Revolutionizing the Hospitality Industry: The Role of Smart Commercial Kitchens in Ensuring Hygiene, Sanitation, and Cleanliness

Souji Gopalakrishna Pillai (Ph.D. Student in Hospitality Management)
Alecia. C. Douglas, Ph.D. (Supervisor)

Introduction

- Smart commercial kitchen technologies are playing an increasingly important role in hygiene, safety, and operational efficiency in the hospitality industry.
- The principle of hygiene and safety are not new to the hospitality industry. However, the COVID-19 outbreak has forced the hospitality industry worldwide to further enhance its hygiene and safety protocols.
- During the new normal, the dimensions of hygiene, safety, and cleanliness in hotels' kitchen operation management have changed, as more stringent measures were being implemented.

Objectives of the Research

The purpose of this research is to empirically analyze the factors influencing the intention to adopt a smart commercial kitchen by incorporating the unified theory of acceptance and use of technology model and task-technology fit.

Questions to Ponder

Whether the commercial kitchens are keeping up with technological innovations that can make chefs'/customers' lives easier and healthier?

The magic word during this pandemic time – COVID-19……?

"Safety, Hygiene, and Sanitation"

Changes in Commercial Food Operations

COVID-19 has highlighted several difficulties related to commercial food production operations, and it has underlined the need and demand for new approaches to ensure that food production is safe (U.S. Food and Drug Administration, 2020).

The World Health Organization (2020) has warned that COVID-19 has increased the risk of infection for food handlers and consumers who are in contact with kitchen surfaces and food handled by infected individuals.

Food Hygiene Practices

- COVID-19 research among Jordanian food handlers on food awareness, attitudes, and hygiene practices highlighted the need to refresh their understanding of the food hygiene standards that minimize and eradicate foodborne diseases (Omar et al., 2020).
- The preparation and storing of food at incorrect temperatures and the cross-contamination of food due to unhygienic handling practices are to be the key causes of many foodborne disease outbreaks in commercial kitchens (Teffo &Tabit, 2020).
- It is estimated that each year roughly 1 in 6 Americans (or 48 million people) gets sick, 128,000 are hospitalized, and 3,000 die of foodborne diseases (CDC, 2018).

New Approaches to Food Production

The COVID-19 pandemic has highlighted several difficulties related to commercial food production operations, and it has underlined the need and demand for new approaches to ensure that food production is safe (U.S. Food and Drug Administration, 2020).

Food principles in the smart commercial kitchen represent a new approach to food safety, leveraging technology, and other tools to create a safer and more digital, traceable food system (CNN, 2017).

What is a Smart Commercial Kitchen?

In a smart commercial kitchen, Internet-of-things (IoT)-enabled sensors and artificial intelligence (AI) algorithms are used to monitor performance, keep track of inventory control, follow up maintenance, analyze data to increase productivity, and manage quality, hygiene, safety, and cleanliness.

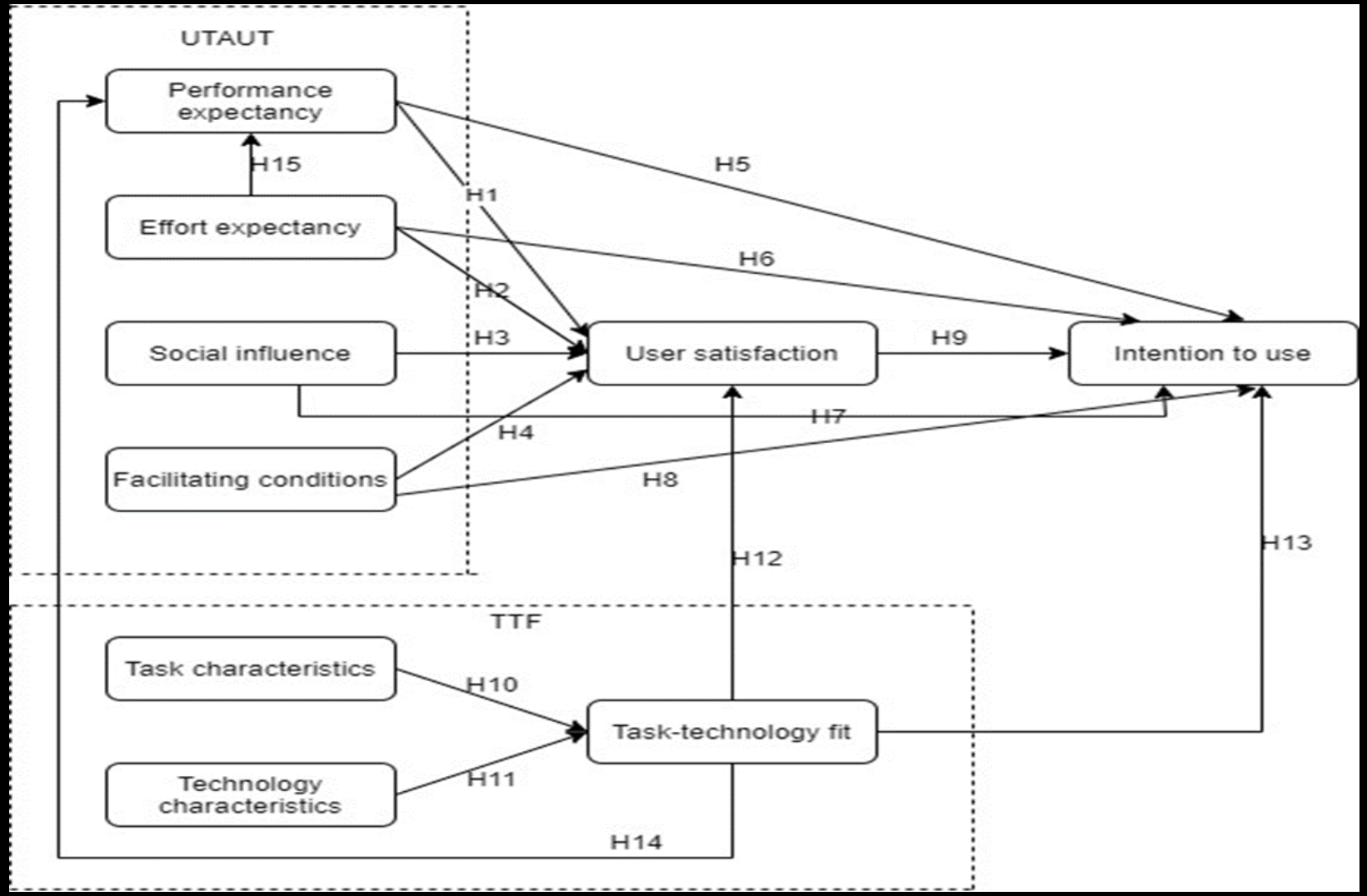
Smart Commercial Kitchen Technologies

With the emergence of the IoT, AI, and the medium that connects anyone and anything to the World Wide Web, inanimate objects like refrigerators, ovens, griddles, and grillers can now communicate and share high levels of digital intelligence data between the user and other inanimate objects, without any human intervention (Dziurzanski, 2019).

The smart commercial kitchen will strengthen traceability, enhance predictive analytics, and respond more quickly to food contamination outbreaks (Olaimat et al., 2020).

Smart commercial kitchens are designed to save energy and time. Their main purpose is to be sustainable and efficient (Temizkan et al., 2017).

Conceptual Framework



Hypotheses

H1: Performance expectancy has a positive effect on satisfaction towards the intention to use a smart commercial kitchen.

H2: Effort expectancy has a positive effect on satisfaction towards the intention to use a smart commercial kitchen.

H3: Social influence has a positive effect on satisfaction towards the intention to use a smart commercial kitchen.

H4: Facilitating condition has a positive effect on satisfaction towards the intention to use the smart commercial kitchen.

H5: Performance expectancy has a positive effect on the intention to use a smart commercial kitchen.

Hypotheses

H6: Effort expectancy has a positive effect on the intention to use a smart commercial kitchen.

H7: Social influence has a positive effect on the intention to use a smart commercial kitchen.

H8: Facilitating condition has a positive effect on satisfaction towards the intention to use the smart commercial kitchen.

H9: User satisfaction has a positive effect on the intention to use a smart commercial kitchen.

H10: Task characteristics are positively related to task-technology fit.

H11: Technology characteristics are positively related to task-technology fit.

H12: Task-technology fit is positively related to user satisfaction.

Hypotheses

H13: Task-technology fit is positively related to the intention to use the commercial smart kitchen.

H14: Task-technology fit is positively related to performance expectancy.

H15: Effort expectancy has a positive effect on performance expectancy.

Methodology and analysis

Data will be collected from chefs from upper-scale to luxury hotels and will be analyzed by using Smart PLS

Expected results

It is expected that the chefs will have the intention to use smart commercial kitchen technologies for the following reasons:

- Smart commercial kitchen technologies will help to improve their job performance (performance expectancy).
- It is easy to learn and use smart commercial kitchen technologies (effort expectancy).
- Important personnel in the hotel recommend the use of smart commercial kitchen technologies (social influence).
- The hotels have the necessary resources and provide support for the adoption of technologies (facilitating conditions).
- Chefs will be satisfied with the services provided by smart commercial kitchen technologies (user satisfaction).
- The smart commercial kitchen technologies will fit the task characteristics of the chefs (task-technology fit).

Conclusion

This study attempts to combine the UTAUT model and TTF model together to explore the determinants that influence the intention to adopt smart commercial kitchens. Embracing smart commercial kitchen technology can connect kitchen equipment to smart devices that communicate with each other and will enable chefs to deliver safe, fresh, and high-quality products continuously.

This will also reduce energy consumption and enable real-time remote maintenance decisions. Smart commercial kitchen technology enables interconnectivity of the equipment and can be controlled effectively and efficiently. Smart kitchen technology also provides safe and hygienic foods to customers.