

How will automation technologies disrupt the tourism industry?

Stanislav Ivanov

Email: stanislav.ivanov@vumk.eu

Web: <http://stanislavivanov.com>



Dr. Stanislav Ivanov



- Professor and Vice Rector (Research), *Varna University of Management*, Bulgaria (<http://www.vum.bg>)
- Editor-in-chief of the *European Journal of Tourism Research* (<http://ejtr.vumk.eu>)
- CEO of *Zangador Ltd.* (<http://www.zangador.eu>)
- Member of *AIEST* (<https://www.aiest.org>)



69th Aiest Conference

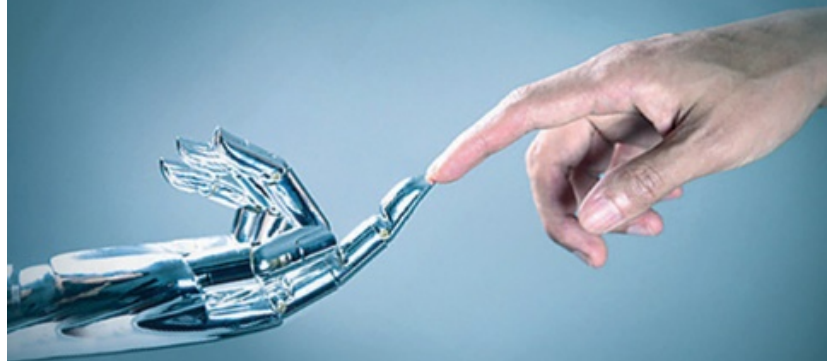
Key facts:

- Dates: 25th-29th August 2019
- Organiser: Varna University of Management, Varna, Bulgaria
- Venue: Rosslyn Hotel Dimyat 4* (<http://dimyat.rosslyn-hotels.com/>)
- More information at: <https://www.aiest.org/conference/conference-2019-varna/>



Forthcoming on 14th October
2019

Robots, Artificial
Intelligence and
Service Automation
in Travel, Tourism
and Hospitality



EDITED BY
STANISLAV IVANOV
CRAIG WEBSTER

CALL FOR PAPERS



TOURISM ECONOMICS

Special Issue on “The Economics of Revenue Management in
Hospitality and Tourism”

Guest Editor

Stanislav Ivanov, Varna University of Management, Bulgaria,
stanislav.ivanov@vumk.eu



Volume 28 ISSN 2211-9736 October 2018

Tourism Management Perspectives

EDITOR-IN-CHIEF
Catheryn Khoo-Lattimore



Tourism Management Perspectives

Special Issue: Tourism beyond humans - robots, pets and teddy bears

Editor-in-chief: Catheryn Khoo-Lattimore
Associate Editor: Babak Taheri

Special Issue Editors:

Stanislav Ivanov, Professor in Tourism and Vice Rector (Research), Varna University of Management, Bulgaria

Ulrike Gretzel, Senior Fellow, USC Center for Public Relations, Annenberg School of Communication & Journalism, University of Southern California, USA

Ian Yeoman, Associate Professor, Victoria University of Wellington, New Zealand, and Visiting Professor, European Tourism Futures Institute, The Netherlands

<https://nexttourismgeneration.eu>

➤ **The Next Tourism Generation (NTG) is a Tourism Sector Skills Alliance for implementing a new strategic Blueprint approach to sectoral cooperation on skills**



➤ **14 partners represent the whole Tourism sector including specialists in hospitality, food and beverage, travel agencies, attractions and recreation.**

➤ **The blueprint strategy will respond to skills gaps in tourism and hospitality, especially soft skills and emerging skill needs in digital and sustainability applications**



➤ **NTG project will concentrate upon to bridge the gap between education and industry and progress the skills needed**



Co-funded by the
Erasmus+ Programme
of the European Union

Robots, AI and
automation
technologies have
already entered travel,
tourism and
hospitality ...

Application of robots, AI and automation technologies:

- *Hotels*



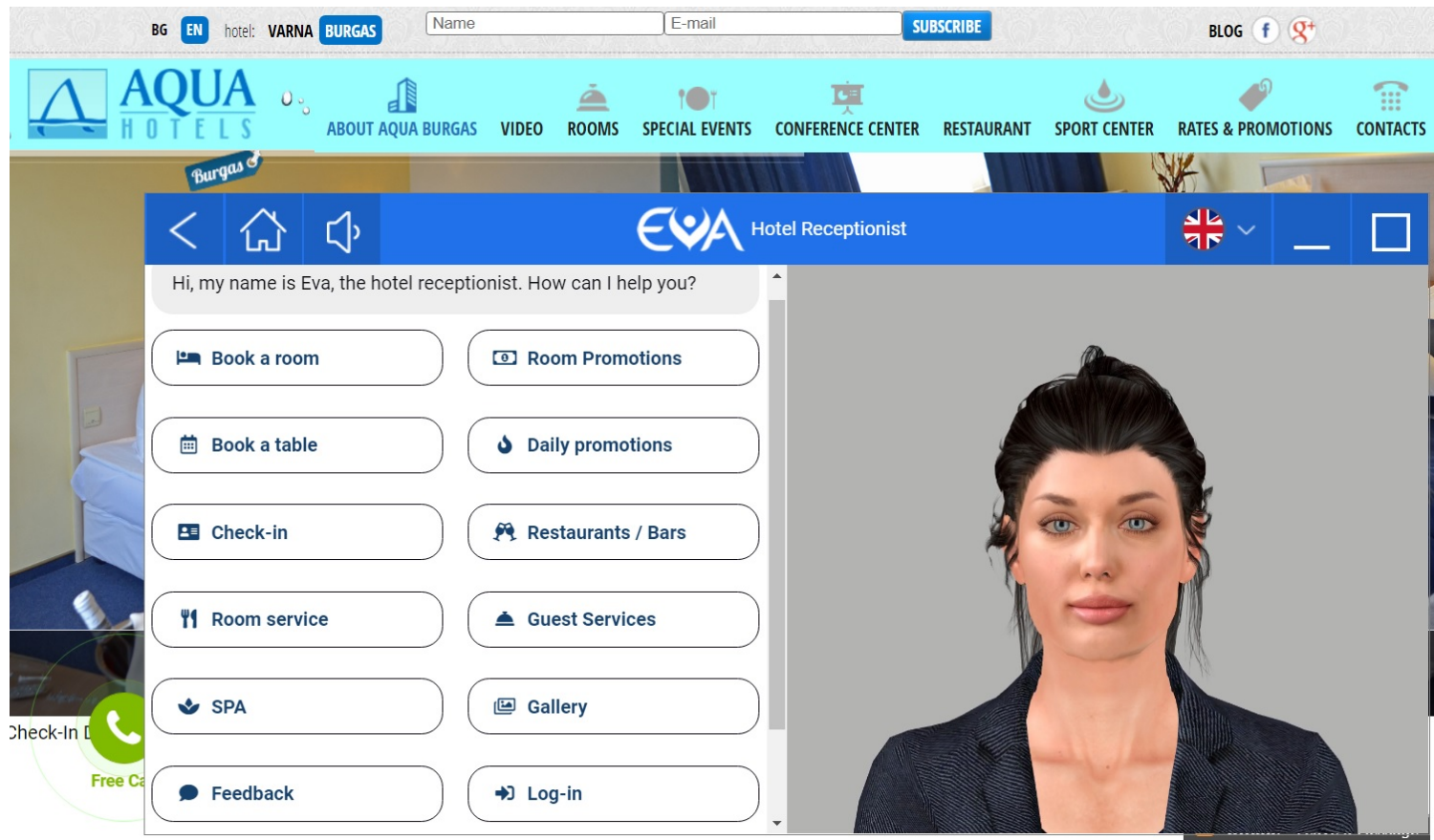
https://www.regalhotel.com/uploads/ricwc/pr-motion/room/720x475/Mobile_key.jpg



<https://media-cdn.tripadvisor.com/media/photo-s/09/48/07/4f/premier-inn-london-hanger.jpg>

Application of robots, AI and automation technologies:

- *Hotels*



Application of robots, AI and automation technologies:

- *Hotels*



Application of robots, AI and automation technologies:

- *Hotels*



http://www.h-n-h.jp/assets/images/facility_img_01.jpg

Application of robots, AI and automation technologies:

• Hotels



Japanese hotel staffed by 243 robots fires more than half of the bots - because they kept malfunctioning and creating MORE work for the human employees

- The Henn na chain - whose name means 'weird' - bills itself as offering the world's first hotels with robot staff
- It operates sites south of Nagasaki and east of Tokyo where the receptions are staffed by robot dinosaurs
- Chain has now culled over half of its 243 robots, many because they created work rather than reduced it

By MARK PRIGG FOR DAILYMAIL.COM

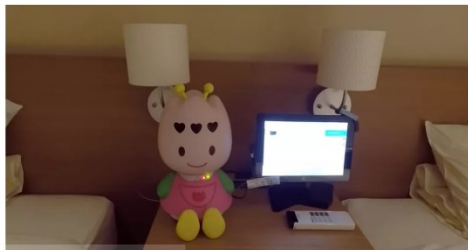


Japan's robot hotel lays off half the robots after they created more work for humans

It turns out even robots can't enjoy job security

By Shannon Liao | @Shannon_Liao | Jan 15, 2019, 4:30pm EST

SHARE



VIDEOS INDIA WORLD BUSINESS ENTERTAINMENT receptionist, an automated gardener and a one-armed luggage



World's first 'all robot hotel' fired half of its robotic staff after guests started 'missing' humans

Updated Jan 17, 2019 | 3:42 IST | Times Now Digital

Henn na Hotel is located in Nagasaki Prefecture.



An 'all robot' hotel in Japan laid off more than half its robotic staff after guests complained the machines 'lacked human intelligence' and had various practical limitations.

The *Henn na Hotel*, which translates to 'Weird Hotel', previously had 243 robot employees. The most popular ones were a velociraptor receptionist, an automated receptionist, and one-armed baggage handler, reported *The Independent*.

Application of robots, AI and automation technologies:

- *Restaurant*

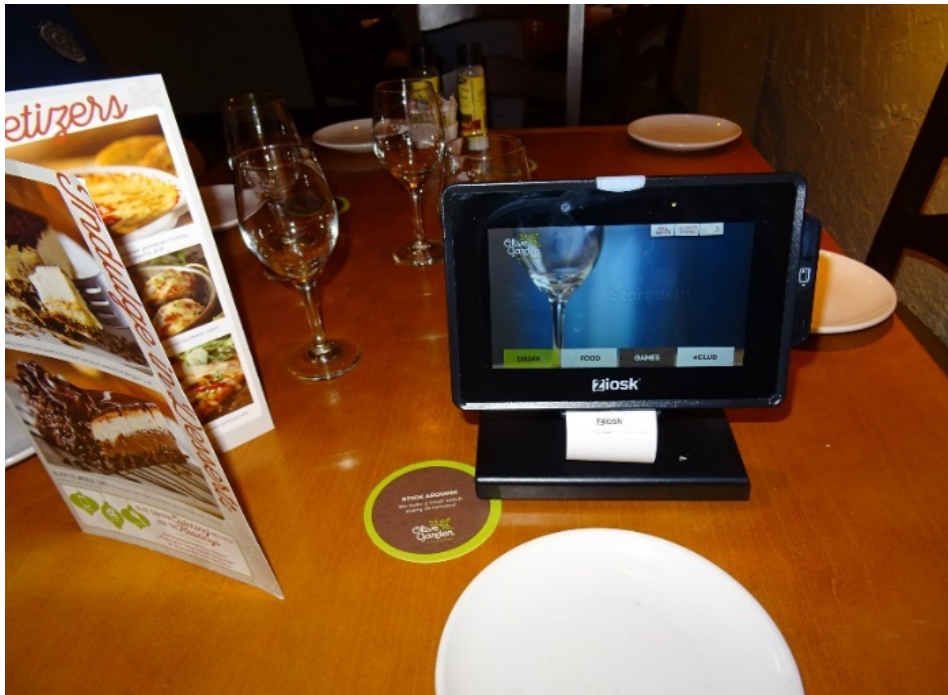


Photo credit: Stanislav Ivanov

Application of robots, AI and automation technologies:

- *Restaurants*



Photo credit: Stanislav Ivanov

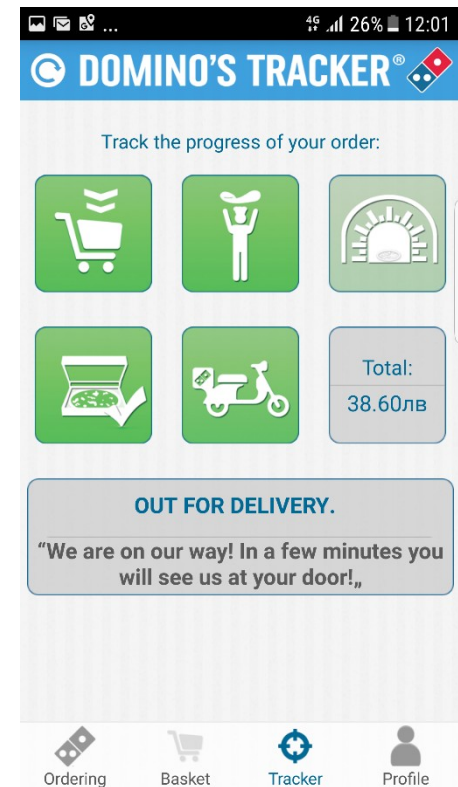
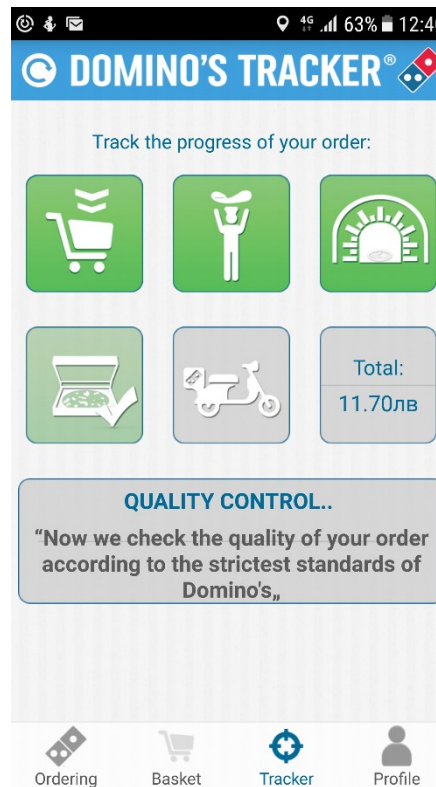
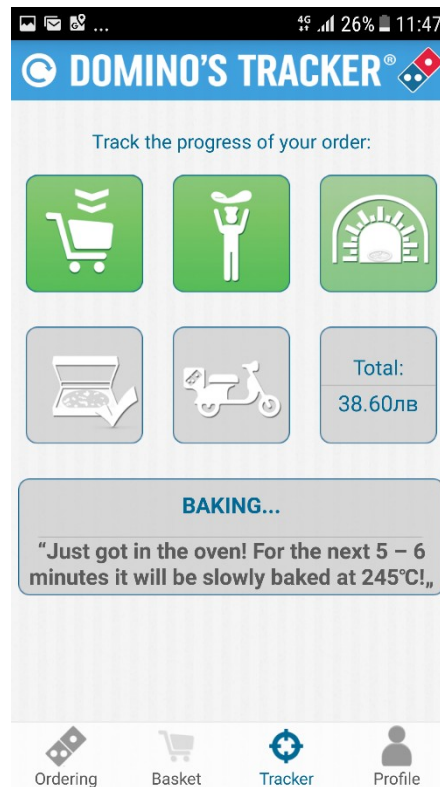
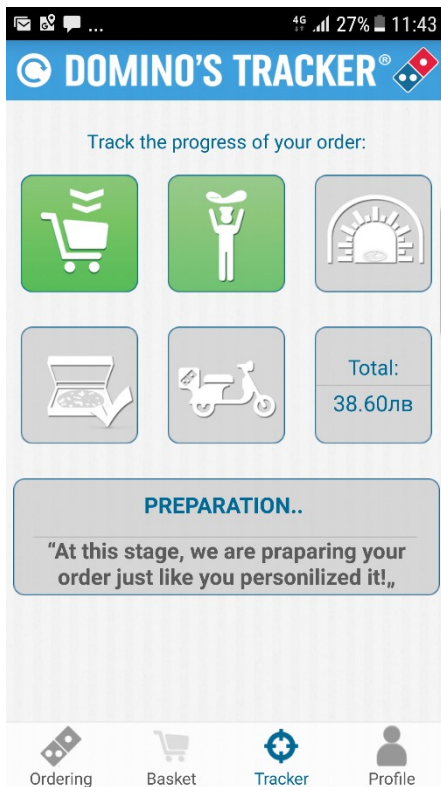
Application of robots, AI and automation technologies:

- *Restaurants*



Application of robots, AI and automation technologies:

- *Restaurants*



Application of robots, AI and automation technologies:

- *Restaurants*



https://amazing.zone/fotosblog/max/drone_q_entrega_pizzas.jpg

Application of robots, AI and automation technologies:

- *Restaurants*



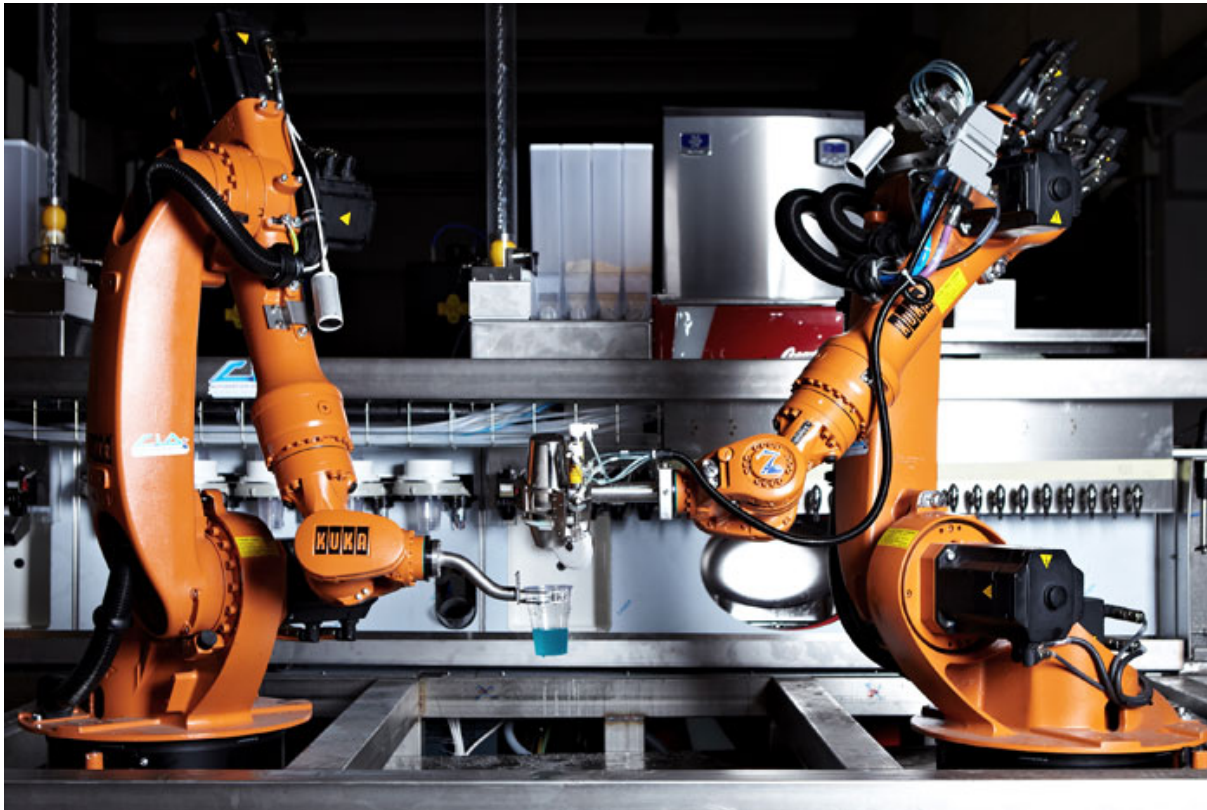
Application of robots, AI and automation technologies:

- *Meetings and events > Telepresence*



Application of robots, AI and automation technologies:

- *Meetings and events / Bars*



Application of robots, AI and automation technologies:

- *Theme and amusement parks*



Application of robots, AI and automation technologies:

- *Airports and other transport stations*



Application of robots, AI and automation technologies:

- *Airports and other transport stations*

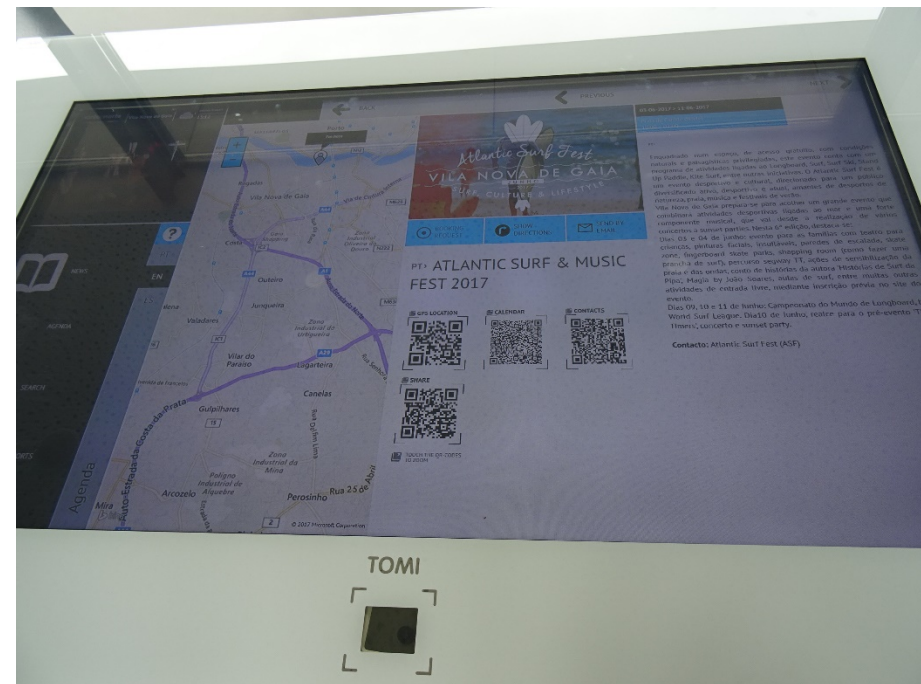


Application of robots, AI and automation technologies:

- *Travel agencies and Tourist information*



Photo credit: Stanislav Ivanov



Application of robots, AI and automation technologies:

- *Museums and art galleries*

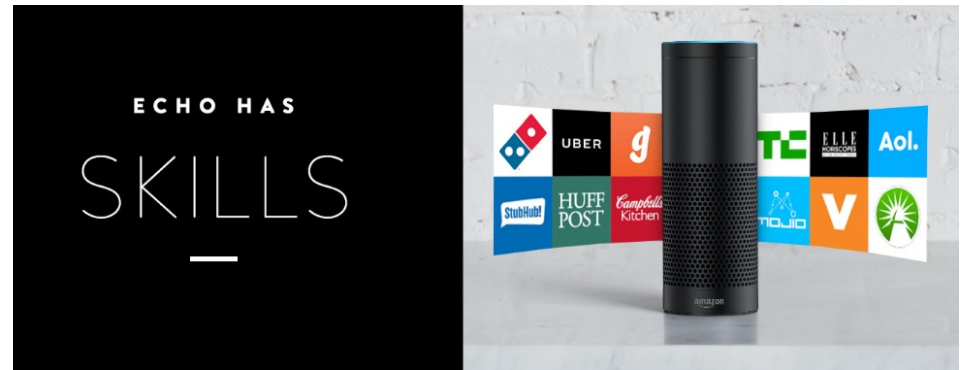


Application of robots, AI and automation technologies:

- *Digital assistants*

Introducing
echo show

Now Alexa can show you things



Skills add even more capabilities like ordering a pizza from Domino's, requesting a ride from Uber, opening your garage with Garageio, and more. Enabling skills lets your Echo do even more—simply discover and enable the skills you want to use in the Alexa App.

New skills are being added all the time. You can also see ratings and reviews to learn what other customers are saying about the thousands of skills available in the Alexa App. [Discover and enable skills.](#)

"Alexa, tell Garageio to close my door."

"Alexa, ask Automatic if I need gas."

"Alexa, ask HuffPost for headlines."

"Alexa, ask TV Shows what time does
The Walking Dead start?"

"Alexa, ask Campbell's Kitchen for a recipe."

"Alexa, ask Fidelity, how is the
NASDAQ doing today?"

Application of robots, AI and automation technologies:

- *Chatbots*



Plovdiv City Concierge

19:56 Ч.

Начало

Hey, Stanislav,
Welcome to Plovdiv City Concierge!
I am your Plovdiv' Tourist virtual guide,
here to help you 24/7 in English.

In order to assist you better, could you
please tell me first, are you local or
visitor?
Just click on the button:

Local

Visitor

Plovdiv City Concierge
Active on Messenger

Weather

For how many days do you want to see the
forecast?



Forecast for 04 Jun 2019 Overcast clouds
Sunrise: 02:43:57 hours

Plovdiv City Concierge
Active on Messenger

Local

Let me tell you a few words about me. 😊

At the moment I have 392 businesses, services and places in
my database. I keep learning every day.

By the way:

- ➡ You can always unsubscribe by typing **X**Stop.
- ➡ There are helpful shortcuts at the bottom menu,
including GDPR and your location setting.
- ➡ Type Menu to get to the list of all categories (broad
search).
- ➡ Type the keyword of what you look for to get faster there,
like "museum", "hotel", "bar" or the name of the venue ...

? Would you like me to show you more tips about
how to use me?

Tips to use you

Last question: would you like occasionally to receive news
from Plovdiv? You will be able to unsubscribe at any time.

Yes

No

Adoption of robots and service automation in tourism

- *Car rental*

Five simple steps to Zipcar freedom.



join

Apply online. Once approved, we'll send you a Zipcard to access vehicles worldwide.



reserve

Find a Zipcar near you and reserve it for the time you need, whether it's for as little as one hour or as long as 7 days.



unlock

When it's time for your reservation, unlock your car using your Zipcard. The keys are inside the car.



drive

Take your Zipcar wherever you want for the time you reserved. Extend in the mobile app or by text message if needed.

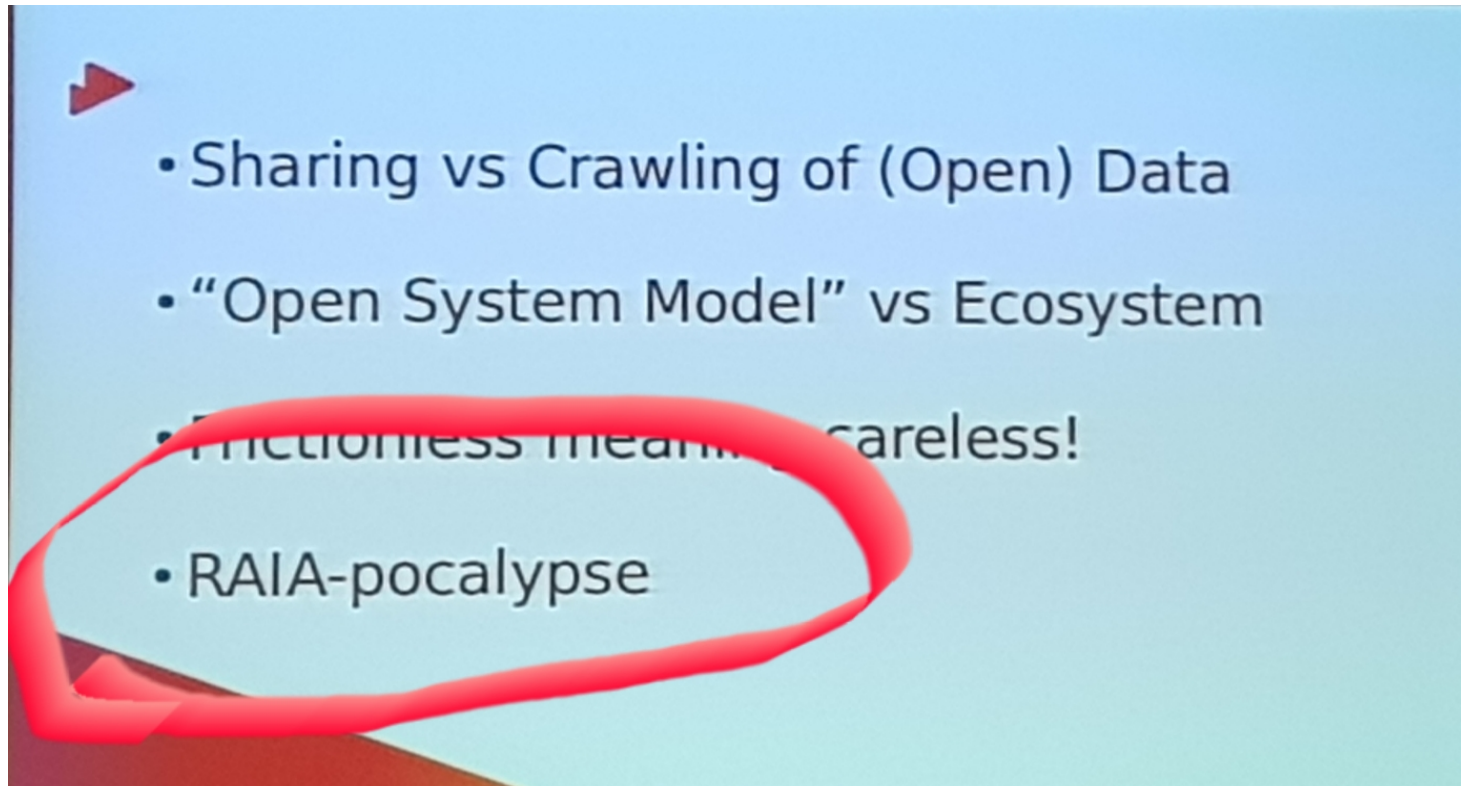


return

Drop off your Zipcar in the designated parking spot. Lock up with the app or your Zipcard, and you're done!

Adoption of robots and service automation in tourism

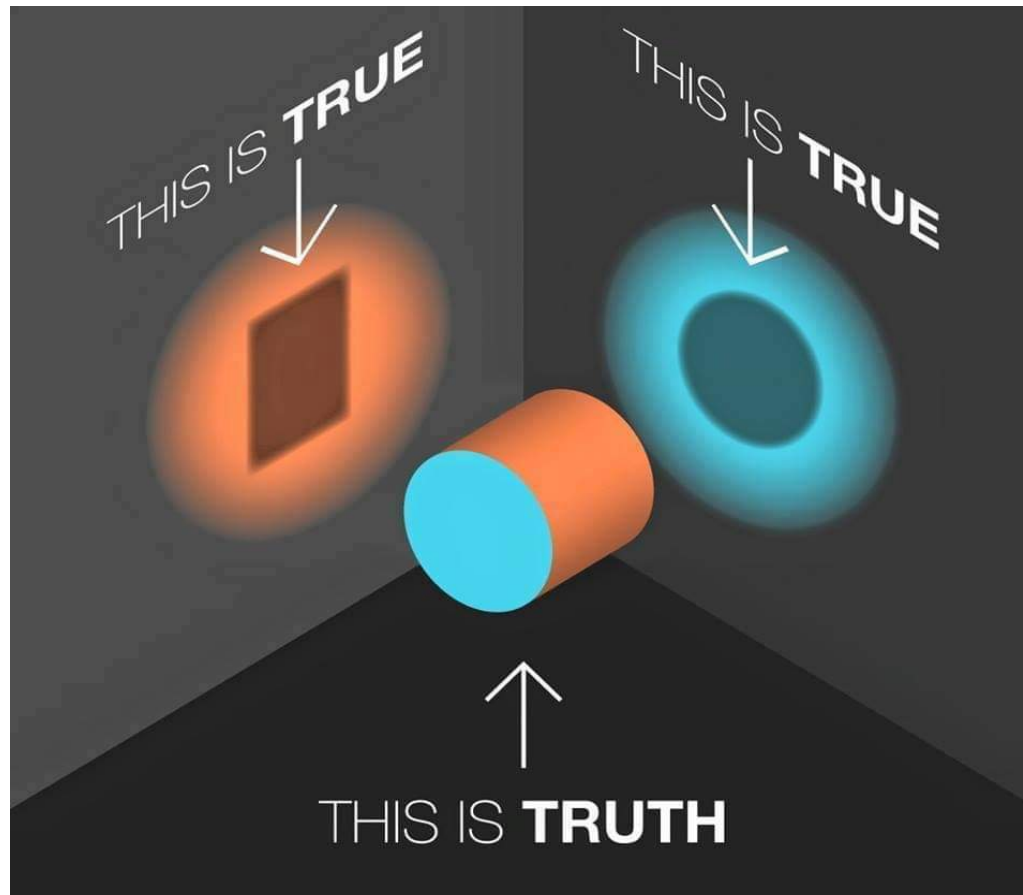
- *RAIA-pocalypse*



Source: Daniele Gobbetti, Peer Srl, Lion-App Summer School, 6th July 2019, Trento, Italy

Adoption of robots and service automation in tourism

- *Holistic perspective*



Research on robots in tourism

Research on robots in tourism

Brave new world: service robots in the frontline

Jochen Wirtz

Department of Marketing, National University of Singapore, Singapore

Paul G. Patterson

Department of Marketing, University of New South Wales, Sydney, Australia

Werner H. Kunz

Department of Marketing, University of Massachusetts, Boston, Massachusetts, USA

Thorsten Gruber

Centre for Service Management, Loughborough University, Loughborough, UK

Vinh Nhat Lu

Research School of Management, Australian National University, Canberra, Australia

Stefanie Paluch

School of Business and Economics, Rheinisch-Westfälische Technische Hochschule Aachen University, Aachen, Germany, and

Antje Martins

Business School, The University of Queensland, Brisbane, Australia

Investigating an innovative service with hospitality robots

Chun-Min Kuo

National Chin-Yi University of Technology, Taichung, Taiwan

Li-Cheng Chen

Department of Hospitality Management, Tajen University, Pingtung County, Taiwan, and

Chin-Yao Tseng

Department of Tourism and Leisure Management, Yuanpei University of Medical Technology, Hsinchu, Taiwan

ISSN (PRINT): 1994 - 7658

ISSN (ONLINE): 1314 - 0817



European Journal of Tourism Research

<http://ejtr.vumk.eu>



Dawning of the Age of Robots in Hospitality and Tourism: Challenges for Teaching and Research

Jamie Murphy ^{1*}, Charles Hofacker ² and Ulrike Gretzel ³

Research on robots in tourism


Adoption of **robots** and **service automation** by tourism and hospitality companies

STANISLAV IVANOV * [stanislav.ivanov@vumk.eu]

CRAIG WEBSTER ** [cwebster3@bsu.edu]

KATERINA BEREZINA *** [katerina@katerinaberezina.com]

Int. J. Human-Computer Studies 82 (2015) 83–95



Contents lists available at [ScienceDirect](#)

Int. J. Human-Computer Studies

journal homepage: www.elsevier.com/locate/ijhcs



A bellboy robot: Study of the effects of robot behaviour on user engagement and comfort [☆]

Eduardo Rodriguez-Lizundia ^a, Samuel Marcos ^b, Eduardo Zalama ^a,
Jaime Gómez-García-Bermejo ^{a,*}, Alfonso Gordaliza ^c



Research on robots in tourism

Robotics and Autonomous Systems 79 (2016) 40–57



Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Robotics and Autonomous Systems

journal homepage: www.elsevier.com/locate/robot



Letter to the editor

Long-term assessment of a service robot in a hotel environment



Roberto Pinillos^a, Samuel Marcos^a, Raul Feliz^a, Eduardo Zalama^{b,*},
Jaime Gómez-García-Bermejo^b

^a *Fundación Cartif. Parque Tecnológico de Boecillo. Parcela 205. Boecillo, Valladolid, Spain*

^b *Instituto de las Tecnologías Avanzadas de la Producción. University of Valladolid, Spain*

Exploring customer experiences with robotics in hospitality

Vincent Wing Sun Tung and Norman Au
*The School of Hotel and Tourism Management,
The Hong Kong Polytechnic University, Kowloon, Hong Kong*

Research on robots in tourism

Perceptual Differences toward Humanlike Robots and Humans in Service: Individualist versus Collectivist Cultures

Yu Chung-En
Tourism College
Institute for Tourism Studies Macau, China

Sacarino, a Service Robot in a Hotel Environment

Eduardo Zalama¹, Jaime Gómez García-Bermejo¹, Samuel Marcos²,
Salvador Domínguez³, Raúl Feliz², Roberto Pinillos², and Joaquín López³

The potential for tourism and hospitality experience research in human-robot interactions

Vincent Wing Sun Tung and Rob Law
*School of Hotel and Tourism Management, Hong Kong Polytechnic University,
Kowloon, Hong Kong*

Research on robots in tourism

Attitudes Toward Autonomous on Demand Mobility System: The Case of Self-Driving Taxi

Iis P. Tussyadiah, Florian J. Zach and Jianxi Wang

Consumer Evaluation of Hotel Service Robots

Iis P. Tussyadiah¹(✉) and Sangwon Park²

Research on robots in tourism

International Journal of Hospitality Management 80 (2019) 36–51



Contents lists available at [ScienceDirect](#)

International Journal of Hospitality Management

journal homepage: www.elsevier.com/locate/ijhm



Developing and validating a service robot integration willingness scale

Lu Lu^{a,*}, Ruiying Cai^b, Dogan Gursoy^c



The power of head tilts: gender and cultural differences of perceived human vs human-like robot smile in service

Chung-En Yu and Henrique F. Boyol Ngan

Research on robots in tourism

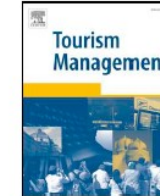
Tourism Management 73 (2019) 172–181



Contents lists available at [ScienceDirect](#)

Tourism Management

journal homepage: www.elsevier.com/locate/tourman



Hotel employee's artificial intelligence and robotics awareness and its impact on turnover intention: The moderating roles of perceived organizational support and competitive psychological climate

Jun (Justin) Li^a, Mark A. Bonn^b, Ben Haobin Ye^{a,*}



International Journal of Hospitality Management 82 (2019) 32–38



Contents lists available at [ScienceDirect](#)

International Journal of Hospitality Management

journal homepage: www.elsevier.com/locate/ijhm



“How may i help you?” Says a robot: Examining language styles in the service encounter

Sungwoo Choi^{a,*}, Stephanie Q. Liu^b, Anna S. Mattila^c




Research on robots in tourism

JOURNAL OF HOSPITALITY MARKETING & MANAGEMENT
<https://doi.org/10.1080/19368623.2019.1592733>

 **Routledge**
Taylor & Francis Group



Humanlike robots as employees in the hotel industry: Thematic content analysis of online reviews

Chung-En Yu 



JOURNAL OF TRAVEL & TOURISM MARKETING
<https://doi.org/10.1080/10548408.2019.1571983>

 **Routledge**
Taylor & Francis Group

ARTICLE



Marketing robot services in hospitality and tourism: the role of anthropomorphism

Jamie Murphy ^a, Ulrike Gretzel^b and Juho Pesonen ^a

Research on robots in tourism

Technology in Society 55 (2018) 24–32



Contents lists available at [ScienceDirect](#)

Technology in Society

journal homepage: www.elsevier.com/locate/techsoc



Young Russian adults' attitudes towards the potential use of robots in hotels

Stanislav Ivanov^{a,*}, Craig Webster^b, Aleksandra Garenko^c



Stanislav Ivanov / Craig Webster / Peyman Seyyedi

Consumers' attitudes towards the introduction of robots in accommodation establishments

Research on robots in tourism

Perceived Appropriateness and Intention to Use Service Robots in Tourism

Stanislav Ivanov^{1(✉)} and Craig Webster²

What Should Robots Do? A Comparative Analysis of Industry Professionals, Educators and Tourists

Stanislav Ivanov^{1(✉)} and Craig Webster²

Research on robots in tourism

Designing robot-friendly hospitality facilities

Stanislav Ivanov and Craig Webster

THE ROBOT AS A CONSUMER: A RESEARCH AGENDA

*Professor Stanislav Ivanov, PhD¹, stanislav.ivanov@vumk.eu
Assistant Professor Craig Webster, PhD², cwebster3@bsu.edu*

TOURISM BEYOND HUMANS – ROBOTS, PETS AND TEDDY BEARS

Stanislav Ivanov

Research on robots in tourism

DE GRUYTER OLDENBOURG

ZfTW 2019; Volume 11 (1): 25-43

Stanislav Ivanov*

Ultimate transformation: How will automation technologies disrupt the travel, tourism and hospitality industries?

DOI 10.1515/tw-2019-0003

ADOPTION OF ROBOTS, ARTIFICIAL
INTELLIGENCE AND SERVICE AUTOMATION
BY TRAVEL, TOURISM AND HOSPITALITY
COMPANIES:
A COST-BENEFIT ANALYSIS

STANISLAV IVANOV AND CRAIG WEBSTER

Research on robots in tourism

Progress on robotics in hospitality and tourism: a review of the literature

Stanislav Ivanov

Department of Tourism, Varna University of Management, Varna, Bulgaria

Ulrike Gretzel

*USC Center for Public Relations, Annenberg School of Communication and
Journalism, University of Southern California,
Los Angeles, California, USA*

Katerina Berezina

*Department of Nutrition and Hospitality Management,
University of Mississippi, Mississippi, USA*

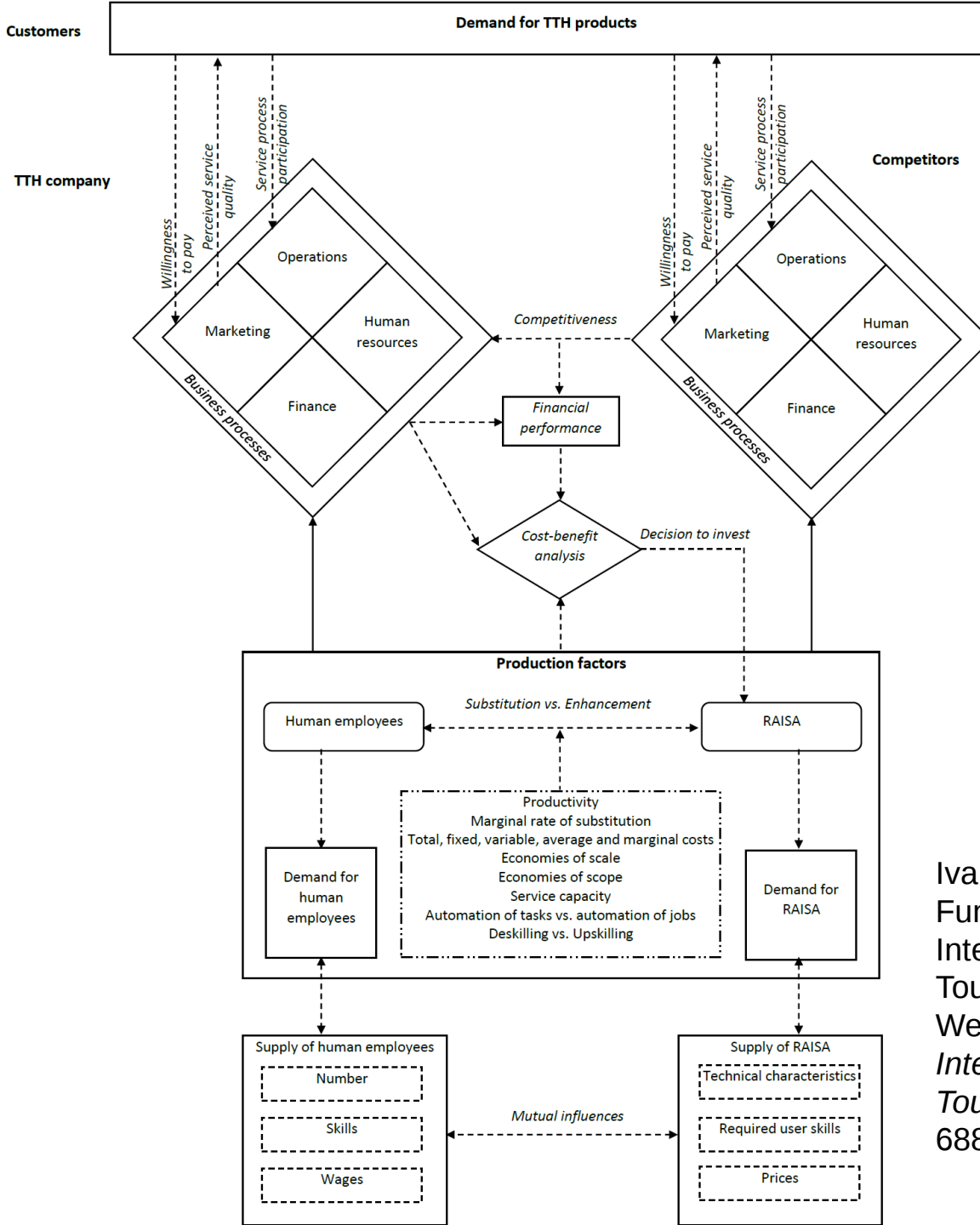
Marianna Sigala

*School of Management, University of South Australia Business School,
Adelaide, Australia, and*

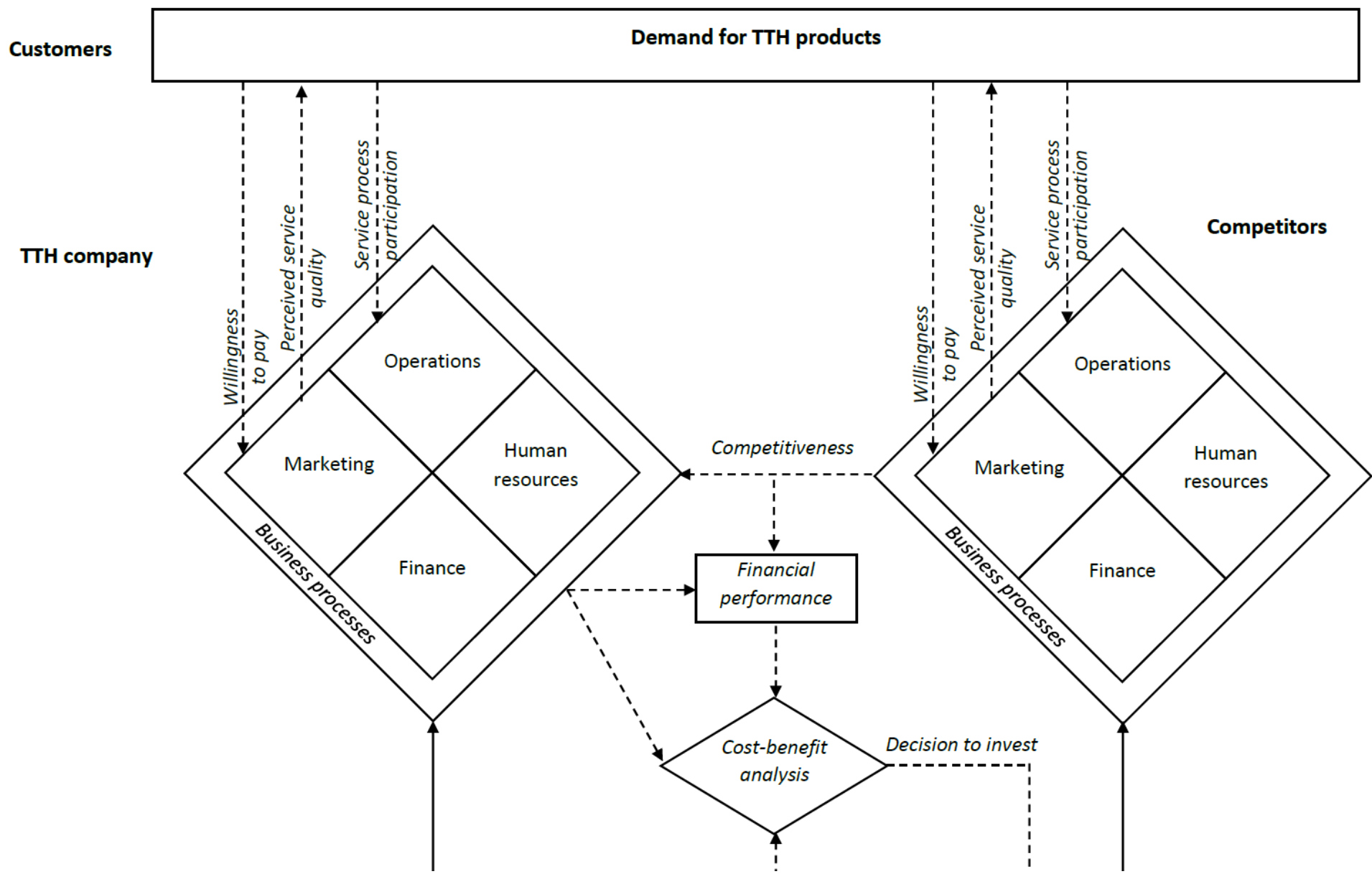
Craig Webster

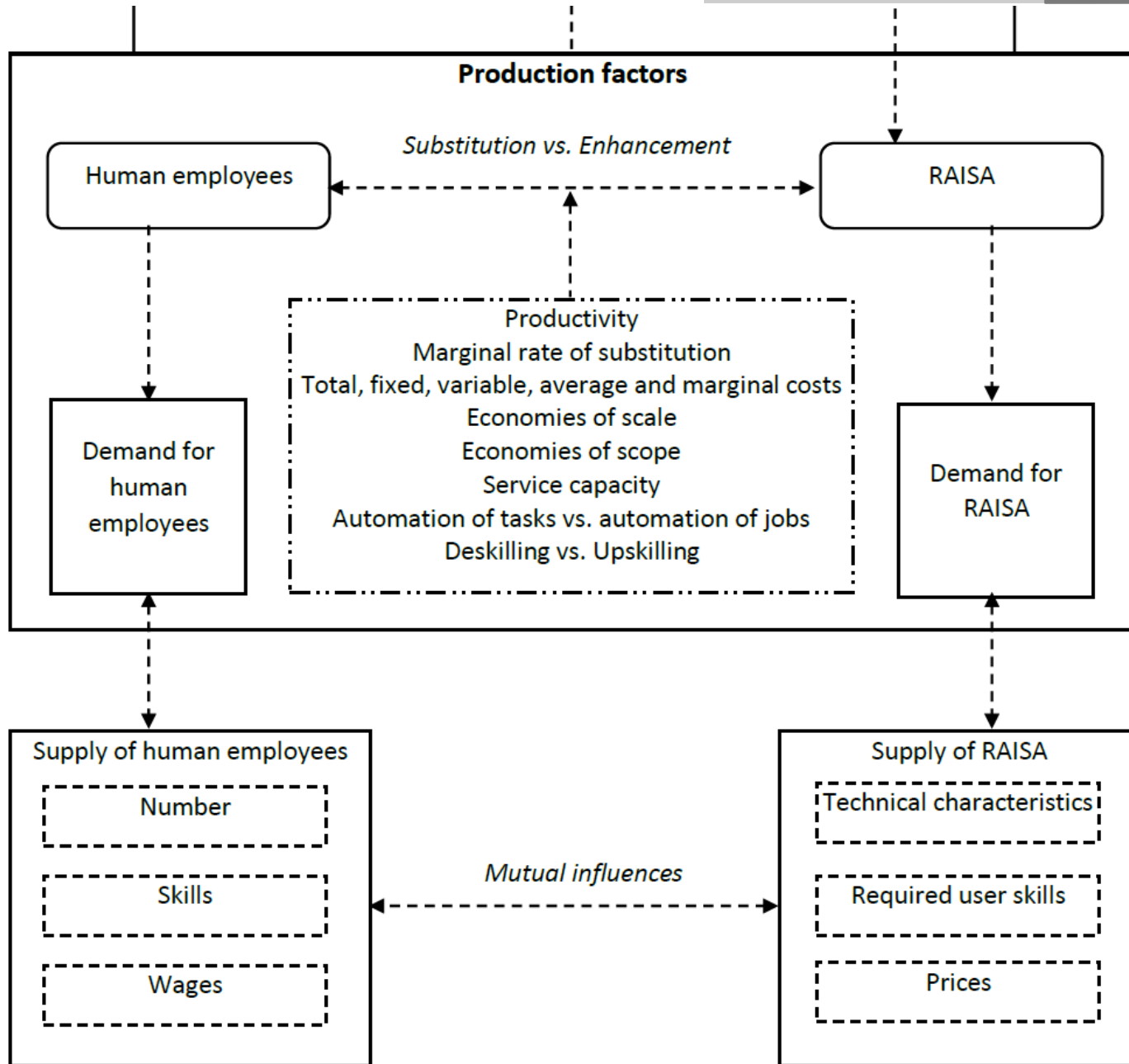
Department of Management, Ball State University, Muncie, Indiana, USA

The economics of RAISA technologies in tourism



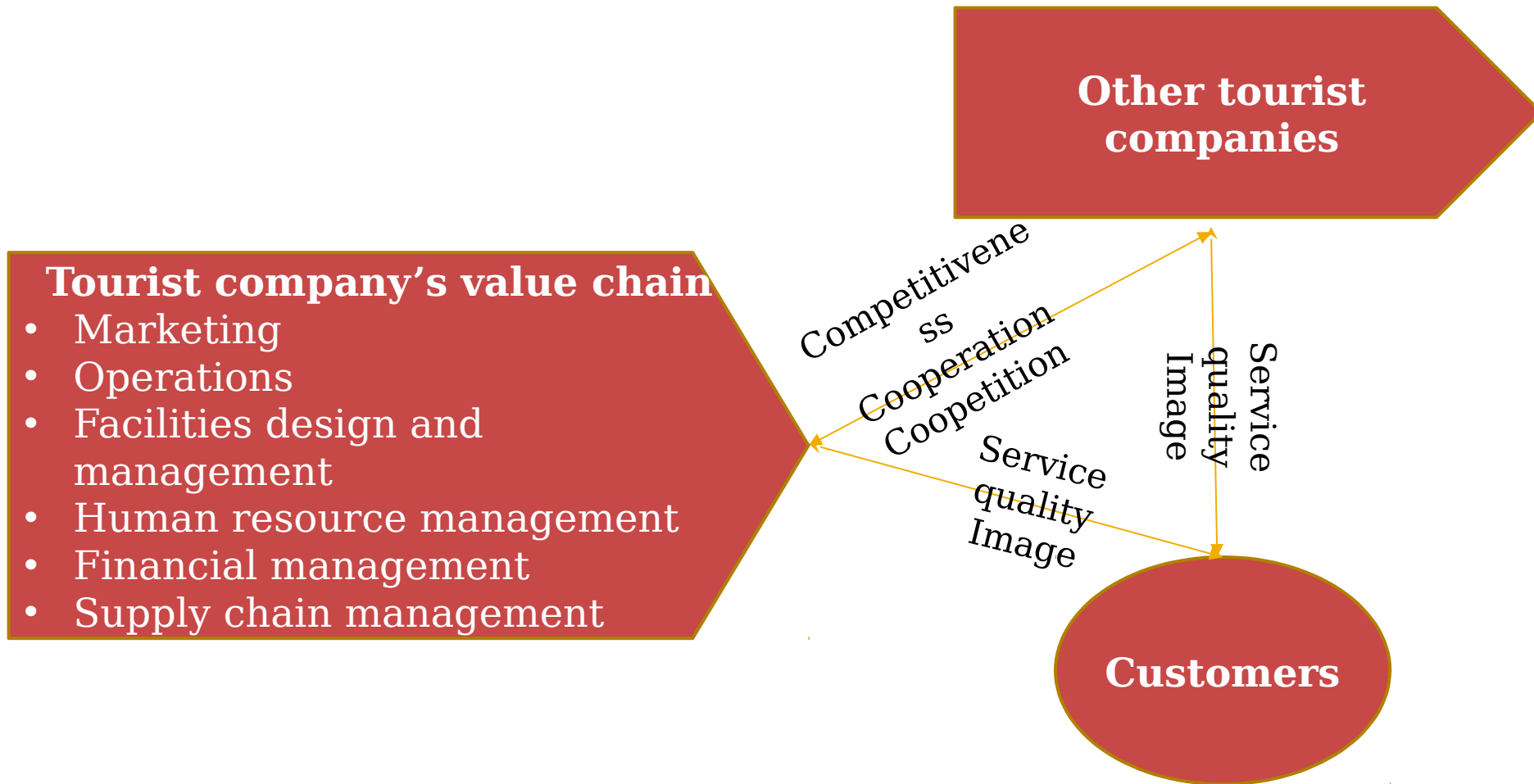
Ivanov, S., & Webster, C. (2019). Economic Fundamentals of the Use of Robots, Artificial Intelligence and Service Automation in Travel, Tourism and Hospitality. In Ivanov, S., & Webster, C. (Eds.) (2019). *Robots, Artificial Intelligence and Service Automation in Travel, Tourism and Hospitality*. ISBN: 978-1-78756-688-0. Emerald Publishing (in press).





How will RAISA technologies
disrupt the tourism industry?

Impacts of RAISA technologies



How will RAISA technologies
disrupt the tourism industry?

OPERATIONS

Impacts of RAISA technologies

Operations

- *Service is delivered by a robot, computer programme, a kiosk, a vending machine or another non-human agent*
- *Increased service capacity of tourism companies – more customers can be served simultaneously and for a particular period of time > increased productivity*
- *Easier scheduling and planning of operations – robots work 24/7, they do not get ill, complain, shirk from work, etc.*

Impacts of RAISA technologies

Operations

- *Reengineering of service delivery processes*
 - new processes, activities, procedures, controls, new service operations manuals
- *Increased role of the customer in the service delivery* > prosumer (=“producer” + “consumer”) > co-creation of value
- *Improved environmental sustainability of operations* – reduced use of resources, reduced waste, elimination of unnecessary activities, etc.
- *Decreased flexibility of the service delivery system*

How will RAISA technologies
disrupt the tourism industry?

HOSPITALITY FACILITIES
DESIGN

Types of robots to use the facilities of service companies

		Type of robot	
		Stationary	Mobile (wheeled, legged, flying, underwater)
Ownership	Company	Front desk robots Robot chef/Cooking robots Robot baristas Robot bartenders Shoe shine machines ATMs Concierge service robots Security robots Massage robots	Security robots Robot guides Robot waiters Companion/sex robots Pet robots Robotic luggage carts Room service deliver robots Robotic vacuum cleaners Robotic lawnmowers Robotic pool cleaners Delivery drones Entertainment robots General service robots
	Customer	(Customers are unlikely to bring stationary robots to hospitality industries, in most situations, apart from extended stay facilities)	Companion/sex robots Pet robots Concierge service robots General service robots

Robot-friendly/robot-inclusive environment (1)

- Tan, Mohan & Watanabe (2016) develop a theoretical framework for robot-inclusive environments which includes two spectra: *level of autonomy of a mobile robot* and *robot-inclusiveness of the environment* in which the robot operates.
- The authors define the robot-inclusiveness as how much the design of the environment takes into account the robot therein, i.e. whether it helps the robot fulfil its tasks.

Robot-friendly/robot-inclusive environment (2)

- The *design* of the premises where the robot needs to operate in, their *cleanliness, tidiness, signage, lightning, noise, physical barriers* (e.g. doors, doorsteps, stairs), *presence of people* and *dynamic* of the environment, presence/lack of *predetermined routes* for robot movement, presence/lack of (artificial) *landmarks* and *sensors* to help robot navigation, etc., all determine the degree to which the environment assists the robot fulfil its tasks – e.g. to deliver the food to the hotel room, to cut the grass in the garden, or to accompany the passengers to the airport gate

When the environment is more robot-inclusive, then the same task can be performed by a less intelligent robot and vice versa: an environment that is not robot-friendly would require a more intelligent robot to navigate through it.

Key considerations in robot-friendly facilities design for service companies

- External physical accessibility of the premises
- Internal physical accessibility of the premises
- Digital map of facilities for robot navigation
- Landing pads for drones
- Shape and surface materials used for the pool
- Safety and security issues
- Recognition of staff, guests, delivery service, and others
- Power-related issues
- Rental facilities for robots
- Repair facilities for robots
- Liability insurance for robots

Robot-friendliness of hospitality facilities will be a new competitive advantage for travel, tourism and hospitality companies!

How will RAISA technologies
disrupt the tourism industry?

HUMAN RESOURCE
MANAGEMENT

Impacts of RAISA technologies

Human resource management

- RAISA would *save employees' time* from performing tedious and repetitive tasks, which they could use for other more creative and revenue generating activities.
- Initially *enhancing*, later *replacing* the employees
- RAISA would *solve some the problems with hiring and firing of employees*, especially the seasonal ones.
- Sometimes RAISA would require *reorganisation of companies* - new departments, job positions, communication

Impacts of RAISA technologies

Human resource management

- Changes in the *number* of employees in the various departments > *zero-employee* properties (Central hostel in Varna, Bulgaria)
- *Resistance* of employees – perceive RAISA as threat for their job positions
- Changes in the required *skills* of employees – communication, social, technical skills > required changes in the curricula of the tourism and hospitality programmes in HEIs

How will RAISA technologies
disrupt the tourism industry?

MARKETING

Impacts of RAISA technologies

Product and service quality

- *Changed customer expectations about the tourism / hospitality product > redefinition of the scope of the product of a tourist company – e.g. should a hotel company be able to provide robot repair service? Or a sex robot?*

Impacts of RAISA technologies

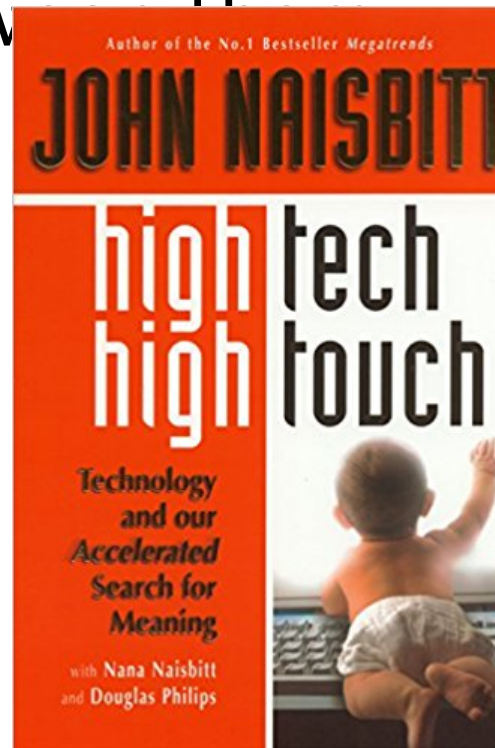
Product and service quality

- RAISA could *enhance the perceived service quality* through new attractive and interactive ways of service delivery, communicating and engaging with customers:
 - Robots, chatbots, service kiosks could *communicate in different languages and do this 24/7*
 - RAISA can *create value for the customers* by making the service deliver process *funny and entertaining*

Impacts of RAISA technologies

Product and service quality

- Division of tourism / hospitality companies into two main large groups – ‘*high-tech*’ vs ‘*high-touch*’ companies with various shades of gray in between



Impacts of RAISA technologies

Pricing

- *Automated pricing*
- *Personalised pricing* – perfect price discrimination
- *Lower prices* for mass ‘high-tech’ products
- *Higher prices* for exclusive ‘high-touch’ products

Impacts of RAISA technologies

Distribution

- Predictive analytics
- Automated allocation of available capacity by distribution channel > intelligent channel managers
- Distribution via digital voice assistants (Amazon)



Impacts of RAISA technologies

Communications, image,

positioning

- The company that adopts RAISA would boast *positive word-of-mouth* due to its *image of an innovative high-tech company*.
- The company may also suffer *negative publicity* - it may be perceived as a company that puts profits before humans
- *Automated communications with customers*
- chatbots, voice assistants, robots

Impacts of RAISA technologies

Robots as consumers and tourists

Autonomous car's involvement in the consumer behaviour of

Stage	Autonomous car's involvement
Need recognition	<ul style="list-style-type: none"> Identify the need for car maintenance after specific number of kilometres or months since last maintenance
Information search	<ul style="list-style-type: none"> Find authorised car maintenance centres
Evaluation of alternatives	<ul style="list-style-type: none"> Find available time slots at authorised car maintenance centres Decide on the specific service and price
Purchase decision	<ul style="list-style-type: none"> Select the time slot that best matches the schedule of the owner
Purchase	<ul style="list-style-type: none"> Make payment with the e-wallet of the owner
Consumption process	<ul style="list-style-type: none"> Drive to the car maintenance centre Undergo maintenance Drive back to the owner's home
Post-consumption behaviour	<ul style="list-style-type: none"> Perform check whether the systems of the car operate properly

If a robot can make these decisions, who is the consumer then – the robot or its owner?

How will RAISA technologies
disrupt the tourism industry?

FINANCIAL MANAGEMENT

Impacts of RAISA technologies

Financial management

- *Labour costs savings* - RAISA work 24/7 and may serve numerous customers simultaneously.
- *Increased sales* - customers' curiosity in seeing the robots, 24/7 availability

Impacts of RAISA technologies

Financial management

Financial costs, associated with RAISA (1)

- *Acquisition costs* – e.g. for purchasing a robot or kiosk, for purchasing a chatbot/payment for its development.
- *Installation costs* – might be virtually zero for a chatbot.
- *Maintenance costs* – electricity consumption of the robot/kiosk, spare parts, periodic maintenance, repair works, etc. They will be zero for a chatbot.
- *Software update costs.*

Impacts of RAISA technologies

Financial management

Financial costs, associated with RAISA (2)

- *Costs for adapting the premises to facilitate robot's mobility* – e.g. removing any barriers for robot's movement within a hotel.
- *Costs for hiring specialists to operate and maintain the robots/kiosks/chatbots.*
- *Costs for staff training.*
- *Insurance costs for the robots/kiosks, insurance for damages caused by a robot, etc.*

How will RAISA technologies
disrupt the tourism industry?

SUPPLY CHAIN MANAGEMENT

Impacts of RAISA technologies

Supply chain management

- Integration of the information systems of suppliers and travel, tourism and hospitality companies
- Automated order



<https://www.samsung.com/au/family-hub-refrigerator/>

What factors determine the impact of RAISA technologies on travel, tourism and hospitality companies?

Factors determining the impacts of RAISA

- Company characteristics / culture
- Market positioning of the company
- Relative labour and technology costs, relative labour and RAISA productivity
- Degree of technological complexity / Technological characteristics of RAISA solutions
- Safety characteristics of RAISA
- Customers' readiness and willingness to be served by a robot, willingness to pay for robot-delivered services
- Employee's readiness and willingness to work with a robot
- Cultural characteristics of both customers and

Cultural characteristics of society



In one week ...



Robots have arrived and are
here to stay.

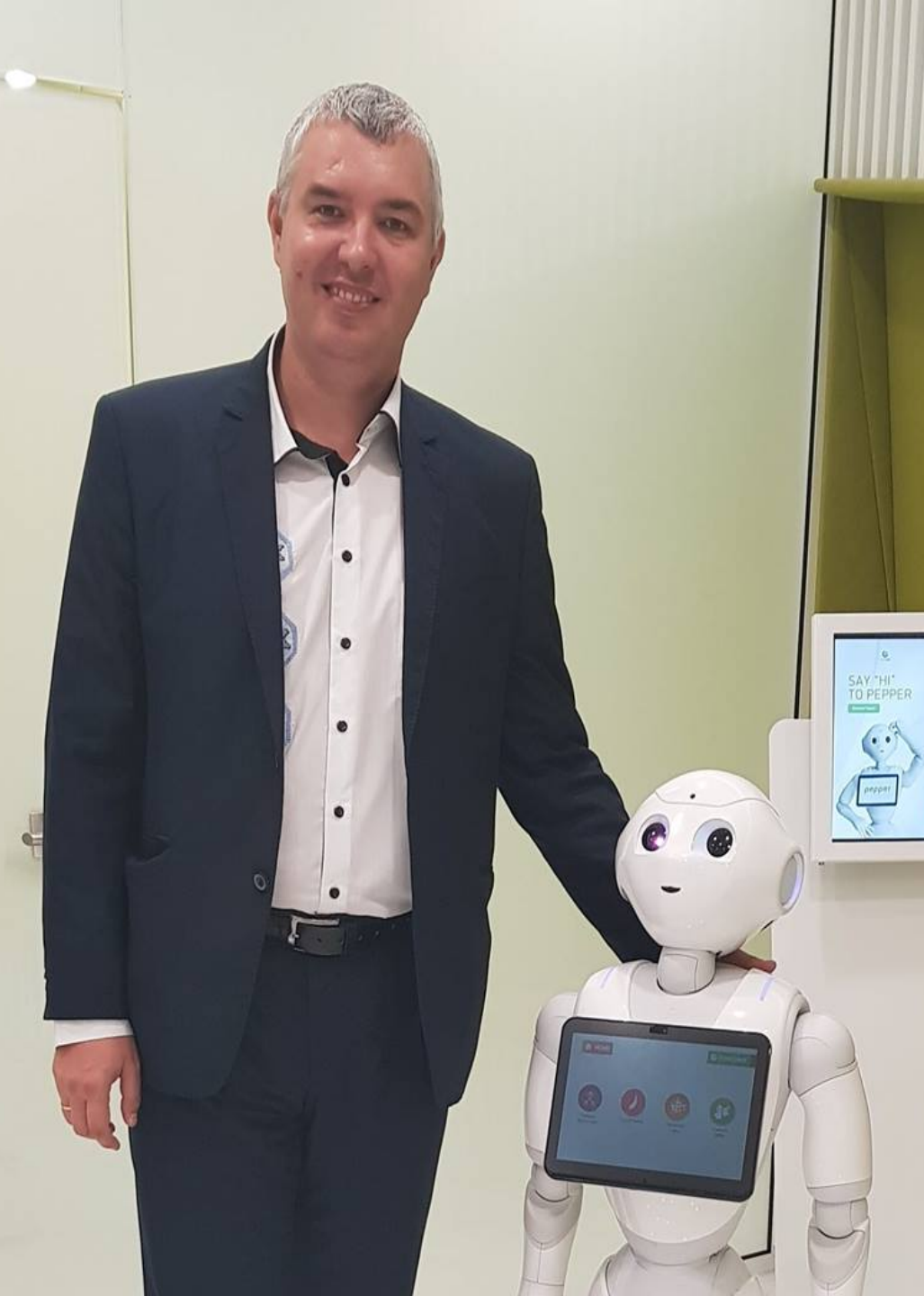
Prepare ...

References and further reading

- Collins, G. R., Cobanoglu, C., Bilgihan, A., & Berezina, K. (2017). *Hospitality information technology: Learning how to use it*. (8th ed.). Dubuque, IA: Kendall/Hunt Publishing Co. Chapter 12: Automation and Robotics in the Hospitality Industry (pp. 413-449).
- Huang, M. H., & Rust, R. T. (2018). Artificial intelligence in service. *Journal of Service Research*, 21(2), 155-172.
- Ivanov, S. (2019a). Ultimate transformation: How will automation technologies disrupt the travel, tourism and hospitality industries? *Zeitschrift für Tourismuswissenschaft* 11(1), 25-43.
- Ivanov, S. (2019b). Tourism beyond humans - robots, pets and Teddy bears. In Rafailova, G. & Marinov, S. (Eds.) *Tourism and Intercultural Communication and Innovations*. Newcastle upon Tyne: Cambridge Scholars Publishing, pp. 12-30.
- Ivanov, S., & Webster, C. (2017a). The robot as a consumer: a research agenda. *Proceedings of the "Marketing: experience and perspectives" Conference*, 29-30 June 2017, University of Economics-Varna, Bulgaria, pp. 71-79.
- Ivanov, S., & Webster, C. (2017b). Designing robot-friendly hospitality facilities. *Proceedings of the Scientific Conference "Tourism. Innovations. Strategies"*, 13-14 October 2017, Bourgas, Bulgaria, pp. 74-81.
- Ivanov, S., & Webster, C. (2018). Adoption of robots, artificial intelligence and service automation by travel, tourism and hospitality companies - a cost-benefit analysis. In Marinov, V., Vodenska, M., Assenova, M. & Dogramadjieva E. (Eds) *Traditions and Innovations in Contemporary Tourism*, Cambridge: Cambridge Scholars Publishing, pp. 190-203.
- Ivanov, S., & Webster, C. (2019a). What should robots do? A comparative analysis of industry professionals, educators and tourists. In Pesonen, J. & Neidhardt, J. (Eds.) *Information and Communication Technologies in Tourism 2019*, Proceedings of the International Conference in Nicosia, Cyprus, 30.01-01.02.2019, pp. 249-262. Cham: Springer.
- Ivanov, S., & Webster, C. (2019b). Perceived appropriateness and intention to use service robots in tourism. In Pesonen, J. & Neidhardt, J. (Eds.) *Information and Communication Technologies in Tourism 2019*, Proceedings of the International Conference in Nicosia, Cyprus, 30.01-01.02.2019, pp. 237-248. Cham: Springer.
- Ivanov, S., & Webster, C. (Eds.) (2019c). *Robots, Artificial Intelligence and Service Automation in Travel, Tourism and Hospitality*. ISBN: 978-1-78756-688-0. Emerald Publishing (in press).
- Ivanov, S., Gretzel, U., Berezina, K., Sigala, M., & Webster, C. (2019). Progress on robotics in hospitality and tourism: a review of the literature. *Journal of Hospitality and Tourism Technology* (forthcoming).
- Ivanov, S., Webster, C. & Berezina, K. (2017). Adoption of robots and service automation by tourism and hospitality companies. *Revista Turismo & Desenvolvimento*, 27/28, 1501-1517.
- Ivanov, S., Webster, C. & Garenko, A. (2018). Young Russian adults' attitudes towards the potential use of robots in hotels. *Technology in Society* 55, 24-32.

References and further reading

- Ivanov, S., Webster, C. & Seyyedi, P. (2018). Consumers' attitudes towards the introduction of robots in accommodation establishments. *Tourism* 63(3), 302-317.
- Kuo, C.-M., Chen, L.-C., & Tseng, C.-Y. (2017). Investigating an innovative service with hospitality robots. *International Journal of Contemporary Hospitality Management*, 29(5), 1305-1321.
- Mohan, R. E., Tan, N., Tjoelsen, K., & Sosa, R. (2015). Designing the robot inclusive space challenge. *Digital Communications and Networks*, 1(4), 267-274.
- Murphy, J., Hofacker, C., & Gretzel, U. (2017). Dawning of the Age of Robots in Hospitality and Tourism: Challenges for Teaching and Research. *European Journal of Tourism Research*, 15, 104-111.
- Murphy, J., Gretzel, U., & Pesonen, J. (2019). Marketing robot services in hospitality and tourism: the role of anthropomorphism. *Journal of Travel & Tourism Marketing*, 1-12. Doi: 10.1080/10548408.2019.1571983
- Pan, Y., Okada, H., Uchiyama, T., & Suzuki, K. (2015). On the Reaction to Robot's Speech in a Hotel Public Space. *International Journal of Social Robotics*, 7(5), 911-920.
- Tan, N., Mohan, R. E., & Watanabe, A. (2016). Toward a framework for robot-inclusive environments. *Automation in Construction*, 69, 68-78.
- Tung, V. W. S., & Law, R. (2017). The potential for tourism and hospitality experience research in human-robot interactions. *International Journal of Contemporary Hospitality Management*, 29(10), 2498-2513.
- Tung, V. W. S., & Au, N. (2018). Exploring customer experiences with robotics in hospitality. *International Journal of Contemporary Hospitality Management*, 30(7), 2680-2697.
- Tussyadiah, I. P., Zach, F. K. & Wang, J. (2017). Attitudes Toward Autonomous on Demand Mobility System: The Case of Self-Driving Taxi. In Schegg, R. & Strangl, B. (Eds.) *Information and Communication Technologies in Tourism 2017*. Proceedings of the International Conference in Rome, Italy, January 24-26, 2017, pp. 755-766.
- Tussyadiah I.P., & Park S. (2018). Consumer Evaluation of Hotel Service Robots. In: Stangl B., Pesonen J. (eds) *Information and Communication Technologies in Tourism 2018*. Springer, Cham, pp. 308-320.
- van Doorn, J., Mende, M., Noble, S. M., Hulland, J., Ostrom, A. L., Grewal, D., & Petersen, J. A. (2017). Domo Arigato Mr. Roboto Emergence of Automated Social Presence in Organizational Frontlines and Customers' Service Experiences. *Journal of Service Research*, 20(1), 43-58.
- Wirtz, J., Patterson, P., Kunz, W., Gruber, T., Lu, V. N., Paluch, S., & Martins, A. (2018). Brave New World: Service Robots in the Frontline. *Journal of Service Management*, 29(5), 907-931.
- Yeoman, I., & Mars, M. (2012). Robots, men and sex tourism. *Futures*, 44(4), 365-371.
- Yu, C. F. & Ngan, H. F. B. (2019). The power of head tilts: gender and cultural differences of perceived human vs human-like.



THANK YOU
FOR THE
ATTENTION

!

QUESTIONS

?