking.com, Expedia and other C	Online Travel Agencies or OTA's. A	t Park Hyatt Vienna the luxury brand	d reported increases in efficiency
	and revenue increase of more than	10% through the use of an AI integr	ated Revenue Management Softwar	e or RMS. As reported by Oracle
	Hospitality the RMS system claim	s to be able to not only observe and	use booking trends but manage dema	and more effectively than a
	dedicated team of employees. Mel	a Hotels International which manag	es a staggering 380 hotels reported b	by Hospitality Net increased
	revenue per available room using A	AI software. Other names in the reve	nue management industry include II	DeaS and RevControl. The OTA
	insight platform includes in its offe	er three modules: Rate Insight, Parity	/ Insight and Revenue Insight. Hosp	itality giants such as Hilton have
	already made use of the platform f	or its "smarter hotel analytics". In an	article from Altexsoft on the metho	ods of performance-enhancing use
	of AI in the hospitality industry the	e methods listed include operational	analytics.	- -

Table 2: Case Study: AI Integration and Impact on Operational Efficiency and Financial Metrics in the Hospitality Industry (cont.)

Source: (Siemens, 2024); (Siemens, 2024); (ENELX, 2024); (DER.OS, 2024); (D'Alesio, 2023); (Schneider Electric, 2024); (Reed, 2024); (PROS, 2024); (Oliveoil, 2018); (Chui et al., 2023); (Karagiannis, 2024); (Budget, 2024); (Karagiannis, 2024); (Blackwells, 2023); (Careless, 2021); (Stojkoska, 2024); (SPOTOLIO, 2024); (Higginbotham, 2021); (Karagiannis, 2024); (Betsheda, 2023); (Grandey & Morris, 2023); (Karagiannis, 2024).

4.2 Healthcare

The information and cases are summarized by their variable effects, and case details can be found in Table 1 and Table 3: Case Study: AI Integration and Impact on Operational Efficiency and Financial Metrics in the Healthcare Industry.

The healthcare industry has proven to be a strategic fit for increasing ROI, CAGR, and NPV through both developed and developing AI financial practices. The estimated ROI for incorporating AI in the healthcare industry is 40%. The compound annual growth rate (CAGR), as shown in Table 1, is also 40%, and while the net present value (NPV) of the healthcare industry stands at \$7,341.38 billion, it has the potential to significantly grow its profit volume.

In comparison, the largest effect on financial practices by AI in healthcare is the decrease in drug development costs and time. Costs in early-stage drug development have been shown to decrease by up to 90%, thus significantly accelerating market entry and profitability. Integration of AI can allow for nearly twice the diagnostic accuracy and speed, which translates into cost savings for healthcare providers or government administrations (Bouley, 2024). AI implementation in faster and more accurate diagnosis and treatment results in shorter treatment times for patients, higher success rates, and lower recurrence rates. This reduces the need for extended patient support, translating into cost savings for insurance companies, hospitals, or governments.

Additionally, the reduction in administrative tasks through AI can save an estimated \$3.6 billion worldwide by reducing operational time by up to 20% (Polevikov, 2023). AI also reduces administrative costs and errors by up to 50%. While the 17 minutes saved per patient may not seem significant individually, AI has been shown to reduce mortality rates from physician error by at least 30% (Polevikov, 2023).

Energy management in healthcare facilities can also save up to \$6.5 million per year, reduce maintenance activities by 40%, and increase system uptime by up to 20% (Schneider, 2023).

AI	Case	Operational Ef	ficiency Impact		B/S Impact		Quantifiable Impact				
Application/	Examples				-						
Integration	AI	Up to 90% decrea	se time and costs in	Dec	creased Research &	Reduces the overall	drug development timeline, leading to faster				
Case	Systems	early stages of dru	g development.	Dev	velopment costs (RD).	market entry and thus faster and higher profit and benefit.					
Drug	I. AtomNet uses deep learning algorithms to analyse the structure of small molecules and predict their potential as drug candidates. This										
Discovery &	speeds up drug development exponentially and can thus increase success rates while simultaneously lowering development costs.										
Development	Be	enevolentAI leverag	ges AI to enhance the	e drug	g discovery and develop	nent process. Its AI p	latform analyses scientific literature,				
	cl	inical trial results, a	nd other datasets to g	gener	ate insights that can lead	l to the discovery of n	ew medicines. It can identify new				
	m	olecules as drug ca	ndidates and help stre	eamli	ne the research. Benevol	lentAI have been used	by the National Institutes of Health (NIH)				
	an	d FDA.									
Disease	Identificat	10n Brain Co.'s to	echnology is crucial	W	hile accuracy and speed	of detection may	Cancer if caught early can be two-four				
Diagnosis and	Al	in helping fig	ht the battle against	no	ot only improve people's	chances at fighting	times cheaper if caught early according to				
Prediction		cancer in usin	ig AI to identify	ca	incer it inadvertently low	vers costs for	the World Health Organisation (WHO).				
		cancerous ce	Is where it would be	ho	ospitals and government	institutions as	The impact of these companies, while very				
		impossible fo	r histologists.	pr	eventive treatment and s	horter and more	positive for the treatment of people, meant				
		According to	the Guardian AI	ef	fective targeted treatmen	it in comparison	significant exposure of the very people it				
		detection can	be almost twice as	WI	ith the prolonged alterna	tive saves in both	was meant to protect to the dangers of				
	T (T)	accurate as an	n invasive biopsy.	na	national spending and quantied fabour costs. I identity then and data setting.						
	I. TI	he AI created for 1d	entitying pastries wa	s repu	urposed for use in identit	tying cancer cells.					
	The story	of Hisashi Kambe a	and his company BR	AIN (Co., Ltd., highlights an a	Iternative approach to	Al development. Faced with the challenge				
	of automa	ting the checkout p	rocess for a bakery cl		The process used to disc	ern between differen	snapes of pastries is not unlike discerning				
	between a	onormal cancer cel	s and normal cells w	linin	a sample.						
	II. U	d mahila ann dasis	Sureallis	form	ationta with aguta kidnar	injum (AVI) and al	arts the national's physician in order to				
	nrevent fu	rther damage. The	and to improve care	nt hel	Id more than 1.6 million	neonle's data was shi	it down as of 2022 due to the British courts'				
	rulings ov	er data protection	app which at one poi			people's data was site	at down as of 2022 due to the British courts				
Admin Work	Task 2	20% reduced time	increasing CAGR o	f 37%	6 from 2022 to 2030	As testified by the	failure of Olive AI the financial investments				
	AI i	n operational	\$3.6 billion dollars	estim	ated saved worldwide	required for this ki	nd of company are steep and violently				
	t	asks	çete ennen donuib			unsustainable.	and of company are stoop and forently				
	Nuances'	cloud-based speech	recognition solution	desig	gned for healthcare profe	essionals using AI tec	h to guarantee accuracy and adoption to the				
	healthcare	provider's voice.O	live AI focuses on au	itoma	ting repetitive, high-volu	ume tasks in healthca	re, such as verifying insurance eligibility.				
	processing	claims, managing	prior authorizations.	This	means faster processing	and cost reductions f	rom labour redundancy				

Table 3: Case Study: AI Integration and Impact on Operational Efficiency and Financial Metrics in the Healthcare Industry

AI	Case	Operational	B/S Impact			Quantifiable						
Application/	Examples	Efficiency				Impact						
Integration		Impact										
Case												
Personalised	Data Sifting	17 min per	Costs to implement AI can	osts to implement AI can range from as little to 20 000 dollars to 1 million as discussed with								
Medicine	AI	patient saved	Microsoft AI expert. Redu	aces administrative costs by 50% while simultaneously	y reducing	in mortality						
			errors by same margin.			rates						
	IBM Watson's	offers effective	and speedy tailored treatme	and speedy tailored treatment recommendations by considering the genetic mutations and specific characte								
	of a patient's tu	umour. Accordin	g to IBM it sifts through 15	g to IBM it sifts through 15 million pages of text providing by far the most effective and informed decision.								
	Flatiron Health	n: Their compreh	nensive genomic profiling a	ensive genomic profiling approach examines the unique genetic makeup of a patient's cancer to identify specific								
	mutations and	match them with	n targeted therapies or clinic	cal trials. The insights their platform provides clinical	trial matching th	hrough data-						
	driven insights	. Tempus: Using	g AI helps doctors understar	nd comprehensive patient profiles and helps identify s	ubgroups.	_						
Energy/	Energy	By reworking	using AI old hospital	2.25 million dollars in energy and utility costs and	Claims it can s	ave an ROI of up						
Electricity	Management	infrastructure S	Siemens was able to save	4.25 million dollars In operations and	to 20 times in a	a singular case						
management	_	6.5 million dol	lars per year.	maintenance.	with predictive	decision making.						
	Siemens lists r	Siemens lists more than five hospitals as using its AI driven innovations allowing for improvements in energy efficiency and analyse data from										
	over 800,000 d	ver 800,000 data points across hospital campuses to create a safe and efficient hospital. Schneider Electric provides advanced electricity										
	management a	nd automation se	olutions. Their EcoStruxure	platform leverages AI and IoT to deliver energy effic	ciency and sustai	inability,						
	particularly in	complex enviror	nments like hospitals.		-	-						

Table 3: Case Study: AI Integration and Impact on Operational Efficiency and Financial Metrics in the Healthcare Industry (cont.)

Source: (Bouley, 2024); (Paul et al., 2021); (The Guardian, 2023); (WHO, 2017); (Somers, 2021); (Coulter, 2022); (Dave, 2024); (Putty, 2024); (Polevikov, 2023); (Noc Folio3, 2024); (5725-W51, 2023); (Flatiron Health, 2023); (Dhellemmes, 2023); (Schneider, 2023);

4.3 Manifacturing

The information and cases are summarized by their variable effects, and case details can be found in Table 1 and Table 4: Case Study: AI Integration and Impact on Operational Efficiency and Financial Metrics in the Manufacturing Industry.

The manufacturing industry has proven to be a strategic fit for increasing ROI, CAGR, and NPV through both developed and developing AI financial practices. The estimated ROI for incorporating AI in the manufacturing industry is 50%. The compound annual growth rate (CAGR), as seen in Table 1, is 57%, and the net present value (NPV) of the manufacturing industry stands at \$144.8 trillion.

The manufacturing industry's most significant financial practices from its developed and developing AI integration include supply chain optimization, automation in factories, predictive maintenance, and growth in AI-driven industries. When it comes to managing the supply chain, AI can help reduce inventory days by up to 6 days, leading to a 10% overall inventory reduction (Alowais et al., 2024). Supply chain optimization driven by AI can also enhance productivity, potentially generating hundreds of millions of dollars in value (Schneider Electric, 2024). Implementing AI can decrease machine downtime by up to 30% and reduce maintenance costs for these machines by up to 25% (Hansmann et al., 2022). Additionally, product quality can be increased by up to 10%, leading to higher revenue and lower costs.

Furthermore, the facilitation of AI in equipment downtime using predictive maintenance has shown to decrease downtime by up to 20% across various industries in manufacturing (Kunie, 2024). AI adoption in maintenance can also improve labor productivity by up to 20% and reduce facility downtimes by up to 15% (Priya et al., 2024).

AI	Case Examples		Operational Efficiency Impac	t	B /S	S Impact	C	Quantifiable Impact
Application/								
Integration								
Case								
Supply	Supply Chain	nider also reports a 6-day reducti	on in day-in		Schneider claims its	AI based	Schneider advertises its chain	
Chain	Analysis &	inver	nventory decreas	e	supply chain manage	ement	as self-healing and boasts a	
Optimization	Management	& Av	verage 15% yield improvement of	n specific		software can generate up to 100		league of benefits ranging from
	Software	manı	facturing lines. And decreasing of	delivery time by ı	лb	million euros in valu	e and	cost and labour decrease to
		to 6 c	lays. Reduces inventory levels by	18% to save on		improve productivity	y by €30	significantly better value
		waste	e and cost with IBM.			million.		generation.
	I. Schneide	r Elec	tric					
	Using AI powere	d soft	ware like many of its solutions it	takes efficiency a	and	overall productivity to	b higher levels i	manipulating and making
	decisions regardi	ng coi	npanies supply chain.					
	II. IBM Ste	ling S	Supply Chain Intelligence Suite	a ., . , .		1 11.	1.1 1	1 1 1 1
	The role of IBM	s Ster	ling's Supply Chain Intelligence	Suites is to increa	ise s	upply chain resilience	e and thus decre	ease supply chain disruptor
A 4 4.	factors all while	ncrea	sing transparency and efficiency	of said chain.	/	(a)	1 1 1	
Automation	Factories Siem	ens re	ported decreased machine downt	ime by up to 30%	0.	Siemens reporte	ed decreased	Bosch reported an increase in
	Bosc	n repo	need decreased machine downlin	The by up to 25% .	0/	maintenance co	st by up to	to 10%
			ported a decrease in production i	Deach with a re	70.	23%	m inst in 2021	to 10%.
	Using AI Steme	this of	account for the simulation of	Bosch, with a revenue of around 80 billion just in 2021, has sought to incorporate AI				
	efficiently and er		faster changeovers in product	analyse images and real time data from assembly lines to detect deviations or defects in				
	lines Fanue one	of the	largest producers of industrial	products early in	anu n the	e manufacturing proce	ess. This allows	for immediate processing and
	robots integrates	AIw	ith its robots to enable	reduces waste a	nd f	aulty products Preser	t and implement	nted in over 120 factories
	canabilities such	as pre	dictive maintenance and	worldwide. Toyota initially applied the enabling competencies of generative AI for				
	adaptive learning	. Fant	ic's AI monitors machine	creating a resilie	ent c	cloud safety system. h	owever. it has a	also invested heavily in its cost
	operations to pre	hen maintenance is needed	saving potential	(as	well as additional saf	ety benefits) fo	r analysis of wear and tear of	
	before breakdow	ur. Additionally, their AI-	machinery and t	tools	s and scheduling main	tenance. This a	pproach not only saves costs but	
	enhanced robots	can le	arn from past tasks to optimise	also minimises	dow	ntime in production.	Foyota's AI sys	tems also help in optimising the
	their movements	and ir	nprove their productivity over	layout of their n	nanu	afacturing floor plan to	o streamline the	e flow of materials and reduce
	time.			their waste prod	lucts	5.		

Table 4: Case Study: AI Integration and Impact on Operational Efficiency and Financial Metrics in the Manufacturing Industry

Table 4: Case Study: AI Integration and Impact on Operational Efficiency and Financial Metrics in the Manufacturing Industry (cont.)

AI	Case	Operation	nal Efficiency Impact	B/S Imp	pact		Quantifiable Impact
Application/	Examples						
Integration							
Case							
Energy	lergy Energy AI Siemens reported decreased Increased				production by up to 8% in the	gas and oil	CAGR of 6.1% in CCUS industry
Efficiency	managemen	energy co	nsumption by up to	industry			Big data in oil and gas to reach over
	t	40%. Dec	rease drilled but	AI-drive	en HVAC systems can reduce e	energy costs by	10.9 billion dollars
		uncomple	ted wells by 20%. Oil	20% to 4	40%, according to the U.S. Dep	partment of	Up to 16.6% annual growth rate for
		and gas in	dustry decrease in	Energy.	This reduction translates to dir	ect savings on	advanced analytics and AI in oil and
		operationa	al costs by up to 20%.	utility bi	ills, a significant expenditure fo	or large buildings.	gas
	I. In Siemens "Smart factories" exhibition they showcased the cost saving power of their AI manag						ent-based energy optimisation code.
	II. Consultancy services team FDM identified the most crucial areas in energy management whic					agement which are c	currently using AI or Ai powered
	techr	nology.					
As mentioned b	before with the	e HVAC	Oil and Gas exploration	n has	The same uses stock	CCUS or Carbon	AI also has made some strides
system, buildin	g managemen	t has	had groundbreaking		trading has seen AI applied	Capture, Utilisatio	n, when it comes to energy storage
proven to be a :	fortuitous and	crucial	advancement using AI		in a more expanded	& Storage is the	and multiple companies have
element in man	aging both pas	st and	technology in order to locate		capacity in energy trading.	process of optimis	ing made use of its predictive abilities
future architect	ure. Smart me	tres and	oil and gas reserves, ev	aluate	Real-time data processing	carbon dioxide	to store and release renewable
IoT devices alo	ngside predict	tive AI	their viability and pred	ict the	and more accurate trend	capture using AI	sources of energy at peak times of
management ca	n help elevate	and	most cost and time effe	ective	prediction for higher profit	driven systems for	demand.
optimise the wa	optimise the way we use energy. method for drilling.				and lower risk.	maximum efficien	cy.
Predictive	redictive Siemens uses AI in its digital factories to implement sys				tems that predict equipment fai	lures and maintenar	nce needs, thus preventing downtime. In
Maintenance	regard to th	e effects of	AI in predictive mainter	nance Mcl	kinsey reported a decrease in e	quipment stoppages	by up to 50% and an increase in
	equipment	lifetimes of	up to 40%. Companies	like Gener	ral Electric, Siemens, IBM, Bo	sch, Hitachi and Sch	nneider Electric all make use of
	predictive n	naintenance	e to save on cost and gua	rantee qua	ality.		

Source: (IBM, 2024); (Schneider Electric, 2024); (Fenwick, 2019); (Siemens, 2024); (FANUC, 2024); (Siemens, 2024); (BOSCH, 2024); (Toyota, 2023); (Linder, 2024); (Allied Market Research, 2023); (FDM, 2024); (Priya et al., 2024); (Hansmann et al., 2022); (Kunie, 2024);

4.4 Energy

The information and cases are summarized by their variable effects, and case details can be found in Table 1 for the comparison values of CAGR, ROI, and NPV, as well as the McKinsey Maturity Index, and across Tables 2-4 in their respective Energy Management sections.

The hospitality industry has proven to be a strategic fit for increasing ROI, CAGR, and NPV through both developed and developing AI financial practices. The estimated ROI for incorporating AI in the hospitality industry is 30%. The compound annual growth rate (CAGR), as seen in Table 1, is 17%, and the net present value (NPV) of the hospitality industry stands at \$1.7 trillion.

In the CCUS (Carbon Capture, Utilization, and Storage) industry, the use of AI is expected to see a growth CAGR of 6.1%. Big data and advanced analytics in the oil and gas industry are projected to reach a market value of over \$10.9 billion, growing at an annual rate of 16.6%.

Additionally, energy efficiency can be improved using AI technologies, employing optimization strategies to lower energy consumption. For example, in manufacturing processes, AI can decrease energy costs by up to 40%. In the oil and gas sectors, AI has been proven to decrease operational costs by up to 20% and increase production by up to 8% by using big data analyses to enhance operational efficiency.

These insights highlight the significant impact of AI on various industries, emphasizing the potential for improved financial metrics and operational efficiencies through strategic AI integration.

4.5 Comparative Analysis of AI's Impact Across Industries

The information and cases are summarized by their variable effects, and case details can be found in Table 1 for the comparison values of CAGR, ROI, and NPV, as well as the McKinsey Maturity Index, and across Tables 2-5 in their respective Energy Management sections.

The hospitality industry has proven to be a strategic fit for increasing ROI, CAGR, and NPV through both developed and developing AI financial practices. The estimated ROI for incorporating AI in the hospitality industry is 30%. The compound annual growth rate

(CAGR), as seen in Table 1, is 17%, and the net present value (NPV) of the hospitality industry stands at \$1.7 trillion.

In the CCUS (Carbon Capture, Utilization, and Storage) industry, the use of AI is expected to see a growth CAGR of 6.1%. Big data and advanced analytics in the oil and gas industry are projected to reach a market value of over \$10.9 billion, growing at an annual rate of 16.6%.

Additionally, energy efficiency can be improved using AI technologies, employing optimization strategies to lower energy consumption. For example, in manufacturing processes, AI can decrease energy costs by up to 40%. In the oil and gas sectors, AI has been proven to decrease operational costs by up to 20% and increase production by up to 8% by using big data analyses to enhance operational efficiency.

Furthermore, the manufacturing industry provided its most significant financial practices from its developed and developing AI integration in the form of supply chain optimization, automation factories, predictive maintenance, and growth in AI-driven industries. When it comes to managing the supply chain, AI can help reduce inventory days by up to 6 days, leading to a 10% overall inventory reduction (IBM, 2024). Supply chain optimization driven by AI can also enhance productivity, potentially generating hundreds of millions of dollars in value (Schneider Electric, 2024). Implementing AI can decrease machine downtime by up to 30% and reduce maintenance costs for these machines by up to 25% (Hansmann et al., 2022). Additionally, product quality can be increased by up to 10%, leading to higher revenue and lower costs.

When it comes to corporate finance and the impact of AI on financial practices across various industries, supply chain optimization in manufacturing emerges as the most influential. It offers the highest ROI, significantly reducing inventory levels and enhancing productivity to generate value up to hundreds of millions of euros (see Table 1). Its industry impact is substantial, notably increasing efficiency in delivery times and inventory management, which majorly affects factory operations.

Secondly, energy efficiency initiatives using AI have proven to be the most cost-saving across all industries, providing reductions of up to 40% in energy consumption. This significant decrease can substantially pad profit margins in industries such as hospitality, manufacturing, and healthcare.

Furthermore, predictive maintenance in manufacturing has shown a significant reduction in equipment downtime, positively impacting productivity. It can also increase equipment lifespans by up to 40%, thus deferring necessary capital expenditures.

Additionally, big data and advanced analytics in the oil and gas industry have shown significant market growth due to AI involvement. With more precise exploration, more efficient operational activities, and reduced costs, AI has transformed the energy sector.

Lastly, while dynamic pricing practices in the hospitality industry, such as in hotels, airlines, and theme parks, may seem minor compared to the effects of AI in industries like manufacturing or energy, they represent significant changes. These include improvements in operational efficiency, dynamic pricing, asset value management, and customer satisfaction.

In conclusion, the integration of AI across various industries demonstrates substantial potential for enhancing financial performance and operational efficiencies. From hospitality to manufacturing and energy sectors, AI-driven strategies are pivotal in driving growth, reducing costs, and improving productivity. As these technologies continue to evolve and mature, their impact on industry practices and economic outcomes is expected to grow, marking AI as a critical component of future business success.

5 CONCLUSION & STRATEGIC RECOMMENDATIONS FOR AI IMPLEMENTATION

In conclusion, this paper serves as an introduction to AI as a transformative factor that enhances operational efficiency, cost and revenue management across various industries. this paper aims to focus on the impact of AI the finances of the industries such as hospitality, healthcare, manufacturing and energy. The papers employed research methodology was descriptive case study as provided by various companies within the four industries and the published financial metrics such as ROI, CAGR, and NPV to evaluate the impact of implemented AI.

In regard to the highest impact that can be seen in table 5 through the detailed set out case studies and financial metrics which showed significant Improvement in supply chain optimization, cost saving to predictive maintenance and operational efficiency boosts. By referring to table four the digital transformation present and Diagnostics personalised treatment and operational efficiency as led by AI can be concluded as a positive general trend in both cost saving and treatment effectiveness.

In conclusion, the best practices for ROI and cost efficiency that offer the best benefits by significantly reducing operational costs and extending the life of expensive equipment is predictive maintenance. It had by far the most significant effects on operational efficiency and the balance sheet of the studied cases.

Followed by best for market growth, big data and analytics in the oil and gas industry present the largest growth opportunities with projected market values that far exceed other sectors.

However, the most promising uses besides the large ROIs in manufacturing have to be emphasised as dynamic pricing and crowd management in theme parks. Not only does it hold potential to be translated into Industries in the public sector such as hospitals and government Administration buildings, but it has a significant impact within an industry where smaller percentages make up most of the change. Not only does helping maximise occupancy and load factors during off peak times by lowering prices while maximising profits during peak times through higher prices is a more effective and sustainable way of doing business it also has significant impacts upon industry such as ski resorts which are going to be battling extinction in the future years because of ecological impacts.

The most significant strategic recommendations for AI implementation, particularly in the corporate finance sector, include enhancing data security, forming data analysis partnerships, promoting interdisciplinary collaboration, and leveraging AI for environmental sustainability.

Overall, the impact of AI was significant across all industries each benefiting it in unique ways. However, the industry that reaped the biggest gains from AI integration was undoubtedly manufacturing. This sector primarily sees extensive financial improvements due to the high volume of data it handles and its strategic fit with AI technologies. Manufacturing benefits from enhanced operational efficiency, supply chain management, and predictive maintenance, all of which contribute to significant cost reductions and increased productivity.

The second most impacted industry was healthcare, where AI has dramatically transformed diagnostics, personalised treatment, and operational efficiency. By analysing vast datasets to identify genetic disease markers and treatment patterns, AI can significantly speed up the length of treatment and reduce overall costs for all parties involved. This leads to better patient outcomes and more efficient use of resources. The energy sector, additionally, gains from AI improving the efficiency and energy management which can be applied across all industries and AI can help in the production of said energy to be more efficient.

Additionally, examining the scalability and adaptation of current AI solutions in smaller or niche markets, which may face unique challenges compared to large-scale implementations by major multinational enterprises (MNEs), is crucial. Collaborative efforts with companies like Siemens or smaller hotel chains could be valuable in analysing the data they have already collected. Although such analysis is likely ongoing internally, the expanding role of AI in both industry and daily life warrants comprehensive academic scrutiny.

An aspect not explored in this thesis is the ethical implications and governance challenges posed by AI, particularly concerning data privacy. Future research should focus on developing frameworks for ethical AI usage that could be adopted industry wide. For example, considerations around the ethics of Siemens selling their AI software, which yields significant returns but raises questions about the privatisation and commercialization of such technology, could be a broad and significant topic for investigation.

Furthermore, as AI is a relatively recent development, its long-term economic impacts on job markets and economic structures need thorough examination. It's crucial to determine whether AI is creating jobs, enhancing them, or displacing them, and how it reshapes or reinforces traditional economic power dynamics. Additionally, AI presents new solutions to the sustainability and global warming crisis by potentially enhancing industry sustainability, optimising resource use, and reducing overall waste.

The posed challenges of future research are the significant question of data privacy and security. The addressing of concerns related to the security of AI systems and the privacy of the data they process, as evidenced in healthcare case studies where software was implicated in data breaches, is critical. Moreover, the complexity of AI and its integration needs to be managed with robust processes and frameworks that are resistant to technical changes. Crucially the studies finding should not be interpreted without caution because of the following limitations, namely, a small number of case studies, the relatively small-time frame as most companies if they even have even begun implementing AI Have not had the chance yet to study at much less share their findings. does the above findings and results may not be generalisable or applicable to other Industries and poor companies however they may serve as small contributions and/or guidelines within limits.

Finally, and perhaps most importantly, developing and implementing regulatory and ethical standards is crucial to guide AI development in sensitive industries such as healthcare and energy. These standards should enforce stringent data protection measures to safeguard the interests of all stakeholders involved.

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Appendix 1: Povzetek (Summary in Slovene language)

Diplomska naloga preučuje vpliv uporabe umetne inteligence (UI) na področju finančne industrije, v gostinstvu, zdravstvu, proizvodnji in energetiki. UI je v ospredju tehnoloških inovacij in prinaša prelomne globalne spremembe v ključnih industrijah. Čeprav so potencialne koristi UI ogromne, diplomska naloga izpostavlja tudi ključne omejitve, kot je omejena razpoložljivost zgodovinskih podatkov, različna stopnja razvoja sprejemanja UI med industrijami, etična vprašanja, vprašanji zasebnosti podatkov in visokimi stroški implementacije. Pozitivni učinki UI se izražajo v različnih industrijah na naslednje načine. V gostinstvu bistveno izboljša operativno učinkovitost z uporabo dinamičnega določanja cen in boljšega vzdrževanja. V zdravstvu je vloga UI še bolj revolucionarna. Izboljšuje natančnost diagnostike, personalizira zdravljenje in zmanjšuje stroške, povezane z diagnostiko in upravljanjem pacientov. Te izboljšave vodijo k boljšemu zdravljenju in učinkovitejšemu zagotavljanju zdravstvenih storitev, kar poudarja ključno vlogo UI v sodobni medicini. V proizvodnji prispeva k izboljšavam proizvodnih procesov, nadzora kakovosti in upravljanja dobavne verige. Uporaba UI tako prinese znatne prihranke in povečano dobičkonosnost. V energetskem sektorju UI optimizira upravljanje z energijo, izboljšuje stabilnost omrežja in zmanjšuje operativne stroške. Tehnologije UI omogočajo boljšo izrabo virov, kar prispeva k višjim prihodkovnim maržam in trajnostni energetski prihodnosti.

Appendix 2: Interview with M. Sc Marko Vahen

The interview with Marko Vahen M. Sc was conducted on the 4th of April 2024 trough the online platform Zoom as facilited by the authors SEB LU International Business subjects Proffesor Gregor Pfajfar. The consent was obtained verbally trough requesting Mr Vahens consent to using his expertise regarding AI in indstry today as a Microsoft emplyee.

- I. Microsoft Cloud Solutions Area Lead for South-East Europe (SEE) IBM & Microsoft
- II. International Business Guest Lecture organised by Professor Gregor Pfajfar.
- III. 30 000 or 130 000 euros packages 200k for slovenia
- IV. 2 main issues data security and maintenance
- V. Cloud security and expenses
- VI. War concerns regulators catch up
- VII. Insurance and banking insane growth from AI tech
- VIII. BANKs are the fastest adapters and biggest potential 3,4 % and now 14 banks he's working with ai now 8-10 percent increase in market share
 - IX. China is a more effective adapter than Japan but yes accurate assessment AI will replace ageing population capabilities.
 - X. Tax administration but governments are not up to adoption Greece (elections coming up) e.g. Albania

Transcribed available audio

Mr Vahen

Basically, we're still wondering where Google is, but we're expecting it to come. AWS or Amazon is not catching us. Nowhere near. So we're now really driving the AI. And what you said in healthcare, I just I was just on a conference in Belgrade, and I listened to four or five really successful cases now in Israel, where it's being used for everything, right?

It's basically from, you know, mental disorders to, you know, to the, to trying to solve and help, even though now we can discuss it or not, the problems that the Israeli soldiers have when they come back from Gaza and so on.

So now the applicability and the let's say the availability became a totally different thing, because, look, of course, I'll share the list prices, but 30,000 euros, or 130,000 euros, which would be a big package is per month, I mean, is enough for you to almost completely reshape your healthcare system in a country, right?

Maybe for the full Slovenia, 300 paper month. And of course, then you need to ingest the data, you need to basically teach the system, right, or leverage it, but it has been done much more available.

And this is exactly what you correctly know this 4 billion was just way off, right? Hopefully I answered your question. You can also reach out to me, I can ship those success cases with you that I mentioned before.

Ula Kanduc:

That would be great. Yeah, I'd love that. You did mention that Google isn't going to catch up anytime soon. I did. Yeah, tell me, tell me. I looked at one of their platforms, which was Google deep think, but it was closed down in Britain because of data security issues.

Mr Vahen:

So would you say that the two main problems that AI or AI powered software encounters is either the high maintenance costs and the data security? That's incredible. Basically, you're asking all the right questions.

Look, now, just in the last year, since Microsoft announced and put everything on the market, yeah, you can check for stock price, what happened, and it was just because of the AI. But also the number of attacks, right, have increased twofold.

Now, why? Because it's not just, you know, good actors using AI. It's basically that the bad actors are using AI to launch attacks, right? So, when somebody says that there's an actor like a country, and I can't name it, which is doing, you know, at least 50% of all of the attacks, they're using AI to do that.

And now imagine, and look, if you want to really run something like the generative AI, or really build models which will help in the healthcare system, for example, or in a hospital, a portion of those, not a portion, a big part of that needs the running flow.