

IR 4.0 and Malaysian Hospitality Higher Education: The Emergence of a New Teaching Era

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To Link this Article: <http://dx.doi.org/10.6007/IJARPED/v13-i3/21826>

DOI:10.6007/IJARPED/v13-i3/21826

Published Online: 18 June 2024

Abstract

The rise of industrial revolution 4.0 or IR 4.0 in this millennium will create great challenges to the global higher education. In the case of hospitality and tourism industry, the emergence of digital revolution will have significant impacts since there is a close relationship between both sectors. Given the fact that hospitality and tourism education is the main platform in shaping and providing the workforce for the industry, it is crucial for the hospitality higher education providers to adapt with the digital innovations and technological advancements in the hospitality programmes. This paper aims to uncover the issues encountered by Malaysian hospitality higher education in adapting the emergence of the IR 4.0 digital revolution particularly on the teaching preferences and delivery methods. For this conceptual paper, literature reviews from journal articles, conference proceedings and theses, online books and news clippings related to the topic of the study are utilised. Further empirical research should be conducted to uncloak the issues faced by the hospitality higher education on the impacts of industrial revolution 4.0. There is also a greater need to study the challenges faced by the hospitality and tourism providers towards the IR 4.0 so that the hospitality higher education can acknowledge the needs and wants of the industry players in this millennium.

Keywords: Industrial Revolution 4.0, Teaching Preferences and Delivery Methods, Hospitality and Tourism Education, Malaysia

Introduction

Recently, the term "Industry 4.0" has become the talk of the town topic among industry experts and academicians. The term which was described as the revolution that will change the landscape of manufacturing industries as well as working orders as suggested by Azmi et al (2018) were coined at Hannover Messe, Germany in 2011 (Messe, 2018). In comparison to the first three industrial revolutions that were linked to mechanization, mass production (electrification) and computerization as asserted by Kagermann et al (2013), the terms

“Smart” and “Cyber-Physical System” was repeatedly use by the German experts in describing this upcoming industrial revolution (Azmi *et al.*, 2018).

According to Porter and Heppelmann (2016), Industry 4.0 is a subclass of digital transformation in existing businesses and processes. Since the industry is characterized by the implementation of cyber physical systems and smart production, the industry 4.0 requires flexible processes and high efficiency of the supply chain structures (Shamim *et al.*, 2017; 2016). Further, a better management of products, just in time production as well as a more efficient time to market is needed in ensuring the success of the processes (Shamim *et al.*, 2017; Iansiti & Lakhani, 2014). Though most of these challenges focused more on the technological aspects as asserted by Shamim *et al.* (2016), there is a lack of literature that investigate the issues of Industry 4.0 within the teaching preferences and delivery methods in the hospitality higher education sector. This is important since hospitality higher education are related to the service sector and at the same time are the main training ground that will provide the future workers with the skills and knowledge needed to run the hospitality industry.

As suggested by Lasi, Fettke, Kemper, Feld and Hoffmann (2014), the key to success in an uncertain environment like Industry 4.0 relies on the training, learning and innovation capability. In this scenario, it is crucial for hospitality higher education to devise strategies to attend the needs and wants of the hospitality industry sector to cater the demand of Industrial Revolution 4.0. Important factors such as programme contents, curriculum design and delivery, assessment of student learning or educational resources need to be draft carefully to create positive and conducive learning environment that will enhance students' ability to adapt with the rapid changes of the advancement in technology. Having said that, the main objective of this conceptual paper is:

- To discuss the issues encountered by Malaysian hospitality higher education in adapting the industrial revolution 4.0 within the context of teaching preferences and delivery methods.

The first part of this paper described the history of hospitality higher education in Malaysia and the connection with the industrial revolution 4.0. The second part focuses on the issues of teaching hospitality higher education in digital era within Malaysian context and this paper will conclude with the important remarks highlighted in this study.

Hospitality Higher Education in Malaysia

In Malaysia, the roots for the hospitality education took its place in the form of vocational and skills training, which focus on level entry development (Bagul & Marzuki, 2007; Goldsmith & Zahari, 1994). Initially, the hospitality education is developed to fill in the gaps between hospitality education and need in line with the expanding hospitality industry (Shariff, 2013; Goldsmith & Zahari, 1994). MARA Institute of Technology (now known as Universiti Teknologi MARA) becomes the first institution, which offers formal hospitality training in 1967, offering Diploma and Advanced Diploma in Hotel and Catering Management. By 1975, three programs were offered, including Diploma in Chef Training, Diploma in Tourism Administration and the Diploma in Institutional and Catering Management (Bagul & Marzuki, 2007). In the mid-1980s, hospitality programs gained the needed momentum with the major expansion in the tourism

Industry (Goldsmith & Zahari, 1994). Several hospitality programs are offered by private colleges in collaboration with well-known institutions abroad either from France, Switzerland, Australia, United States and Britain, to name a few (Khoo, 2003). By the end of 1993, undergraduate programs in Tourism Education started which indicates that the subject is a key component in Malaysian education at the tertiary level (Thitthongkam & Walsh, 2011; Goldsmith & Zahari, 1994).

Throughout the years, the Malaysian Government has played a dynamic role in expanding the hospitality education as a response to both social and economic demands (Lee, 2004). In ensuring that the education meets the industry demand for a trained and competent workforce, a Program Standards in Hospitality and Tourism Education was formulated by the Malaysian Government to respond to the industry call. As a reference for educational quality and effectiveness, the Malaysian Qualifications Frameworks (MQF) was introduced by the Qualifications Agency (MQA) in determine the qualifications and quality issues related to Malaysian Education.

IR 4.0 and Hospitality Higher Education in Malaysia

As one of the main contributors to Malaysian economic sector, the hospitality and tourism industry which was categorized under the service sector has triumphally succeed in supporting the nation growth throughout the years. According to Malaysian Tourism Promotion Board (MPTB) statistics, the total receipts for the year 2018 are at Ringgit Malaysia 84.1 billion, an increase of 2% from the year 2017. This figure has shown that despite the overall ease of tourists' arrival last year due to economic issues and changes in tourists' preferences in looking for new exciting experiences, the industry is still standing strong and become the second biggest contributor to the country economic development (Bernama, 2018).

In ensuring that the hospitality and tourism industry is relevant and capable in facing the unpredictable future changes particularly the Industrial Revolution 4.0, the hospitality higher education plays a very crucial role in shaping the dynamic workforce for the industry. Challenges on applications such as big data analysis, cloud system, Internet of Things (IoT) and simulations may have caused radical changes in service delivery and marketing in the tourism industry (Gul & Gul, 2018). Besides these challenges, aspects such as mass customization, digital enhancement, supply chain efficiency and smart work environment should also be considered as other important criteria's that should be focused by the hospitality and tourism industry, as well as hospitality education providers. As contended by Azmi *et al* (2018), a full and continuous innovation and learning is needed as this service industry depends on people as the main workforce who will run the businesses in the long run.

In order to face the challenges of the industrial revolution 4.0, the Ministry of Higher Education Malaysia has come out with the Higher Education 4.0 programme to fill in the gaps of the industrial revolution 4.0. In this programme, the Ministry of Higher Education required the Malaysian universities to shift their focus to 10 important qualities to ensure the success of the Higher Education 4.0 programme implementation (Azmi *et al.*, 2018). The 10 qualities required are:

- i. Holistic, Entrepreneurial and Balanced Graduates
- ii. Talent Excellence
- iii. Nation of Lifelong Learners
- iv. Quality Technical and Vocational Training Graduates
- v. Financial Sustainability
- vi. Empowered Governance
- vii. Innovation Ecosystem
- viii. Global Prominence
- ix. Globalised Online Learning
- x. Transformed Higher Education Delivery

Since conventional teaching and learning is still one of the main methods in delivering information and knowledge, the environment is not sufficient for the fourth industrial revolution as argued by the ministry (Azmi *et al.*, 2018). Therefore, various new methods of teaching and learning should be considered by the hospitality higher education apart from the technical know-how, which was currently implemented. Since industrial revolution 4.0 are closely related to continuous technology invention and improvement, it is wise for the hospitality higher education to restructure the programme contents as well as curriculum to ensure that they are well prepared and can adapt with the digital revolution era.

Teaching Hospitality Higher Education in Digital Era: Malaysian Context

Until today, hospitality education has played an important role in supporting the human resources need and development for Malaysian hospitality industry. As the hospitality and tourism industry is the second biggest contributor to the Malaysian economic development Malaysian Tourism Promotion Board (2018), therefore it is crucial for the hospitality education sector to continuously supply the industry with qualified and skillful graduates. Furthermore, with the overwhelming demand and lack of skilled and trained personnel in major sector of the hospitality industry as asserted by Mohd Zahari, Sharif and Tuan Ismail (2005), there is no surprise to see the increase enrolments in the hospitality programme either at the public higher institutions as well as private higher institutions (Zahari *et al.*, 2005).

In facing the challenges of IR 4.0, it is useful for Malaysian hospitality higher education to select the appropriate and effective teaching approaches to nurture the development of skills and knowledge of the graduates in a highly technological environment. This is in line with the suggestion by Azmi *et al* (2018) who suggested that higher learning institutions that offer Tourism and Hospitality courses need to develop and facilitate adequate training programme which emphasize on the importance of value towards Industrial Revolution 4.0. By doing so, the pedagogy institutions not only will produce graduates who are highly skillful in terms of technical aspects, but at the same time are able to demonstrate their capabilities in handling highly technological instruments that will be introduced in the future for the hospitality industry.

Although strategies have been put forward by the Ministry of Higher Education in facing the IR 4.0 by introducing Higher Education 4.0 programme, the affect of the programme is still vague due to low exposure towards IR 4.0 among higher learning institutions in Malaysia (Azmi *et al.*, 2018). It is important to note here that Industrial revolution 4.0 relies highly on

the usage of technologies in delivering the information to the students. According to Maznah (2004), although most higher learning institutions in Malaysia are ready to use technologies as a medium of teaching, but due to unfortunate lack of strategic plan, the implementation of the online learning facilities was disrupted (Azizan, 2010; Maznah, 2004). Nevertheless, several Malaysia hospitality higher institutions have taken the important steps in introducing the usage of technologies in delivering their hospitality and tourism teaching methods. In a study by Azmi *et al* (2018), it was found that e-learning and immersive learning are the two popular methods of using technologies in teaching hospitality education in Malaysia. In the e-learning method for example, the technology focused more in assisting student academic performance. The e-learning also was also used as a medium of disseminating information in a campus and at the same time become the primary form of medium for distance education (Aziz *et al.*, 2023; Azmi *et al.*, 2018; Embi *et al.*, 2011). On the other hand, some academicians used immersive learning techniques to replicate the possible scenarios or to expose the students with new skills and techniques. Interactive platforms such as “Kahoot” and “Socrative” are used to effectively engage students while conducting assessments (Azmi *et al.*, 2018). From the efforts taken by the several Malaysian hospitality higher learning institutions in conducting the teaching and learning using the methods mentioned before, it has shown that the institutions are aware on the importance of using technologies in line with the Industrial Revolution 4.0 and the Higher Education 4.0 programme, which was introduced by the ministry.

Even though the usage of technologies is crucial in facing the IR 4.0, the conventional way of teaching should not be neglected particularly in teaching hospitality and tourism subjects. For centuries, hospitality organizations and learning institutions have utilized the conventional methods to deliver teaching and learning (Azizan, 2010). It has been said that this type of teaching technique in which an instructor and the students interact in a face-to-face manner whether in classrooms or practical laboratory is effective for students who favor to write down notes and paying attention during the class (Azmi *et al.*, 2018). This way of teaching in a way provides room for students to think creatively and at the same time boost their critical thinking skills, depending on the students’ abilities. Though this teaching method might not be relevant in facing the IR 4.0, the conventional teaching method is still useful in producing quality lifelong learners and balanced graduates, if it was use along with to the technologies in the classrooms (Azmi *et al.*, 2018). For example, the usage of interactive platforms such as “Kahoot” or “Socrative” or uploading the assessments and interact with the students through Google Classroom are some of the ways where conventional teaching methods can be applied in delivering the courses. This type of blended learning not only makes the teaching become fun and effective, yet at the same time educate the students on the importance of engaging with the digital technologies.

Another way of teaching hospitality and tourism students that should be continuously implemented along with the emergence of the IR 4.0 would be hands-on method. According to Chen (2017), hands on learning will increase the engagement of students through direct practical experiences. Hands-on method involves the participation of students in performing physical activities, rather than just listening to the lectures and writing down the notes similarly to conventional methods. The physical touch towards an object is needed to see the results for hands-on method (Azmi *et al.*, 2018). In the case of hospitality and tourism education in Malaysia, most courses offered in this programme incorporate hands-on

activities through the practical laboratories which include front office, housekeeping, as well as kitchen classes. On the basis of integrating hands-on method with the Industrial Revolution 4.0 technology, the use of simulation in teaching or an exposure to artificial intelligence in the programme is needed to provide the students with the experiences needed in handling this new wave of responsive, guest-centric hospitality.

According to Feinstein and Parks (2002), the use of simulations has been found to be effective learning tools by hospitality educators. Simulations such as CRASE (the Cornell Restaurant Administration Simulation Exercise) which based on a medium-sized licensed restaurant; CHASE (Cornell Hotel Administration Simulation Exercise) based on a large hotel with the primary focus on the room division management; CHESS (Competitive Hospitality Education Simulation Series), based on a large hotel with the primary focus on yield management; HOTS (Hotel Operation Training Simulation), based on a hotel with a mix of foodservice and accommodation products; and “Top of the House” which focus on situation analysis, performance assessment, business plan development, and operating decisions for hotel (Douglas et al., 2008; Fawcett, 2002; Hinton, 1996; Martin & McEvoy, 2003) are some of the examples of educational simulations exercise that can be implemented in the hospitality and education programme in Malaysia higher education institutions. This type of simulation can be utilized by the higher education institutions to equip the students with the necessary input to face the IR 4.0 revolution. However, it should be noted here that to implement the simulations exercise, the simulation should be set according to the local hospitality and tourism environment rather than applying the Western countries hospitality environment due to the different culture and lifestyle practices.

In relation to artificial intelligence (AI), it was suggested pedagogically that lectures should incorporate examples of robots – industrial, professional services and personal services in their assignments, readings and class discussions as asserted by (Murphy et al., 2017). In addition to this, participation in robot competition which focus on hospitality services such as robots for domestic applications to serve cocktails during a cocktail party for instance, should be encourage by educators (Touretzky, 2010; Angulo *et al.*, 2015). From this exposure on the management of AI, students will be able to demonstrate their hands-on practice in inventing a new platform of service for the use in hospitality sector, but at the same time provide opportunities for the hospitality and tourism students to collaborate with other students from different disciplines such as computer science, engineering, psychology, communication and anthropology (Murphy *et al.*, 2017).

Conclusion

This conceptual paper has unclocked the issues pertaining to the teaching preferences and delivery methods in Malaysia hospitality higher education. The emergence of Industrial Revolution 4.0 would certainly have great impacts on the hospitality and tourism education globally, and Malaysia will also face the same challenges in the hospitality and tourism industry. Therefore, it is crucially important for Malaysian hospitality higher education to adapt to the radical changes of technologies that will emerge in the upcoming years. Academicians on the other hand must be well prepared with new methods of teaching and delivery to coped with the incremental innovation and technological advancement. The usage of e-learning or hospitality simulation exercises, the exposure to artificial intelligence, and the implementation of conventional teaching and hands-on methods supported by the advance

technologies should be encouraged by higher learning institutions in ensuring that the Higher Education 4.0 programme set by the Ministry is achievable. As asserted by Azmi *et al* (2018); Jayawardena *et al* (2023) by adopting active learning methods of teaching, academicians will be able to get along well with the digital revolution and at the same time, will produce graduates who are highly skillful and knowledgeable in managing the unpredictable changes in the hospitality industry. Additionally, there is also critical need for the education authorities to provide with the important infrastructure and internet facilities to ensure that these kinds of technologies can be implemented in the teaching and learning activities. Without all the improvement in facilities and infrastructure, it would be impossible for the academicians as well as higher learning institutions to move forward in achieving the goals of preparing the skillful graduates for the Industrial Revolution 4.0.

Viewing from the theoretical and contextual aspects, this study provides valuable contributions to both academic literature and practical applications in the field of education and hospitality management within the context of the Fourth Industrial Revolution (IR 4.0). From the theoretical aspect, the study contributes to the academic understanding of how IR 4.0 technologies can be integrated into the curriculum and pedagogical approaches of hospitality higher education. It may also offer new theoretical frameworks or models for incorporating digital and smart technologies into the current educational practices. In regard to educational innovation, this study could propose new theories on the effectiveness of blended learning, virtual simulations, and other digital tools specifically within the local education culture in enhancing student engagement and learning outcomes in the hospitality education. From the aspect of skill development, it can be highlighted that the study provides theoretical insights into the new skill set required for hospitality and tourism students to thrive in the IR 4.0 era, such as digital literacy, data analytics, and technology management. Turning now to the contextual contributions, this study offers a comprehensive analysis of how Malaysian hospitality higher education institutions are responding to the challenges and opportunities presented by IR 4.0. The study also provides contextual insights into the initiatives and strategies that was implemented in Malaysia to incorporate IR 4.0 in hospitality education. In addition to the previous statement, this study addresses the challenges and opportunities related to cultural acceptance, digital divide, and equitable access to technology enhanced situation. Since Malaysian hospitality and tourism industry consists of several different sectors, it is important to ensure that the higher education institutions supply graduates that possess relevant skills and knowledge, from theoretical as well as practical aspects. Therefore, this study could inform policymakers and educational practitioners in Malaysia about effective approaches in integrating advanced technologies into hospitality education. By acknowledging the importance of IR 4.0 technologies into the hospitality higher education, not only it will help in bridging the gap between technological advancements and educational practices, but eventually it will assist in producing future hospitality professionals that are well-equipped to thrive in the rapidly evolving IR 4.0 landscape.

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