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Foundations for Leveraging Advanced Information and Communications Technologies to Improve Customer Experience and Loyalty in the Hospitality Curriculum

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Abstract:

Customer loyalty is among the most important phenomena in hospitality. Enterprises of all sizes are increasingly turning to a range of advanced information and communications technologies (ICT) to enable them to better understand and improve the customer experience in pursuit of improving loyalty.

After exploring the impact of advanced ICT on hospitality, we look at the creativity, decision-making and communication skills required to improve the leverage of advanced ICT in hospitality.

We then assess how well leading institutions in hospitality undergraduate education are meeting the need educate students in these skills, in the context of key ICT.

Keywords: Information and communications technologies, customer experience, customer loyalty, hospitality, education

1. Introduction

Customer loyalty lies at the heart of every successful hospitality business (Kandampully & Suhartanto, 2000). Loyalty drives referrals and revenue. Central to assuring loyalty is a great customer experience. How operators assess, review and revise the processes that enable great experiences relies on customer and performance data (Kandampully, Tingting, & Jaakkola, 2018). Conventionally, larger operators have enjoyed a competitive advantage over smaller operators, with greater resources enabling the collection and analysis of data on experiences. Lacking resources, smaller operators have had a tougher time gathering and exploiting data to improve the customer experience, optimise performance, build their reputations and maximise revenue.

Information and communications technologies (ICT) have been identified as having a significant role to play in hospitality and tourism industries, notably in the Asia Pacific region (Tolkach, Chon, & Xiao, 2016). In common with many small to medium enterprises across a range of industrial and service sectors, smaller hospitality operators are increasingly deploying artificial intelligence (AI), machine learning (ML) and related ICT (e.g., 'big' data analytics, social media, online communities) to reshape their businesses (Bowen & Whalen, 2017).

Several authorities (Brynjolfsson & McAfee, 2016; Frey & Osbourne, 2013; Gratton, 2011; Gratton & Scott, 2016; Robinson, 2011; Zhao, 2012) note that creativity, decision-making and complex communication skills are critical to working with and leveraging the benefits of advanced ICT in the workplace.

The pilot study reported in this paper had the objectives of identifying whether or not:

- 1. Creativity, decision-making and communication skills lie at the core of hospitality education; and
- 2. Hospitality education is introducing students to the potential of artificial intelligence, big data, social media, online communities and similar ICT.

2. Literature review

2.1. ICT in hospitality

Cloud-based AI, and particularly ML, systems (such as IBM's Watson) are enabling a wave of responsive, customer-centred improvement across hospitality through enabling process optimisation in:

- Tourism policy settings, by simulating tourism behaviour and forecasting economic yield (Folgieri, Baldigara, & Mamula, 2017; Smallman & Moore, 2010; Smallman, Moore, Wilson, & Simmons, 2012; Wilson & Moore, 2017);
- Competitive intelligence, by drawing upon and analysing a whole range of data (Antonio, Almeida, Nunes, Batista, & Ribeiro, 2018; Claveria, Monte, & Torra, 2015; Kirilenko, Stepchenkova, Kim, & Li, 2018; Rita, Rita, & Oliveira, 2018);
- Reputation risk management, by better managing reviews and social media posts (Aula, 2010; Munnukka & Järvi, 2014);
- Booking and staff interaction, by deploying 'chatbots' to deliver a personalised experience and 'capture' visitors to social media sites, rather than relying purely on aggregator sites (Rita et al., 2018);
- Occupancy and rate optimisation, by developing highly nuanced and 'tuned' analysis of occupancy and rate data developed through data mining (Claveria et al., 2015; Rita et al., 2018); and
- Personalisation, by tailoring experiences to match a guest's preferences (Kirilenko et al., 2018; Sánchez-Medina, Naranjo-Barrera, Alonso, & Rufo Torres, 2018), notably through reward programs;
- Updates and maintenance, by predicting and prioritising upgrades and repairs based on occupancy and guest feedback to implement improvements that will give the best returns, and to optimise maintenance (Kobbac, 2012).

At the boundaries of the diffusion of AI technology is the deployment of robotics in hospitality (Tung & Au, 2018).

Hence, hospitality owners, managers and employees are seeing their own skills sets augmented by ICT (so-called 'augmented intelligence'). The question is, how ready is the industry for the challenges that this presents? The development of social capital in hospitality organisations is known to be problematic (Brien & Smallman, 2011), so the adoption and integration of advanced ICT in hospitality strategy and operations must further add to the challenge. So, we ask what is required?

2.2. The skills we need?

The sheer scale and rate of change posed by the surge of advanced ICT into the workplace can seem bewildering, but it is apparent that there are core skills that we need to focus on, as indicated by several authorities (Brynjolfsson & McAfee, 2016; Frey & Osbourne, 2013; Gratton, 2011; Gratton & Scott, 2016; Robinson, 2011; Zhao, 2012). That these skills are required in hospitality is by inference relatively pressing, given the adoption and diffusion of ICT into hospitality (Bowen & Whalen, 2017) that we have previously indicated, notably in the Asia Pacific region (Tolkach et al., 2016).

The skills that we need for the evolving world of non-routine analytical and manual work focus on creativity, decision-making and complex communication. Creativity is linked to decision-making through problem solving. Decision-making is linked to complex communication through the need to normalise decisions made. Complex communication is required to break through newly created ideas. We argue that these are the essential tools for leadership as we move forward in the evolving world of work, and no more so than in hospitality.

2.3. Creativity

Creativity is often conceived of as a solitary affair. For some artists and others, it can be just so. It is important to recognise that creativity is a contact sport (Brown, 2009; Ogilvie & Liedtka, 2011), and the process of creating a solution to a challenge or refining an existing solution to a problem that affects an organisation or community requires contact with communities that consume or build the solution. It requires:

- 1. Collecting information on what people need by asking good questions;
- 2. Developing breakthrough ideas by pushing past incremental or obvious solutions;
- 3. Building prototypes to learn how to improve ideas; and
- 4. Communicating the story to encourage others to act.

In other words, as Steve Jobs said¹, it's about connecting experiences to produce a better experience that exceeds the obvious. Most importantly, creativity doesn't stop with creation; it needs to be 'sold' as well.

2.4. Decision-making

Over the years, many models of decision-making have been put forward. Most present decision-making as a rational process. Often as not, it isn't. Even decisions made based on the fullest information possible rely on someone, somewhere to make a subjective judgment based on expertise or experience, or both. This has been modelled as 'naturalistic decision-making'.

Naturalistic decision-making deconstructs decision-making through detailed analyses of discourse, narrative and social action by decision-makers with a strong focus on context (Gore, Banks, Millward, & Kyriakidou, 2006). It has been used extensively in the study of real world decision makers, particularly in high risk work environments (Elliott, 2005; Gore et al., 2006; Gore, Flin, Stanton, & Wong, 2015; Klein, 1998; Lipshitz, Klein, & Carroll, 2006; Lipshitz, Klein, Orasanu, & Salas, 2001; McDaniel, 1993; Shattuck & Miller, 2006; Zsambok & Klein, 1997). It attempts to describe what people do under pressure of time, ambiguous or absent information, poorly-defined goals, and an evolving context (Klein, 1997). Further, it describes how people can use their experience (in the form of heuristics) to arrive at good decisions without the need to compare potential positive and negative outcomes of a course of action. Also, it is, if rather obviously, 'naturalistic', in that it is drawn from the real world. Additionally, naturalistic decision-making offers guidance for training people to make better decisions or to help others to make better decisions. Finally, its tacit acceptance that the role of the discursive mind (Edwards & Potter, 1992; Harré & Gillett, 1994; Moore, 2002) in decision-making represents a marked departure from earlier decision-making paradigms (Smallman & Moore, 2010, pp. 401-402). Woodside,

¹ https://medium.com/taking-note/steve-jobs-three-steps-to-making-connections-that-matter-c2a8eb77b402 [accessed 26 January 2019]

MacDonald, and Burford (2004) and Decrop (2006) implicitly follow this approach in their naturalistic accounts of tourism decision-making.

In this paradigm decision-making is not about rational choice. We all develop heuristics through which we make decisions. These heuristics are the product of lived or simulated experiences, including learning and training (indeed the etymology of the word is the Greek $\varepsilon \upsilon \rho \iota \kappa \alpha$ (evrika - "I have found")). We use heuristics to make decisions based on interpreting patterns that we perceive in cues (signals) that we perceive in the context in which we work and live. Cues are experienced through the human senses (taste, sight, touch, smell and sound).

2.5. Complex communication

Complex communication in the second machine age is complex, yet vital to effective leadership (Barrett, 2006). Its purpose is the successful sharing of information through multiple means: digital, visual, verbal, and non-verbal. These channels of course are interwoven.

Digital communication refers to communication through social media, texting, messaging and email.

Digital technologies have transformed communication (Willis, 2017). They create a sense of urgency and a need to share. Conventional communication is based on information transmission and feedback. Telephony aside, it was the case that written communication took a little while to compose and send (even by telex or fax). Social media now balances the opportunity for instant gratification in sending messages, whilst allowing recipients the opportunity to respond. However, enabling and encouraging rapid transmission (and indeed accidental transmission) has opened a huge window for error. The physical process of writing letters, and transmitting them via post, telex or fax would usually cause pause for thought. The immediacy of digital transmission confers no such discipline. In short, what happens in Facebook, LinkedIn and on email is on the Internet for life.

3. Methodology

Hence, the key skills required in interfacing with advanced ICT are not purely technical, since that is in the purview of technical specialists. Instead, hospitality executive, managers and employees will need to hone creative, decision-making and communication skills to leverage the very best out of artificial intelligence, big data, social media and online communities. These are the areas that we as educators will need to work on and to develop new approaches to deliver interventions to develop these skills.

In this pilot study, we ask are creativity, decision-making and communication skills at the core of hospitality education or not? And, is hospitality education introducing students to the potential of artificial intelligence, big data, social media, online communities and similar ICT?

We analyse the graduate attributes (GAs), course (program) learning outcomes (CLOs), core or elective subjects (units) and subject (unit) learning outcomes (SLOs) of hospitality and leisure management programs at the top 10 universities for hospitality and leisure management, based on the QS World University Rankings by Subject 2018²:

1. University of Nevada - Las Vegas, USA, BSc Hospitality Management;

² https://www.topuniversities.com/university-rankings-articles/university-subject-rankings/top-universitieshospitality-leisure-management [accessed 26 January 2019]

- 2. Ecole hôtelière de Laussane, Switzerland, BSc International Hospitality Management;
- 3. The Hong Kong Polytechnic University, Hong Kong, BSc (Hons) Hotel Management;
- 4. University of Surrey, UK, BSc (Hons) International Hospitality Management;
- 5. Glion Institute of Higher Education, Switzerland, BBA International Hospitality Business;
- 6. Les Roches Global Hospitality Education, Switzerland. BBA Global Hospitality Management;
- 7. Swiss Hotel Management School, Switzerland, BA International Hospitality Management³;
- 8. Bournemouth University, UK, BA (Hons) International Hospitality Management;
- 9. Cornell University, USA, BS Hotel Administration;
- 10. Virginia Polytechnic Institute and State University, USA, BS Hospitality and Tourism Management

We analysed data on each course from the websites or brochures of each institution. Our analysis approach was simply to look for explicit evidence of the inclusion of creativity, decision-making and communication skills or awareness building of the use of advanced ICT in GAs, CLOs, core or elective subjects, and SLOs in each of the courses.

4. Results

The results of our analysis are detailed in Table 1 (attached to this paper). They refer to the nine courses for which we were able to access data.

4.1. Graduate attributes

Creativity features in the GAs of three out of nine courses. Decision making features in five. Communications features in six.

AI, big data analytics, social media, online communities and other technologies do not feature in the GAs of any course.

4.2. Course learning outcomes

Creativity features in the CLOs of one out of nine courses. Decision making features in six. Communications also features in six.

AI, big data analytics, social media, online communities and other technologies do not feature in the CLOs of any course.

4.3. Core or elective subjects and subject learning outcomes

Creativity features in the subjects or SLOs of five out of nine courses. Decision making features in five. Communications features in eight.

Big data analytics features in the subjects or SLOs of four out of nine courses. Social media features in six and other technologies feature in four.

AI and online communities do not feature in the subjects or SLOs of any course.

4.4. Institutional ranking

Based on the number of occurrences of the key terms across GAs, CLOs, core or elective subjects and SLOs of the nine hospitality and leisure management courses we analysed, they rank thus:

³ At the time of writing, we had not received data requested from the Swiss Hotel Management School.

- 1. University of Surrey, UK, BSc (Hons) International Hospitality Management;
- 2. Bournemouth University, UK, BA (Hons) International Hospitality Management;
- 3. Hong Kong Polytechnic University, Hong Kong, BSc (Hons) Hotel Management;
- 4. Glion Institute of Higher Education, Switzerland, BBA International Hospitality Business;
- 5. Cornell University, USA, BS Hotel Administration *and* Virginia Polytechnic Institute and State University, USA, BS Hospitality and Tourism Management
- 6. Les Roches Global Hospitality Education, Switzerland. BBA Global Hospitality Management;
- 7. Ecole hôtelière de Laussane, Switzerland, BSc International Hospitality Management; and
- 8. University of Nevada Las Vegas, USA, BSc Hospitality Management.

To be clear, *this is not a comment on the quality of these courses*; they are the top ranked schools in hospitality worldwide (under the QS Rankings). It is a simple analysis of the degree to which their course descriptions include the key terms.

5. Discussion and Conclusions

5.1. Discussion and implications

Our findings demonstrate that the core skills of creativity, decision-making and complex communication are clearly included, to greater or lesser extents, in the curriculum of a majority of highly ranked hospitality courses worldwide. However, creativity, decision-making and complex communications too, seem to be missing in some of these courses. This is concerning, given the advance of ICT into the hospitality sector and the importance of these skills in using ICT to augment and leverage human intelligence. The advocates for the adoption of these skills sets (Brynjolfsson & McAfee, 2016; Frey & Osbourne, 2013; Gratton, 2011; Gratton & Scott, 2016; Robinson, 2011; Zhao, 2012) are highly respected and their advocacy is grounded in strong research and scholarship.

Of the ICT that we sought evidence of, social media, big data analytics and other technologies feature in several courses. Of course, the adoption of social media in hospitality courses should be no surprise, given its huge importance in social media marketing (Hlavac, 2014) and competitive intelligence (Bekes & Smallman, 2018). Data science (big data analytics) too, is now well established across a range of industries and its inclusion as a business intelligence tool in business-related courses is also important, as business statistics is transformed. This finding supports the scholarly investigation of application of this technology to hospitality (Antonio et al., 2018; Claveria et al., 2015; Kirilenko et al., 2018; Rita et al., 2018).

It is unfortunate that the application of AI seems to be missing from leading courses. As we discussed earlier, cloud-based AI, and particularly ML, systems (such as IBM's Watson) are enabling a wave of responsive, customer-centred improvement across hospitality. The lack of their inclusion in the hospitality curriculum is counter to some scholarship in the application of AI to hospitality (Folgieri et al., 2017; Kobbac, 2012; Sánchez-Medina et al., 2018; Tung & Au, 2018).

5.2. Conclusion

In this pilot study, we asked if creativity, decision-making and communication skills are at the core of hospitality education or not? The answer to this is a qualified "yes."

We also asked if hospitality education introducing students to the potential of artificial intelligence, big data, social media, online communities and similar technologies? The

answer here is "yes" with reference to big data, social media and similar technologies, but "no" with reference to AI and online communities.

Based on this basic analysis, it seems that the need to develop skills that will enable the hospitality sector to better leverage new ICT is slowly being met in several leading educational institutions. However, we would not make generalised claims based on this pilot study alone, not least since the depth and quality of learning in key areas has not been assessed, although we contend that we have established a case for further investigation.

It is indisputable that ICT plays a significant role in hospitality and tourism industries, notably in the Asia Pacific region (Tolkach et al., 2016). It is also indisputable that hospitality operators of all sizes are increasingly deploying artificial intelligence (AI), machine learning (ML) and related ICT (e.g., 'big' data analytics, social media, online communities) to reshape their businesses (Bowen & Whalen, 2017). Cloud-based AI, and particularly ML, systems (such as IBM's Watson) are enabling a wave of responsive, customer-centred improvement across hospitality.

It seems that educators are slowly introducing the skills required to leverage the use of these technologies through augmenting human intelligence, and indeed are introducing the technologies themselves. However, rather like 'Moore's law', which successfully described the geometric progression in the speed of computing power over the past several decades, the more rapid introduction of creativity, decision-making and communication skills curriculum, with reference to their leveraging advanced ICT, is likely to become increasingly compelling over a very short time span.

5.3. Limitations of this study and suggestions for future study

This is a pilot study that uses publicly available data that was analysed in a *very* simple manner. It does not provide a strong basis for making generalised claims. This was not our intent. Rather it was to test whether the research theme is worthy of further investigation, which we contend it is.

The study would be considerably improved by developing a more detailed data set, with an improved depth of data supplied by the institutions we have analysed. Moreover, it would improve the study if we undertook interviews with leading educational practitioners and industry figures too. We should also seek to use more sophisticated analytical methods for text analysis.

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	University of Nevada – Las Vegas	Ecole hôtelière de Laussane	Hong Kong Polytechnic University	University of Surrey	Glion Institute of Higher Education	Les Roches Global Hospitality Education	Swiss Hotel Management School	Bournemouth University	Cornell University	Virginia Polytechnic Institute and State University	
Course (Program)	BSc Hospitality Manage- ment	BSc International Hospitality Manage- ment	BSc (Hons) Hotel Manage- ment	BSc (Hons) International Hospitality Manage- ment	BBA International Hospitality Business	BBA Global Hospitality Manage- ment	BA International Hospitality Manage- ment	BA (Hons) International Hospitality Management	BS Hotel Administra- tion	BS Hospitality and Tourism Manage- ment	Count (out of 9)
GAs											
Creativity	×	GAs are not specifically articulated in the publicly available material	×	✓	✓	GAs are not specifically articulated in the publicly available material	Data requested was not available at the time of submission	✓	×	×	3
Decision-making	×		~	~	~			×	~	✓	5
Communications	×		✓	✓	✓			✓	~	✓	6
AI	×		×	×	×			×	×	×	0
Big data analytics	×		×	×	×			×	×	×	0
Social Media	×		×	×	×			×	×	×	0
Online communities	×		×	×	×			×	×	×	0
Other technologies	×		×	×	×			×	×	×	0
CLOs						CI Os em					
Creativity	×	× × × ×	×	×	✓	not specifically		×	×	×	1
Decision-making	×		✓	✓	✓	the publicly		✓	✓	✓	6
Communications	×		~	✓	✓	available material		~	~	 ✓ 	6
AI	×		×	×	×			×	×	×	0

Table 1: Presence of creativity, decision-making and communication skills, and advanced technology content in hospitality and leisure management course (program) GAs, CLOs, core subjects and core SLOs

	University of Nevada – Las Vegas	Ecole hôtelière de Laussane	Hong Kong Polytechnic University	University of Surrey	Glion Institute of Higher Education	Les Roches Global Hospitality Education	Swiss Hotel Management School	Bournemouth University	Cornell University	Virginia Polytechnic Institute and State University	
Course (Program)	BSc Hospitality Manage- ment	BSc International Hospitality Manage- ment	BSc (Hons) Hotel Manage- ment	BSc (Hons) International Hospitality Manage- ment	BBA International Hospitality Business	BBA Global Hospitality Manage- ment	BA International Hospitality Manage- ment	BA (Hons) International Hospitality Management	BS Hotel Administra- tion	BS Hospitality and Tourism Manage- ment	Count (out of 9)
Big data analytics	×	×	×	×	×			×	×	×	0
Social Media	×	×	×	×	×	n			×	×	0
Online communities	×	×	×	×	×			×	×	×	0
Other technologies	×	×	×	×	×			×	×	×	0
Core or elective subjects and SLOs					SLOs not available through website	SLOs not available through website					
Creativity	×	✓	~	✓	×	✓		✓	×	×	5
Decision-making	×	×	~	~	×	~		~	~	×	5
Communications	~	~	~	~	~	~		~	~	×	8
AI	×	×	×	×	×	×		×	×	×	0
Big data analytics	×	~	×	~	×	~		~	×	×	4
Social Media	×	✓	×	✓	~	✓		✓	×	✓	6
Online communities	×	×	×	×	×	×		×	×	×	0
Other technologies	×	×	~	~	×	×		~	×	✓	4
Count (out of 24)	1	4	9	11	8	5		10	6	6	-