THE ROLE OF ROBOTS AND AUTOMATION TECHNOLOGIES IN THE POST-COVID TOURISM

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- Founder and Editor-in-chief of *ROBONOMICS: The Journal of the Automated Economy* (https://journal.robonomics.science/)

Content

- Current application of automation technologies in travel, tourism, and hospitality
- Biosecurity as a driver of automation in travel, tourism, and hospitality
- Using automation technologies for a physically distant service delivery system

Application of automation technologies in travel, tourism and hospitality

Application of automation technologies

- Hotels

Photo credit: Sezam24

http://digieva.net/#features

Source: Best Western Premier Sofia Airport

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Application of automation technologies

- Restaurants
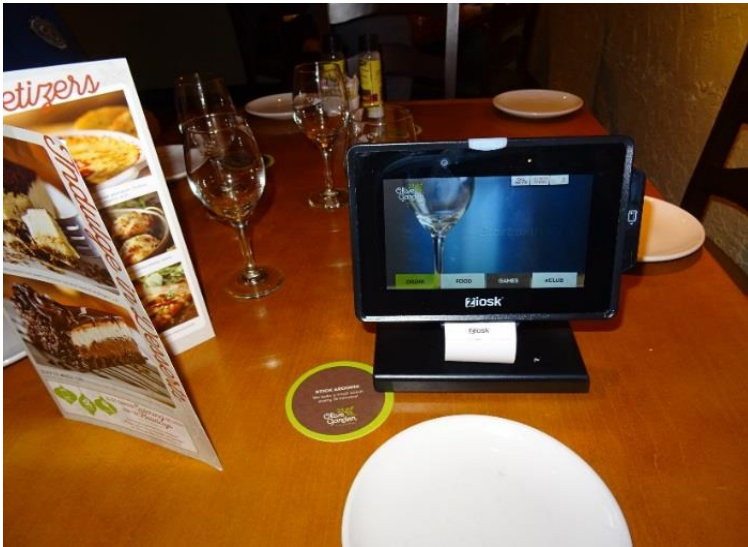

Photo credit: Stanislav Ivanov

Application of automation technologies

- Airports and other transport stations

Photo credit: Stanislav Ivanov

Application of automation technologies

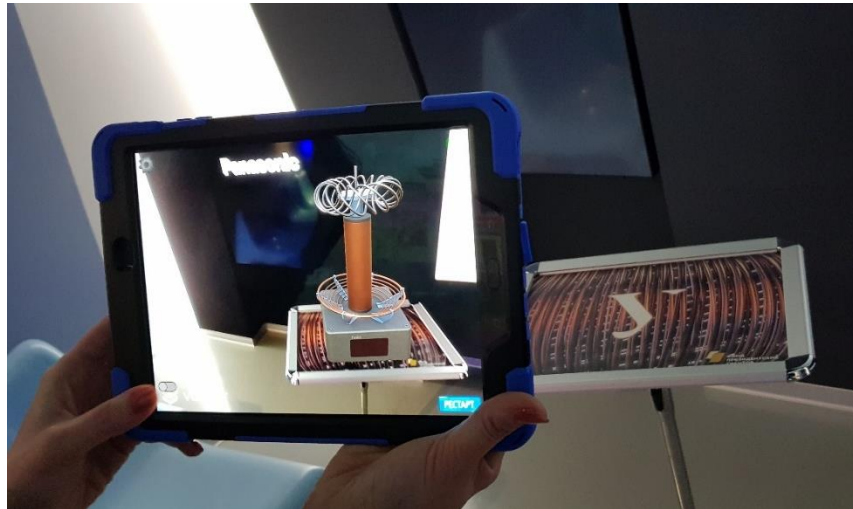- Museums and art galleries

https://promo-bot.ru/media/2020/01/3OIG2jkE-tM.jpg

Photo credit: Stanislav Ivanov

https://www.vrlife.news/wp-content/uploads/2016/05/drawntothefuture_c_agnese_sanvito_1.jpg

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Application of automation technologies

- Voice-activated devices

Introducing
echo show

Now Alexa can show you things

- Chatbots

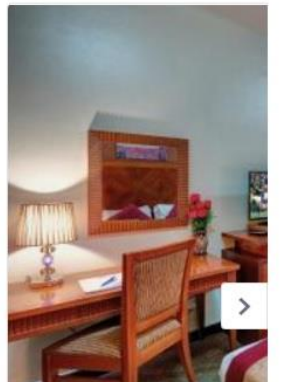Searching for hotels in Dubai United Arab Emirates, arriving March 16th for 6 nights

Nassima Royal Hotel ⭐⭐⭐⭐⭐ 👍 from 892.04 AED total
Very good 8.5 · 5357 verified reviews · in the heart of Dubai
eva.booking.com

London Crown 1 Hotel Apa
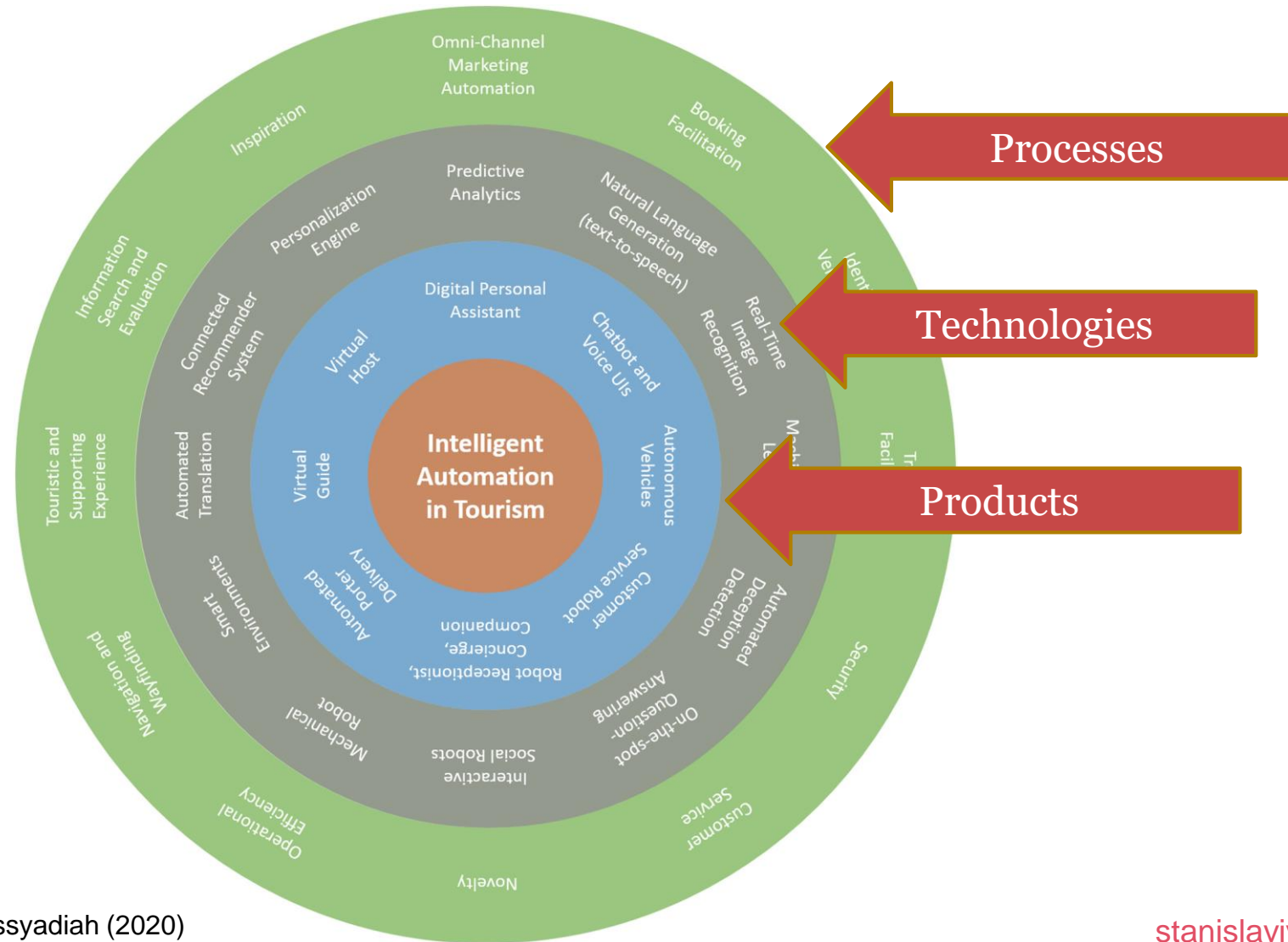Passable 5.2 · 1000 verified
eva.booking.com

View details
View rooms

Application of automation technologies

Source: Tussyadiah (2020)

Biosecurity as a driver of automation

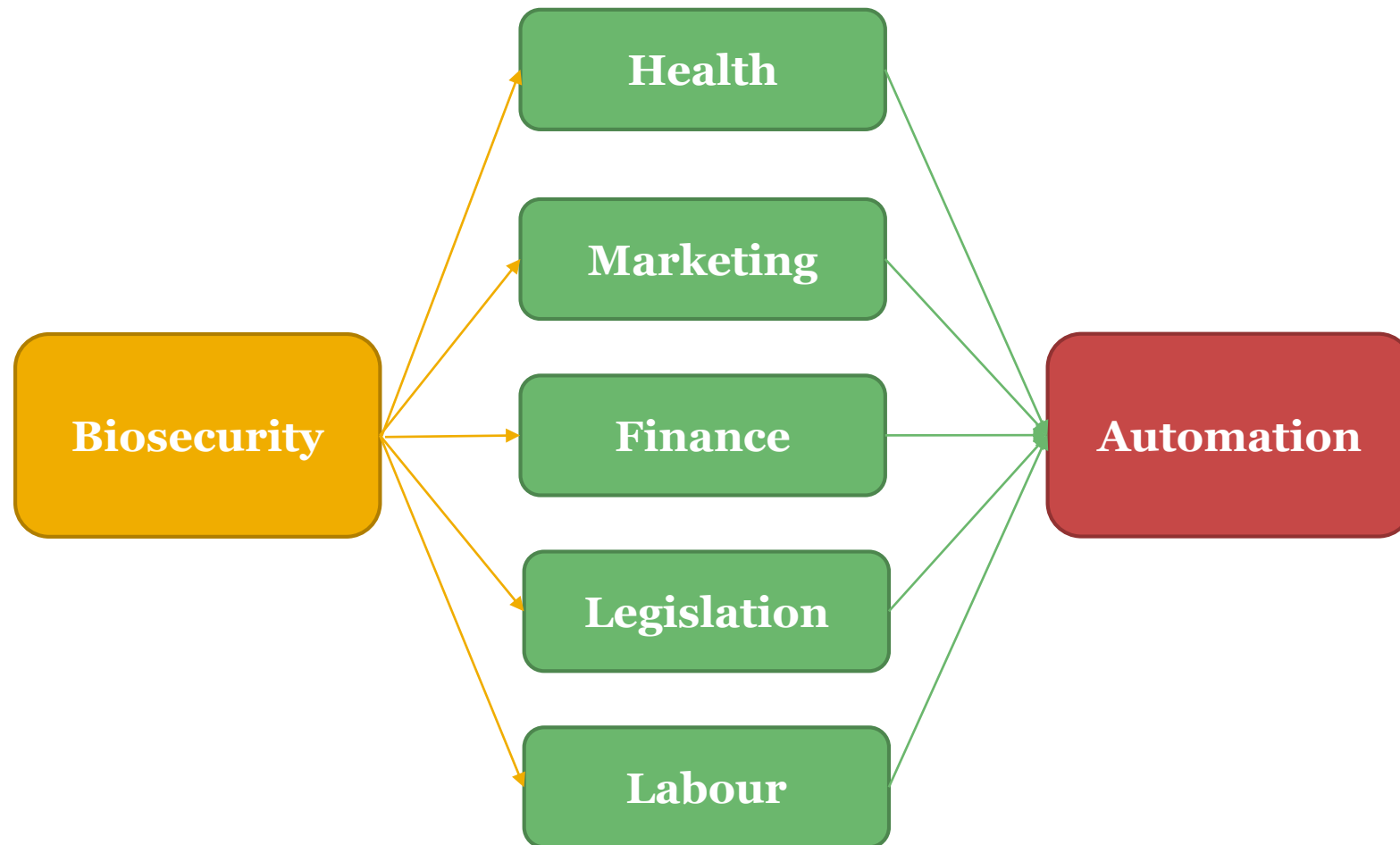# Biosecurity as a driver of automation

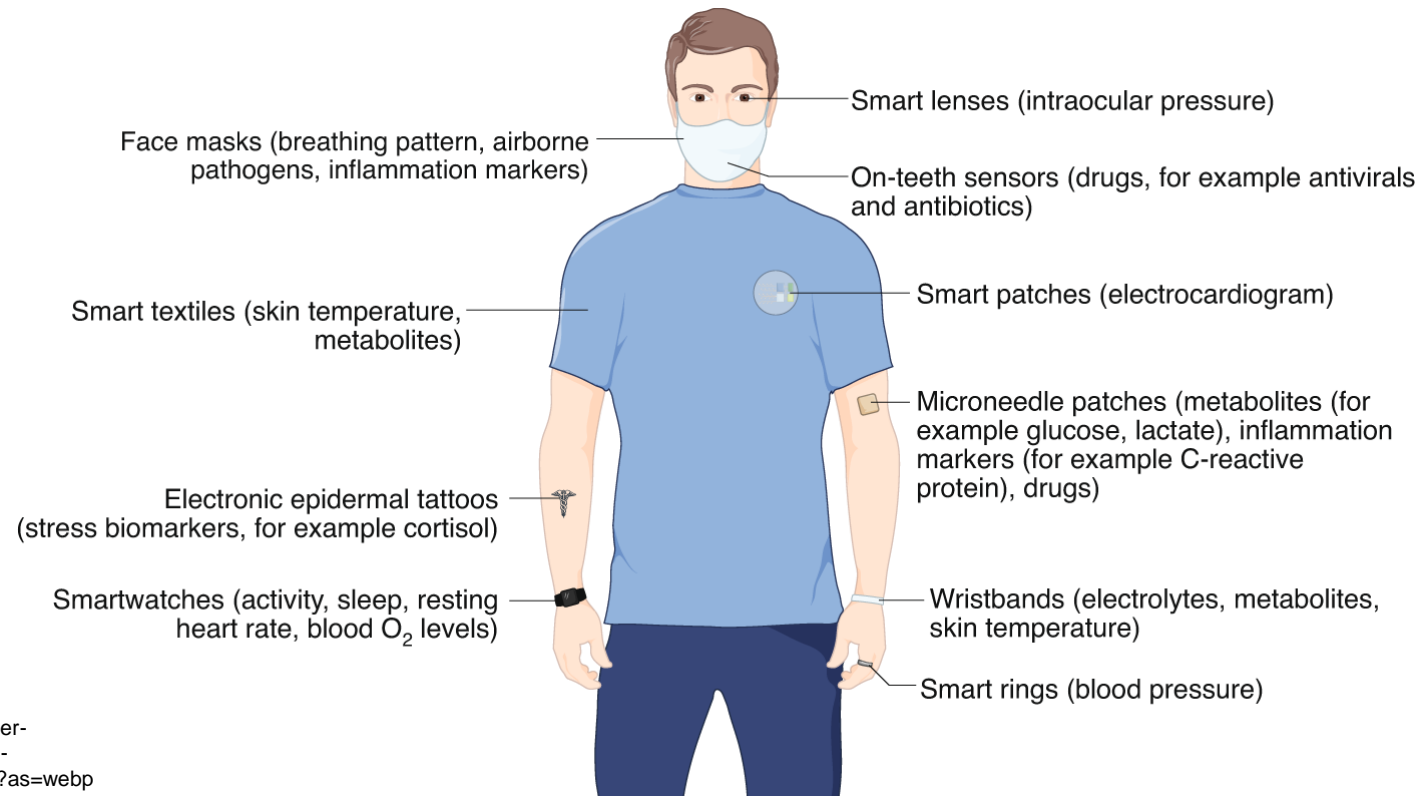Who led the digital transformation of your company?

A) CEO

B) CTO

C) COVID-19

Biosecurity as a driver of automation

Biosecurity as a driver of automation

- **Chatbots, mobile, wearable or implanted devices** might be used to collect data about a person's health and inform guests and employees that the environment is safe and other people around them are not likely to be infected.

Smart lenses (intraocular pressure)

Face masks (breathing pattern, airborne pathogens, inflammation markers)

On-teeth sensors (drugs, for example antivirals and antibiotics)

Smart textiles (skin temperature, metabolites)

Smart patches (electrocardiogram)

Microneedle patches (metabolites (for example glucose, lactate), inflammation markers (for example C-reactive protein), drugs)

Electronic epidermal tattoos (stress biomarkers, for example cortisol)

Smartwatches (activity, sleep, resting heart rate, blood O_2 levels)

Wristbands (electrolytes, metabolites, skin temperature)

Smart rings (blood pressure)

Privacy

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Biosecurity as a driver of automation

- Many **employees** may not want to go back to the employers who laid them off.
- Others may prefer to work in *another industry* that had not experienced the shock that tourism suffered.
- Immigrant workers may not be able to obtain work *visas* easily or they may be subject to compulsory quarantine when they enter the country.
- Thus the labour supply in tourism and hospitality may actually *shrink* in the post-viral world.

**Automation technologies compensate for the lack of employees**

Biosecurity as a driver of automation

- COVID-19 **challenged the corporate social responsibility claims** of TTH companies.
- TTH companies may consider automation technologies as a way to **minimise dependence on human labour**, and **potential future lay-offs and negative word of mouth**.

https://www.irishtimes.com/polopoly_fs/1.40
24996.1568988014!/image/image.jpg_gen/d
erivatives/box_620_330/image.jpg

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Biosecurity as a driver of automation

- Automation technologies provide an additional source of **competitive advantage** for TTH companies in the post-viral tourism – moving **from 'high touch' to 'high tech'** services.
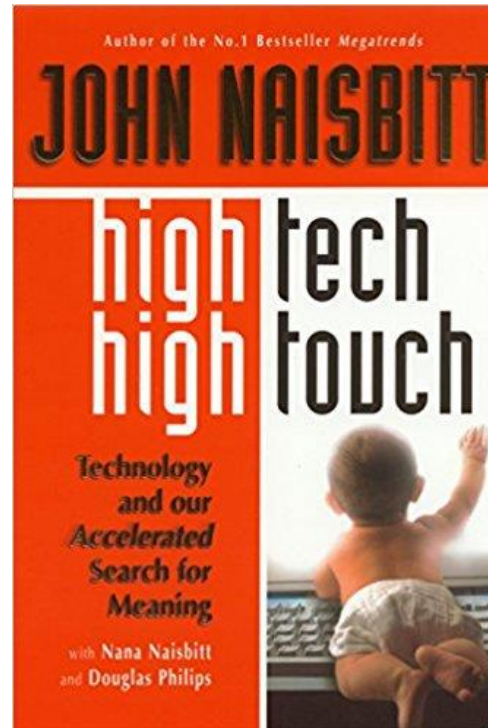
Biosecurity as a driver of automation

- COVID-19 pandemic would force owners and managers of surviving TTH companies to search more aggressively to **decrease the fixed costs** of their companies.
- A TTH company with a high level of automation has **fewer human employees** compared to a company with low or no automation that serves the same number of customers; hence, it has **lower labour costs and lower fixed costs**.
- Automation technologies **decrease the cash outflow** of the company and help it remain **liquid**.

Biosecurity as a driver of automation

- TTH companies with high automation would **not need to deal with rigid labour laws and negative publicity** when they fire employees during a pandemic.

https://corporate.cyrilamarchandblogs.com/wp-content/uploads/sites/88/2020/01/Indian-Labour-Laws-Recap-2019-and-Outlook-2020.png

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Biosecurity as a driver of automation

- **Legislation** in the post-viral world may force TTH companies to consider the **use biometric technologies** for measuring the health status of employees and tourists in real time.
- Legislation may require TTH companies to **decrease their service capacity** – e.g. fewer seats in restaurants, fewer guests in hotels, fewer passengers in airplanes.
- The health and safety measures will likely add to the **cost** of running a business > stimuli to automate many tasks.

Biosecurity as a driver of automation

- Biometrics for **measuring the temperature**

Photo credit: Stanislav Ivanov

- Robots for **disinfection**

Source: https://retailandhospitalityhub.com/hotel/hotel-industry-updates/uvd-robots-keep-hotels-clean-and-rebuild-customer-confidence/

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Biosecurity as a driver of automation

- Automation technologies are a useful tool to enforce **physical distancing**

Starship Technologies is sending its autonomous robots to more cities as demand for contactless delivery rises

Kirsten Korosec @kirstenkorosec / 11:39 pm EEST • April 9, 2020

Comment

Source: https://techcrunch.com/2020/04/09/starship-technologies-is-sending-its-autonomous-robots-to-more-cities-as-demand-for-contactless-delivery-rises/

- Automation technologies are a useful tool to facilitate **social connectedness**

Robots providing social support while we're social distancing

by Silicon Valley Robotics

News   April 17, 2020

Wired Magazine recently called for us to, post pandemic, "ditch our tech enabled tools of social distancing". But are our telepresence robots creating emotional distancing or are they actually improving our emotional lives. This week in our weekly "COVID-19, robots and us" discussion with experts, we're looking at the topic of virtual presence and emotional contact as well as many other practical ways that robotics can make a difference in pandemic times.
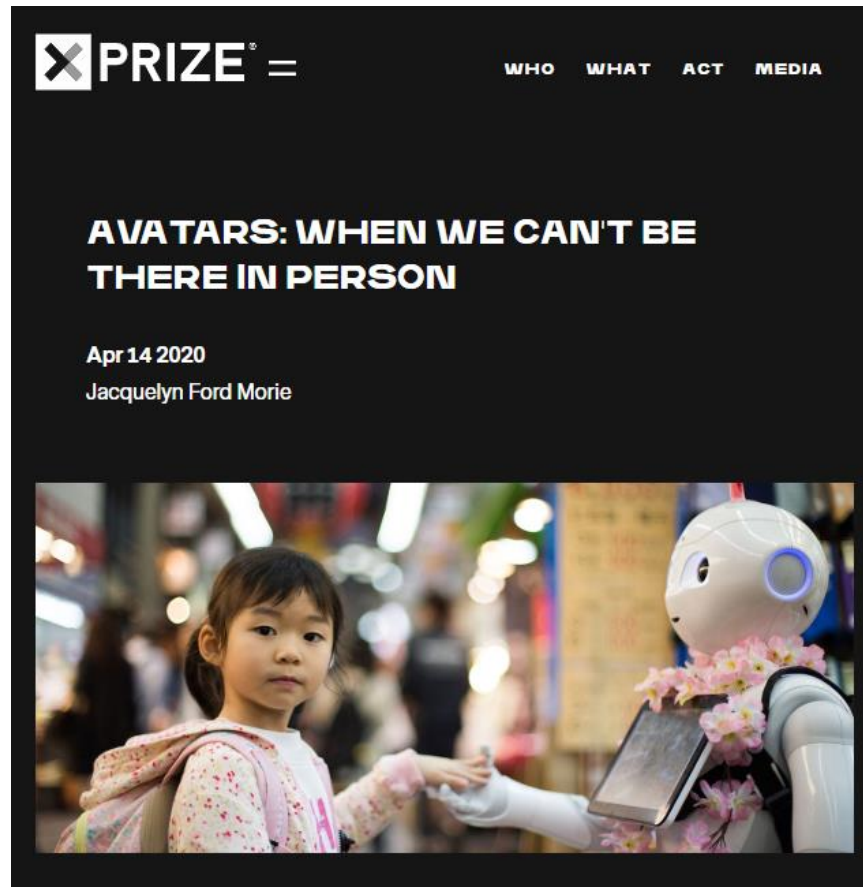
Source: https://robohub.org/robots-providing-social-support-while-were-social-distancing/

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Biosecurity as a driver of automation

- Avatar tourism

Source: https://www.xprize.org/prizes/avatar/articles/avatars-when-we-can-t-be-there-in-person

Using automation technologies for a physically distant service delivery system

Routledge
Taylor & Francis Group

Check for updates

RESEARCH NOTE

Service robots as a tool for physical distancing in tourism

Faruk Seyitoğlu [a] and Stanislav Ivanov[b]

Contents lists available at ScienceDirect

International Journal of Hospitality Management

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

ELSEVIER

Research Paper

Check for updates

A conceptual framework of the service delivery system design for hospitality firms in the (post-)viral world: The role of service robots
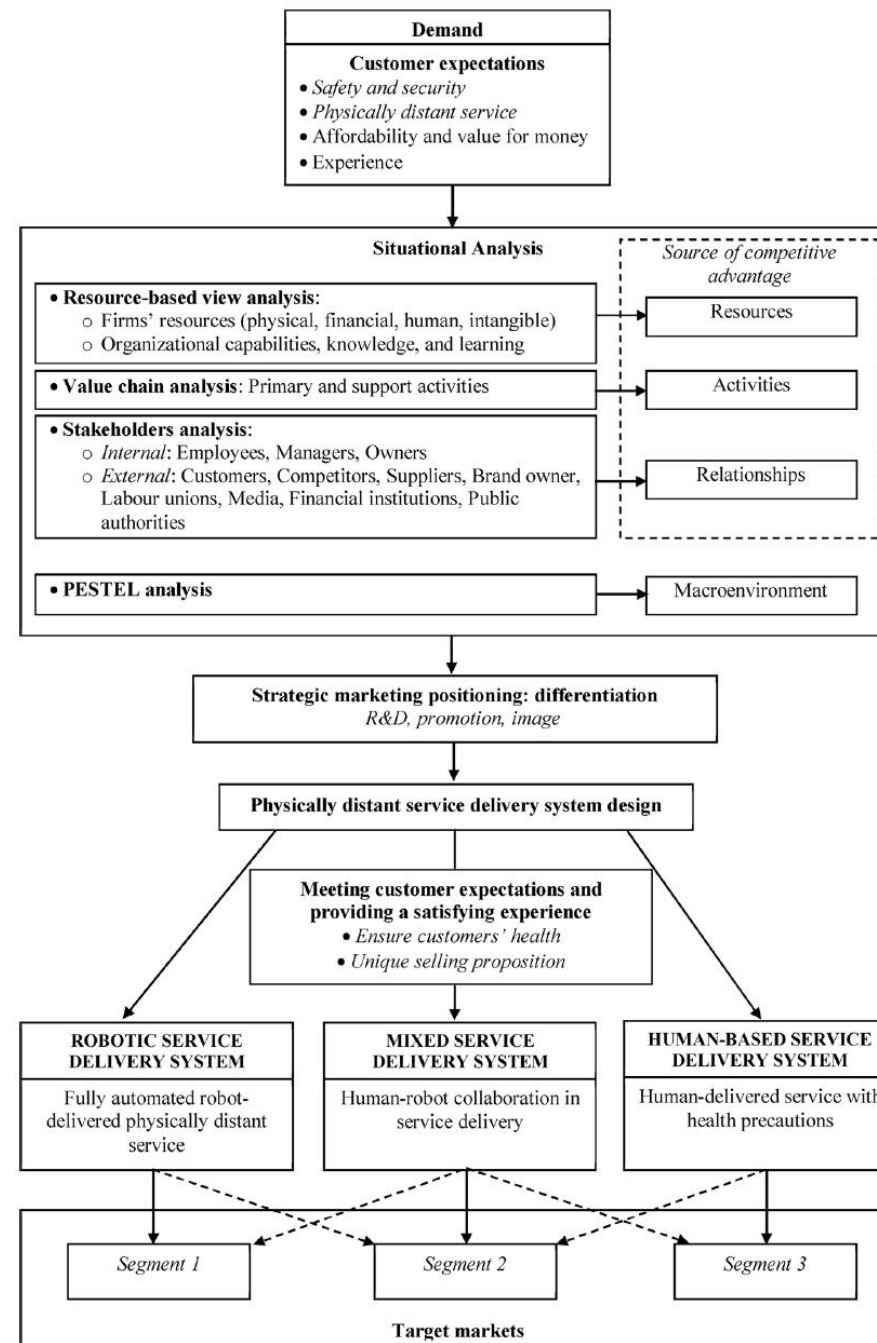
Faruk Seyitoğlu [a,*], Stanislav Ivanov[b]

Fig. 1. Conceptual framework of the service delivery system design for hospitality firms in the (post-)viral world.

Seyitoğlu & Ivanov (2020b)

Table 1. Physically Distant Service Delivery System Designs in the (Post-)Viral World

	Service Delivery System Designs		
	Robotic Service Delivery System	*Mixed Service Delivery System*	*Human-based Service Delivery System*
Based on	Fully automated robot-delivered physically distant service	Human-robot collaboration in service delivery	Human-delivered service with health precautions
Requirements	✓ implementing service robots for all front-of-house operations ✓ robot maintenance (in-house or outsourced) ✓ disinfection of the robot after serving each guest ✓ adaptation of employees ✓ adaptation of customers	✓ implementing service robots for some front-of-house operations ✓ robot maintenance (in-house or outsourced) ✓ disinfection of the robot after serving each guest ✓ personal care and attention (wearing masks, not being close to customers, using disposable materials, disinfectant use, distance sitting design etc.) for some tasks which require social skills and emotional intelligence ✓ adaptation of employees ✓ adaptation of customers	✓ relying on human employees in all aspects of front-of-house operations ✓ back-of-house operations may be automated ✓ highly sensitive health precautions (wearing masks, not being close to customers, using disposable materials, disinfectant use, distance sitting design etc.) by firm and employees ✓ adaptation of employees ✓ adaptation of customers
Advantages	✓ no human touch ✓ low risk of virus transmission ✓ enjoyable experience without worrying about being infected ✓ novel experience	✓ no human touch for some tasks ✓ social interaction with human employees ✓ novel experience	✓ social interaction with human employees
Disadvantages	✓ inflexible service delivery system ✓ customers might be frustrated by the lack of human employees ✓ no social interaction with human employees	✓ medium risk level of transmission of the virus ✓ enjoying the experience to some degree due to worrying of being infected by the human staff	✓ higher risk level of transmission of the virus ✓ human touch for all tasks ✓ not enjoying the experience due to worrying of being infected by the human staff
Target Tourist Segments	✓ Tourists with high security and health concerns ✓ Tourists who are highly motivated towards robotic/advanced technology	✓ Tourists with lower or moderate security and health concerns ✓ Tourist relying on human employees to some degree ✓ Tourists who are not motivated to high-tech service but concern about their health	✓ Tourists with lower or moderate security and health concerns ✓ Tourist seeking for social interaction ✓ Tourists relying on human employees

Seyitoğlu & Ivanov (2020b)

Biosecurity stimulates automation but it is the economics that makes it feasible!
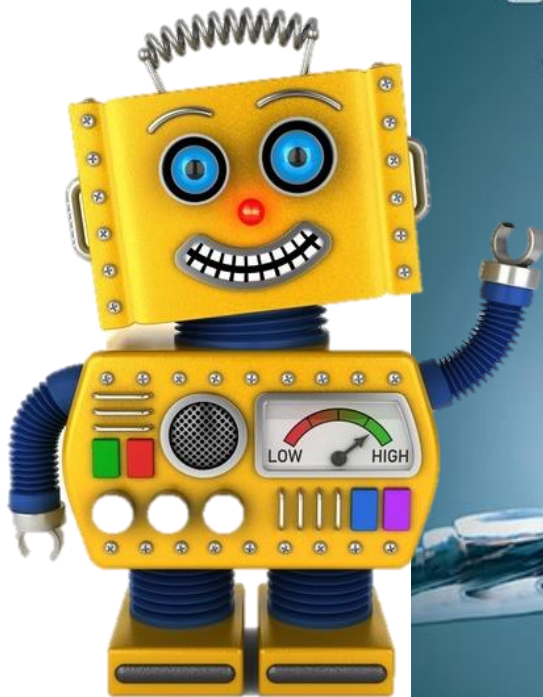
Robots, Artificial Intelligence and Service Automation in Travel, Tourism and Hospitality

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References and further reading

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THANK YOU FOR THE ATTENTION!

QUESTIONS?