

**Hospitality employers' perceptions of technology for sustainable development: The implications for graduate employability**

ALI, Alisha <<http://orcid.org/0000-0002-7667-4293>>, MURPHY, Hilary and NADKARNI, Sanjay

Available from Sheffield Hallam University Research Archive (SHURA) at:

<http://shura.shu.ac.uk/11569/>

---

This document is the author deposited version. You are advised to consult the publisher's version if you wish to cite from it.

**Published version**

ALI, Alisha, MURPHY, Hilary and NADKARNI, Sanjay (2018). Hospitality employers' perceptions of technology for sustainable development: The implications for graduate employability. *Tourism and Hospitality Research*, 18 (2), 131-142.

---

**Copyright and re-use policy**

See <http://shura.shu.ac.uk/information.html>

# **Hospitality employers' perceptions of technology for sustainable development: The implications for graduate employability**

## **Abstract**

This paper investigates hospitality employers' perspectives of two key inter-disciplinary subjects, i.e. sustainable development (SD) and information technology in the context of hospitality education, particularly graduate employability. A qualitative approach is deployed at this stage of the research with semi-structured interviews conducted with employers of hospitality graduates that represent diverse stakeholders in the industry. Respondents had varying interpretations of the meaning of sustainable development and the role of technology in their businesses. Sustainability is not currently prioritised as a critical employability skill however employers clearly appreciate the value of sustainability for their business and recognise how technology might support SD. This is the first effort to investigate employers' perspectives of the interdisciplinary subjects of technology and sustainable development in hospitality management undergraduate education.

## **Keywords**

Sustainable development, Information technology, Hospitality education, Employer perspective, Interdisciplinary subjects, Graduate employability

## **Introduction**

Hospitality businesses and higher education (HE) have important roles as active stakeholders in supporting a paradigm shift towards sustainable development (SD) both in academic discourse and at a wider policy level (Tilbury, 2011). Certainly, the rapid changes in our society and an enlightened perspective of sustainability require new, cross-disciplinary and softer competences in sustainability related knowledge (Huq and Gilbert, 2013). One of these new perspectives is the use of technology for SD (Ali and Frew, 2013; Bartlett and Trifilova, 2010; Henry, 2012; Melville, 2010; Scheel and Vazquez, 2011). Students are increasingly engaging with digital tools for their learning and it is argued that this should promote a contribution to SD (Ali et al., 2014) and for "engaging meaningfully with ideas of sustainability" (Middleton, 2009, p. 187).

Moreover, for the HE sector to add value to employability and to society in a wider context, educators must have a thorough understanding of these key stakeholder needs, particularly employers, to inform and enrich the hospitality curriculum (Barber et al., 2011). Responding to the needs of our industry is critical as "many hospitality and tourism management academics have limited recent industry experience - hence the need for industry engagement" (Roberts, 2009, p. 132). Though the industry is often involved in curricula design, it is rarely at the nexus of sustainability and technology education.

SD is one of the competences identified by employers required to meet the growing need for higher-level skills (Jackson, 2010, 2013; Rawlinson and Dewhurst, 2013). Incorporation of SD into the hospitality education is gaining traction (Barber et al., 2011; Boley, 2011; Deale et al., 2009) and research exists which examines the business perspective of SD, in the context of hospitality education and curriculum design (Millar and Park, 2013). Technology is also a graduate skill required by employers (Wang et al., 2009). However, there has been little academic investigation

into the industry perspective of technology for SD in hospitality, particularly the impact on graduates' employability.

As the nature of technology and the understanding of SD are constantly evolving, it is critical to scrutinise how employers view the employability value of these interdisciplinary subjects. Research has focused separately on the role of technology (Finch et al., 2013; Jackson, 2010, 2013; Pirzada and Khan, 2013; Wilton, 2011) and on SD (Bohdanowicz, 2005; Darcy et al., 2010; Tzschentke et al., 2008) while few authors have examined the cross-disciplinary nature of technology for SD. By examining technology and SD, this study will contribute not only to the literature but also to methodologies and practice. The main contribution to the literature is in the synchronised examination of both technology and SD, which offers a fresh perspective. Though this study builds on the literature identified by previous researchers, it introduces an additional layer of investigation by focusing on the role technology can directly play in SD and its impact on employability. This research focuses specifically on the interdisciplinary nature of both SD and technology while most of the literature, till now, has focused on the wider aspects of defining and examining the determinants and drivers of SD and technology as separate disciplines. It contextualises technology for SD within a range of stakeholders who are known to be employers of hospitality graduates. Previous researchers have measured reported data (Dhiman, 2012); whereas our contribution, in methodological terms, is in adopting a more goal-directed and investigative approach to discover employer perceptions rather than reported or intended ones. This answers the call from researchers in this domain (Lewin et al., 2012; Melissen, 2013) to encourage innovation in these interdisciplinary research areas and to adopt a pragmatic research design. To our knowledge, this is the only paper that has attempted to investigate employers' perspectives of these interdisciplinary subjects in hospitality management undergraduate education. As a contribution to practice, it provides educators with a deeper insight into the employers' perceptions, which should, in turn, inform curricula design.

Therefore, the over-arching **research** question addressed in this paper is, how do employers of hospitality graduates perceive sustainable development and the contribution of technology to sustainable development, particularly the implications for employability?

## **Literature review**

### *The hospitality industry and sustainability*

Sustainable development is defined as "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987, p. 43). It encompasses economic, environmental and socio-cultural concerns and has become a critical issue for managers, governments and consumers (Alonso and Ogle, 2010; de Grosbois, 2012) including the hospitality industry. Once considered "smokeless", the hospitality industry is now seen as having a substantial ecological footprint, with intensive use of resources and energy (Bohdanowicz, 2005; Melissen, 2013). For example, the accommodation sector is estimated to be accountable for 21% of tourism's total carbon footprint (de Grosbois et al., 2011). As the industry continues to grow, it is important to understand the environmental impacts and how these can be controlled or prevented (Barber et al., 2011).

Businesses that take a holistic approach to SD can benefit from greater profits, reduced costs, strengthened employee commitment, improved customer satisfaction and retention and better

investor relationships. Hospitality companies can profit from pursuing environmentally friendly strategies that are transparent and responsible as these activities make them more acceptable in the eyes of the community (Cvelbar and Dwyer, 2013). Customers also expect that companies will meet their environmental responsibilities and act accordingly (de Grosbois, 2012) by choosing hotels pursuing environmentally friendly and socially responsible policies (Anuwichanont et al., 2011). Indeed, a 2008 survey of 1000 business travellers found that 95% of them think that accommodation providers should be engaging in green initiatives (Deloitte, 2008).

Hospitality companies are also taking steps to engage in more environmentally friendly behaviour. Bohdanowicz et al. (2011) and de Grosbois (2012) have highlighted that accommodation providers are attentive to their environmental impacts and have implemented strategies to help them become more sustainable. Whilst these efforts are noteworthy, greater progress is required by the hospitality industry in embracing SD as part of their operational, tactical and strategic plans. Current approaches are often criticised as being unplanned and detached from the business strategy (Tzschentke et al., 2008), narrow focused (Darcy et al., 2010) and tend to be side-lined for other business concerns (Bohdanowicz, 2005). Moreover, despite a wealth of research on SD in the hospitality industry the debate is still considered theoretically weak (Moscardo, 2008) and businesses are finding it difficult to understand and apply sustainability practices (Mihalic et al., 2012). Jenkin et al. (2011) argue that many business leaders view SD as being disconnected from the way they conduct their business. López-Gamero et al. (2011) and Orlitzky et al. (2011) contend that it is the proficiency and commitment of business managers to SD which will be critical to organisations in maintaining longevity.

#### *The employable graduate*

The move in academia from “intellectual enlightenment” towards a “service to industry” means delivering employable graduates and supporting different kinds of learning (Jang et al., 2010). Research has concentrated on the skills and competences required by HE graduates for employability (Finch et al., 2013; Wilton, 2011) and drilled down to focus on those which are important for hospitality graduates (Dhiman, 2012; Zehrer and Mössenlechner, 2009). Amongst those critical skills and competences that employers demand is technology and SD to meet the growing need for higher-level skills (Rawlinson and Dewhurst, 2013). Jackson (2010) highlights the range of competences needed in management graduates and emphasises the need for these interdisciplinary competences rooted in technology and SD. Employers also have disparate expectations regarding graduates’ competencies and skills (Greene and Saridakis, 2008), often focusing on operational aspects at the expense of academic or strategic competences (Wilton, 2011). Hospitality itself is an applied subject area and, for the curricula to develop meaningfully, industry inputs are critical (Barber et al., 2011; Millar et al., 2010).

#### *Employability and interdisciplinary subjects*

Employability is high on the agenda for most HE institutions for reasons such as government policy, employer demand and a shortage of skills, triggering a dramatic shift on course design and how the role of HE is perceived (Huq and Gilbert, 2013). In fact the nature and role of HE has been questioned in terms of its wider role in the economy, particularly with regard to employability (Star and Hammer, 2008). Enz et al. (1993) were the first to initiate a survey on employability with key stakeholders, i.e. graduate students, faculty and industry representatives, to formulate a new

hospitality curriculum and identified the key success factors of hospitality careers. More recently, Cheung et al. (2010, p. 27) highlighted the importance of industry-related competences, identifying “eight competency dimensions of (1) self-management (2) strategic positioning, (3) implementation (4) critical thinking (5) communication (6) interpersonal skills (7) leadership and (8) industry knowledge.” However, these do not fully incorporate the interdisciplinary subject of sustainability and technology.

Different perspectives prevail as to who should be the dominant driver for curricula design. Fearn (2008) contends that HE’s primary role is to facilitate learning rather than being a training ground for businesses whilst Bohm et al. (2004) maintain that the quality of education provision includes employability of graduates. Initiatives in employability, in collusion with industry, have been variously undertaken (Solnet et al., 2007). However shortfalls persist between course curricula competences presented and those required (Helyer, 2011). There remains a lack of precise definition about the terms “inter-disciplinary”, “multi-disciplinary” and “trans-disciplinary”. Nonetheless, “inter-disciplinarity” is widely accepted as an attempt to integrate or synthesise perspectives from several disciplines (McEwen et al., 2009). Moreover, the inter-disciplinary approach seeks to redefine problems outside of normal boundaries with the main advantage of applying interdisciplinary thinking for complex problem solving, a key competence and high level skill required for management. Jackson (2010) identifies sustainable sensitivity as an important personal and ethical competence and, in a wider context; there is a “growth in demand for these boundary-crossing competencies”(Oleksiyenko, 2013, p. 344).

#### *Graduate skill sets in technology*

The ability to exploit technology is now seen as a necessary requirement for gainful employment (Pirzada and Khan, 2013). Technology, as an employability skill, is supported by employers and it has featured in several definitions of employability (Confederation of British Industry, 2007; Australian Council for Educational Research, 2008) and many researchers have promoted technology as significant for employable graduates (Pool and Sewell, 2007; Rosenberg *et al.*, 2012). This situation is mirrored for hospitality graduates with Bilgihan et al., (2014), Nolan et al., (2010) and Raybould and Wilkins (2005), identifying technology as a requisite skill. With regards to career success, information technology was ranked 10/33 in importance as a subject matter by hospitality professionals (Gursoy et al., 2012).

Technology has been a key driver for hospitality businesses for several decades and it has drastically transformed how the industry operates (Law et al., 2013; Law et al., 2014). Hospitality is a “high touch” and service intensive industry and its information processing requirements, distribution channels and operational requirements demand that technology is adopted and used to its advantage (Law et al., 2013; Law et al., 2014). The focus of technology applications in hospitality has been on human resources practices, security, revenue, marketing, guest services and operations and strategic management (Ip et al., 2011). This has led to improvements in productivity, guest services, cost control, marketing and competitive advantages (Bilgihan et al., 2011). Given the critical importance of technology to the hospitality industry, graduates need to have a proactive understanding of technology, not only how to operate the systems used but to extract relevant and reliable information generated by these systems for business advantages (David, 2007) and to apply technology across functional boundaries for strategic advantage.

### *Graduate skill sets in sustainability*

The incorporation of SD in the hospitality curriculum remains at an embryonic stage (Deale et al., 2009) with researchers investigating stakeholder SD requirements for employability, e.g. Barber *et al.* (2011) and Boley (2011). Barber et al. (2011, p. 8) commented that, “the sustainability of the hospitality industry is dependent upon industry professionals who accept SD principles as part of their management values including sound environmental stewardship.” Millar and Park (2013, p. 86) establish that hospitality employers generally concur that learning about sustainability in HE is important for the industry and emphasised that students need to understand “what the concept actually means in their professional and personal life and why it is important for them to know it.” This understanding must exceed the limited perception of SD as a cost savings exercise and beyond being a financial business case for all stakeholders (Dyllick and Hockerts, 2002; Pelozo et al., 2012). For all business related subjects, fundamental competencies such as strategic thinking, communication, leadership, and decision-making skills may remain constant over time. However, more recent, rapid changes in our society require new, cross disciplinary and softer competences, such as sustainability-related knowledge to encourage critical, holistic and interdisciplinary thinking (Huq and Gilbert, 2013; Wiek et al., 2011).

### *Technology for SD*

Ali and Frew (2013) observed that a synergistic relationship exists between technology and the core elements of sustainability, i.e. economic, environmental and socio-cultural. This technology referred to in this paper is Information and Communication Technology. It is the umbrella term that refers to any product that stores, retrieves, manipulates, transmits and receives digital data and how these differing applications work with each other (Buhalis, 2003). In essence, it is the technology required for information processing and flow (Ali and Frew, 2013) with SD examples in the hospitality sector such as waste monitoring systems, room and lighting control and electronic bookings. Knowledge of such technology is not only important for career success but it is seen as critical in allowing individuals to be more productive and become better citizens (Pirzada and Khan, 2013). Understanding the use of such technologies “has the potential to inspire students to become leverage points for sustainable development” (Rockstroh, 2013, p. 404).

Compton et al. (2013, p. 113), in a New Zealand setting, found that using technology increased students’ environmental awareness. It can also play a role in “developing future citizens with a meaningful, critical and robust construct of sustainability”. SD is a concern for all of us and technology is deeply embedded in our social systems and “without it society would immediately collapse” (Mulder et al., 2011, p. 2). The best hope for SD is through the use of technology (Henry, 2012). Given the critical importance of both the technology and sustainability agendas for both hospitality HE and industry, the time is opportune to address this research gap. Therefore, as awareness within the industry increases from the employer and customer stakeholders, educational institutions should respond to this need. These interdisciplinary subjects are rarely investigated and this paper responds to the gap in the research by directly addressing the employers’ perspective and their vision on technology for SD. This paper seeks to expound the discussion in this domain by probing synergies in these inter-disciplinary areas, i.e. sustainability and technology, within the context of hospitality education and employability. This research provides a first qualitative insight, wherein the focus is on discovery and depth of understanding.

This research addresses the hospitality employer perspective of technology for SD. They are key stakeholders in the hospitality education process and investors in the future of our graduates. Specifically the research questions addressed in this study are,

1. What are hospitality graduate employers' perspectives on SD?
2. Do hospitality employers' view graduate knowledge of SD, technology and technology for SD as important for their business?
3. Would graduate employers give preference to hiring students who had a greater awareness of how technology for SD can impact their business?

### **Methodology**

The focal population of this study is hospitality graduates' employers whose perspectives were sought on technology for SD and hospitality undergraduate management students' employability. This research adopted a qualitative approach using semi-structured interviews. Qualitative research provides in-depth information on fewer cases and covers a variety of contexts, pertinent to this population of hospitality employers under examination. Despite the limitations of making inferences or replication (Kitchin and Tate, 2000) semi-structured interviews are one of the most commonly used qualitative methods and Long (2007) supports interviews as a method to encourage insights which are otherwise difficult to gauge through a survey. This technique is more suitable for finding out "why" rather than "how many" or "how much" (Fylan, 2005, p. 66). This method was the most apt as this study sought perceptions from diverse stakeholders as listed Table 1, which include hotels, travel agencies, hospitality technology suppliers and professional industry associations. Hospitality graduates seek employment with hotels and allied industry verticals; therefore input from a broad spectrum of informants was essential in fulfilling the research objectives.

The research instrument was informed by the literature and 12 interview questions were prepared based on the following key themes:

1. Sustainability in the workplace/business: respondents were asked how they define SD, comment on their organisation's SD practices, and discuss the importance of graduates' knowledge of sustainability.
2. Graduate skill sets in technology and sustainability: respondents were probed on the level of importance they attached to graduating students' understanding of technology and SD while hiring and whether this would be a differentiator in hiring decisions.
3. Nurturing sustainable technology graduates: suggestions were invited from the respondents on how HE establishments could make their graduates more employable, specifically in regards to technology and SD related knowledge base and skillsets.

Given the qualitative methodology, Davies and Dodd's (2002, p. 279) approach of ensuring rigour and reliability of the research process through "attentiveness, empathy, carefulness, sensitivity, respect, reflection, conscientiousness, engagement, awareness, and openness" was adopted and validated via an internal expert review of the research instrument.

Fifteen semi-structured interviews were conducted. Five participants were interviewed at an international conference; eight further interviews were conducted in the UK and two more interviews in UAE. In addition to ensuring stakeholder representation across the industry value chain, the sample-set of interviewees also reflected geographic practicalities. Most of the interviewees were based in Europe, as two of the three authors are located there in HE. Though some of the businesses identified for the interviews have a global footprint, the geographical representation was

predominantly Europe, Middle East and Africa centric. Though the entire stakeholder value chain could not be represented in each of the geographies, the number of interviews was deemed sufficient as no new themes or issues emerged from the later interviews, thus suggesting saturation had been reached (Veal, 2011). These interviewees also represent the typical employment profile of the hospitality graduate sector. The responses were collated, inspected and subjected to thematic analysis. This approach brought out more clearly the patterns and facts from the interviews (Mason, 2014).

### Findings and discussion

#### *Sustainability in the workplace: employers' perspectives on sustainable development*

The stakeholders interviewed can be divided into two broad categories for analysis, those from the hotel sector and those in other sectors related to hospitality industry, for example, contract catering and pubs and restaurants, referred to in this paper as non-hoteliars. An anonymised description of interviewees is presented in Table 1 below.

**Table 1: Description of the Interviewees**

| <b>Interviewee</b> | <b>Type of Organisation</b>            | <b>Role in the Organisation</b>     | <b>Interview Location</b> |
|--------------------|--|-------------------------------------|---------------------------|
| <b>1</b>           | Hotel sector                           | Corporate level/ Strategic role     | Conference in Switzerland |
| <b>2</b>           | Hotel sector                           | Corporate level/ Strategic role     | Conference in Switzerland |
| <b>3</b>           | Sector related to hospitality industry | Operational Level/ Operational role | Conference in Switzerland |
| <b>4</b>           | Sector related to hospitality industry | Operational Level/ Operational role | Conference in Switzerland |
| <b>5</b>           | Sector related to hospitality industry | Operational Level/ Operational role | Conference in Switzerland |
| <b>6</b>           | Sector related to hospitality industry | Corporate level/ Operational role   | UAE                       |
| <b>7</b>           | Hotel sector                           | Corporate level/ Strategic role     | UAE                       |
| <b>8</b>           | Sector related to hospitality industry | Corporate level/ Strategic role     | UK                        |
| <b>9</b>           | Hotel sector                           | Operational Level/ Operational role | UK                        |
| <b>10</b>          | Hotel sector                           | Operational Level/ Operational role | UK                        |
| <b>11</b>          | Hotel sector                           | Corporate level/ Strategic role     | UK                        |
| <b>12</b>          | Hotel sector                           | Corporate level/ Strategic role     | UK                        |



|    |  |                                     |    |
|----|--|-------------------------------------|----|
| 13 | Hotel sector                           | Property level/ GM role             | UK |
| 14 | Hotel sector                           | Property level/ GM role             | UK |
| 15 | Sector related to hospitality industry | Operational level/ Operational role | UK |

Employers understanding of SD from the perspective of their own organisations voiced different interpretations based on the specific orientation of their business. Some participants from the hotel sector demonstrated that they were aware of the need to include SD as a part of their core strategy as illustrated by comments such as, 'sustainability has to be fully integrated in the business model.'

Other hoteliers perceived a wider context when defining SD as a marketing, economic, moral and social responsibility, with a long-term perspective, exemplified by the following, 'it is important to be green as a business but also I think you have a moral and social responsibility to apply it' and

'It is increasingly apparent that sustainability in all its guises is imposing on every area of the business (in the future)... sustainability policies and actions are simply infused into all that we do and are a normal part of the culture of the organisation.'

However, for some, it was considered more as a cost saving exercise as depicted in these quotes; 'using ecology as means to maximize savings and minimize expenditure in operations' and 'utilities are one of our highest and ever increasing costs and naturally we have an economic reason.' Non-hoteliers had a wider interpretation of SD as compared to the hoteliers. The quotes below are a sample of what was discussed.

'Takes the environment into consideration throughout the entire course of corporate activities - from the product development phase to disposal stage.'

'Encourage long-term development of tourism.'

It is evident that the hospitality industry has an understanding of what SD is; however, this conceptualisation varied with interpretations ranging from very weak to very strong. A very weak interpretation was viewed as focusing in economic sustainability whilst a very strong interpretation concentrated on encompassing the economic, environmental and socio-cultural environments (Garrod and Fyall, 1998; Hunter, 1997). Whilst some emphasised purely the economic aspects, perhaps only focusing on SD with the hope of financial yields from stakeholders (Peloza et al., 2012), it was clear that hospitality graduate employers appreciate the wider scope of SD (Millar and Park, 2013) such as the environmental and socio-cultural aspects.

*Sustainability in the workplace: employers' perspectives on the importance of graduates' knowledge of sustainability*

Hoteliers have mixed views on the importance of students possessing a good understanding of SD when they joined their businesses. Some were less concerned about students acquiring SD credentials during the educational process and felt it only mattered when it made good business sense or offered a competitive advantage. Such hoteliers commented, 'this is not necessarily important but they should have a good understanding of what is important to the business and how to help the business move forward and be sustainable.' Another stated,

'I think it would be in the vision, principles and values of the company but I don't think they would be looking for this as a skill, unless the role that you are applying for is specifically related to this.'

Whilst other hoteliers saw graduates' knowledge of SD as being important with comments such as;

'It is always good if they do. We have information on our green initiative on our Website so if I am interviewing someone, it would be good to see that they have read up the companies policies and know that it is important to us as a company and part of our day-to-day life in our hotels.'

'It will be another plus point for them, particularly if they were going up against students with similar qualifications or experience.'

In general, non-hoteliers acknowledge the growing importance of graduates having a good understanding of SD but also indicated that it was not a priority as seen from the following comments, 'it's not a requirement right now, but it will be more important in the future' and 'it is important to us ... but not a priority.'

Employers are beginning to recognise the importance of SD and the need for graduates to be informed (Barber et al., 2011; Millar and Park, 2013). However, this was not being given priority as an employability skill. While some employers are more concerned with graduates meeting business objectives, others saw the importance of SD for the strategic future of their business though not the immediacy. Dyllick and Hockerts (2002) assert that concentrating on the business case for SD is not sufficient.

*Graduate skill sets in technology and sustainability: employer perspectives on the role of technology and sustainability*

All stakeholders however identified technology skills as important, particularly the ability to apply technology effectively when seeking employment. This is derived from comments such as, 'technology by itself is not useful but knowing how to apply it (is more important)', '100%...there is no substitute for an understanding of technology and 'an understanding of sustainability technology and how it can balance ecology and economics, for the benefit of the organisation.'

This aligned to the findings in the literature where technology was identified as a key skill in models of graduate employability (Pool and Sewell, 2007; Rosenberg et al., 2012) and important for the hospitality industry (Gursoy et al., 2012). When probed on the contribution that technology can make for SD, many of the stakeholders revealed very specific applications of technology. This is confirmed by the findings of Bilgihan et al. (2014) in their survey of 110 hospitality industry professionals which identified that graduates required better knowledge of applications such as Microsoft Excel, Outlook and Micros.

Hoteliers' perspectives on technology's role was often limited to the physical management of the property and assets together aligned with the specific role of technology in communicating to customers as seen in these quotes,

'We have LED lights, steam cleaning technology, smart grid and solar panels.'

'We have here at this hotel one of the more sophisticated property management system that manages all of my utilities here.'

'We use using social media to convey our messages and our values about sustainability and engage with our customers.'

Only one hotelier respondent had a more holistic view of how technology could promote SD as explained in the following comment,

'Technology is used for our wastage and our supply chain ... menus and food, which looks at our food, where it comes from, how it is used and wastage. We are always looking for ways to bring in new technologies to help our business and share our values and tell people what we do.'

The non-hotel sector expressed a more strategic view of technology's role with comments such as,

'It is key to the success of the energy and environment team that technology is at the forefront of all we do.'

'It measures and manages GHG emissions produced throughout the product lifecycle to calculate the Product Carbon Footprint and acquire carbon labels.'

Hoteliers appeared to have limited knowledge of the role of wider uses of technology for SD. While there were aspirations for how such technologies could be used, the actual implementation was quite limited. Despite over 50 years of attempting to integrate sustainability into business operations, hoteliers remained preoccupied with everyday operational aspects (Chen et al., 2009), ignoring long-term priorities such as SD. This focus on tactical rather than the strategic aspects has a direct impact on their vision of SD. This also was reinforced by the prevalence of research on the tactical aspects of technology, e.g. Buhalis and Law (2008) and Ip et al. (2011), who focus on applications in hospitality with little attention given to the interdisciplinary nature of technology for SD. Non-hoteliers however, appeared to have a broader understanding of how technology can be

used to support their business sustainability. This may be due to the different nature of their businesses and how technology is used to deliver their services.

*Education and capacity building apropos to employability: employability of graduates with a greater awareness of technology for sustainable development*

Graduate employers gave a qualified “yes” to stating that they would give preference to hiring a graduate who had a greater awareness of technology for SD. However this was moderated by the need to have a clear business case for these specific skills. These employers felt some other skills are rated as more important, thus there does not seem to be a comparative advantage in employability with stakeholders purporting a range of views,

'As a hospitality company, higher importance is placed on relationship skills. Technology and sustainability knowledge is important but not as important as the interpersonal skills.'

'If they can prove it can save money for the company, then yes.'

'We will not “unprioritise” him/her based on a lack of knowledge regarding sustainability.'

Employers indicated that there were job roles in their businesses which focused on the use of technology for SD, however, these distinct opportunities were planned for the future. Some employers saw this technology role primarily being the responsibility of engineers whilst others placed it in various job roles, as, positions varying from hotel manager, front office to operations, sustainability can be implemented into the scope of all these positions' and 'there are support roles in the business where this knowledge would be valued.'

*Nurturing sustainable technology graduates: suggestions to higher education on technology for sustainable development and graduate employability*

The responses from all stakeholders disclosed that SD should be included in the curriculum particularly in the context of the external environment, which aligns to the findings of Barber et al. (2011) and Millar and Park (2013). Employers recognised SD as having implications for the longevity and future survival of hospitality businesses and acknowledged that students should be suitably informed. Moreover, employers emphasised that students should be involved in community work so they developed a sense of understanding of the implications of actions on the wider environment. The role of higher education was also clearly identified by interviewees.

'Having an understanding of sustainability impacts for the long run survival of the business.'

'Sustainable education has to be included in the curriculum of students.'

There were specific comments on how technology might support SD. This is elaborated below.

'Understanding how technology can be used to get the message across for businesses and how these tools changes.'

'Better academic training in technology ... distribution, revenue channels of technology... social networking.'

'Schools need to teach facts and truth on technology and sustainability.'

## **Conclusions**

This research sought to explore hospitality graduate employers' viewpoints of technology supported SD and the resultant implications for graduate employability. The diversity of opinions from the stakeholders depends on the industry vertical (hotel chains, online travel agency, hospitality technology supplier and professional industry association) and is not straightforward to synthesise. The interviews have yielded an equally diverse set of opinions thereby eluding consistency in their perceptions on SD. Not only do they define SD in a number of diverse ways but also the role that it plays in employability. However, most stakeholders are clear in that they see a prospective role for graduates who have these key interdisciplinary skills of technology for SD in the future. Despite extensive disparity in their definition and understanding about the precise meaning of SD and the role technology might play, some powerful stories emerge from the discussions, i.e. 'taking the environment into consideration throughout the entire course of corporate activities.' The evidence presented here shows that SD is a consideration for most hospitality employers.

As the interviews and their juxtaposition with the literature sources indicate, the full or exact extent that technology can enable more effective SD practices is difficult to assess precisely. Often, there is an absence of a common understanding of the terms SD and technology. Many interviews see a very 'light version' of SD e.g. using energy saving lighting, while others elaborate on a more social, moral or societal reflection. Technology also refers to a range of information technologies, systems and communications, with some interviewees referring to social media as technology whereas others refer to more sophisticated IT systems in energy monitoring and management.

Stakeholder participation in technology for SD is a central requirement for success. These divergent views here reveal a disparity of opinion on what constitutes SD, particularly in respect of the hoteliers themselves who tend to adopt a more simplistic, cost saving view of SD. This is in contrast to the non-hotelier stakeholder group who have a vision of SD beyond economic frameworks. This range of views is also reflected when discussing SD graduate employability credentials, where the immediacy of SD is recognised but not prioritised for employability by hotels, but more widely appreciated by other employee stakeholders.

Currently a short-term view seems to prevail on SD, which may be somewhat due to the recent economic crisis, and SD is seen as some kind of 'luxury' item that cannot yet be afforded, even in graduate education. Most respondents indicate that SD should be included in the curriculum though some concern is expressed about the "truth" about SD, possible due to the debate that still rages over the last 27 years and the relevance of the original concept as the world continues to change dramatically. Surely this is an area where HE should be more active and drives SD awareness from the graduate entry level onwards? Additionally, HE has a responsibility to educate in a wider sense and the challenge may be on how we include SD in the curriculum. Though this may be currently addressed in marketing and strategy courses in environmental scanning, e.g. by implementing a

PEST analysis, the linkage between the environmental (E) and technology (T) aspects should be made more explicit in course design and delivery.

The limitations of this research may lie in the diverse group of stakeholders interviewed and the relatively modest sample size. Therefore the results cannot be generalised to all hospitality graduate employers or employers from a particular sector of the industry. This is particularly challenging with a diverse, hard to reach population and with a multi-faceted subject such as technology for SD. Nonetheless, the depth of discovery within the interviews and wealth of opinions expressed somewhat compensates for the limited number of interviews. A further limitation may be the tendency in the time frame of the interviews to refer to what is obvious and visible and within the interviewees' frame of reference while other incidents and examples may be excluded or obscured, on first reflection. Further probing is required and a more ethnographic approach may be required as interviewees cannot be relied upon, either individually or collectively, as the key informants of all the SD practices within their businesses. Moreover, risks associated with bias must be similarly acknowledged.

The interviews conducted indicate very strongly that HE has a role to play in propagating both SD awareness and the enabling role of technology. Therefore, future research will use these findings to develop a questionnaire for distribution to a wider group of hospitality graduate employers and address the questions that remain unanswered in this work. This research has laid the groundwork of understanding how hospitality graduate employers view SD, the enabling role afforded by technology and the implications for the hospitality curriculum and graduate employability.

## References

- Ali A and Frew JA (2013) *Information and Communication Technologies for Sustainable Tourism*. London: Routledge.
- Ali A, Murphy H and Nadkarni S (2014) Hospitality students' perceptions of digital tools for learning and sustainable development. *Journal of Hospitality, Leisure, Sport & Tourism Education* 15: 1-10.
- Alonso DA and Ogle A (2010) Tourism and hospitality small and medium enterprises and environmental sustainability. *Management Research Review* 33(8): 818-826.
- Anuwichanont J, Mechinda P, Serirat S, Lertwannawit A and Popaijit N (2011) Environmental Sustainability in the Thai Hotel industry. *International Business & Economics Research Journal* 10(11): 91-100.
- Australian Council for Educational Research (ACER) (2008) *A Study into the Assessment and Reporting of Employability Skills of Senior Secondary Students*. Report to the Commonwealth Department of Education, Employment and Workplace Relations, ACER, Melbourne.

- Barber N, Deale C and Goodman R (2011) Environmental sustainability in the hospitality management curriculum: Perspectives from three groups of stakeholders. *Journal of Hospitality and Tourism Education* 23(1): 6–17.
- Bartlett D and Trifilova A (2010) Green technology and eco-innovation: Seven case-studies from a Russian manufacturing context. *Journal of Manufacturing Technology Management* 21: 910–929.
- Bilgihan A, Berezina K, Cobanoglu C and Okumus F (2014) The information technology (IT) skills of hospitality school graduates as perceived by hospitality professionals. *Journal of Teaching in Travel & Tourism* 14(4): 321-342.
- Bilgihan A, Okumus F and Kwun DJW (2011) Information technology applications and competitive advantage in hotel companies. *Journal of Hospitality and Tourism Technology* 2(2): 139-153.
- Bohdanowicz P (2005) European hoteliers' environmental attitudes greening the business. *Cornell Hotel and Restaurant Administration Quarterly* 46(2): 188-204.
- Bohdanowicz P, Zientara P and Novotna E (2011) International hotel chains and environmental protection: an analysis of Hilton's we care! programme (Europe, 2006–2008). *Journal of Sustainable Tourism* 19(7): 797-816.
- Bohm A, Follari M, Hewett A, Jones S, Kemp N, Meares D, Pearce D and Van Cauter K (2004) Forecasting international student mobility: A UK perspective. Available at: [www.internationaleducationgateway.org/Vision\\_2020\\_International\\_Students\\_UK\\_Perspective.pdf](http://www.internationaleducationgateway.org/Vision_2020_International_Students_UK_Perspective.pdf) (accessed 10 March 2014).
- Boley BB (2011) Sustainability in hospitality and tourism education: Towards an integrated curriculum. *Journal of Hospitality & Tourism Education* 23(4): 22-31.
- Buhalis D (2003) *eTourism Information Technology for Strategic Tourism Management*. Harlow: Prentice Hall.
- Buhalis D and Law R (2008) Progress in information technology and tourism management: 20 years on and 10 years after the Internet - The state of eTourism research. *Tourism Management* 29(4): 609-623.
- Chen JS, Sloan P and Legrand W (2009) *Sustainability in the Hospitality Industry*. MO: Elsevier.
- Cheung C, Law R and He K. (2010) Essential hotel managerial competencies for graduate students. *Journal of Hospitality & Tourism Education*, 22(4): 25-32.

- Compton V, Compton A and Patterson M (2013) *Sustainability and technology in New Zealand: exploring students' environmental awareness as a result of curriculum shifts*. In PATT27, December. Christchurch: New Zealand.
- Confederation of British Industry (2007) *Shaping up for the Future: The Business Vision for Education and Skills*. London: Confederation of British Industry.
- Cvelbar LK and Dwyer L (2013) An importance–performance analysis of sustainability factors for long-term strategy planning in Slovenian hotels. *Journal of Sustainable Tourism* 21(3): 487-504.
- Darcy S, Cameron B and Pegg S (2010) Accessible tourism and sustainability: a discussion and case study. *Journal of Sustainable Tourism* 18(4): 515-537.
- David F (2007). *Strategic management – concept and cases* (11 ed.). New Jersey: Pearson.
- Davies D and Dodd J (2002) Qualitative research and the question of rigor. *Qualitative Health Research*, 12(2): 279-289.
- de Grosbois D (2012) Corporate social responsibility reporting by the global hotel industry: Commitment, initiatives and performance. *International Journal of Hospitality Management* 31(3): 896-905.
- de Grosbois D, Fennell D, Jamal T and Dredge D (2011) Carbon footprint of the global hotel companies: comparison of methodologies and results *Tourism Recreation Research* 36(3): 231-245.
- Deale C, Nichols J and Jacques P (2009) A descriptive study of sustainability education in the hospitality curriculum. *Journal of Hospitality & Tourism Education* 21(4): 34 - 42.
- Deloitte. (2008) The staying power of sustainability: balancing opportunity and risk in the hospitality industry. Available at: [http://www.deloitte.com/assets/dcom-unitedstates/local%20assets/documents/us\\_cb\\_sustainability\\_190608%281%29.pdf](http://www.deloitte.com/assets/dcom-unitedstates/local%20assets/documents/us_cb_sustainability_190608%281%29.pdf) (accessed April 20<sup>th</sup> 2014).
- Dhiman MC (2012) Employers' perceptions about tourism management employability skills. *Anatolia* 23(3): 359-372.
- Dyllick T, and Hockerts K (2002) Beyond the business case for corporate sustainability. *Business Strategy and the Environment* 11(2):130-141.
- Enz CA, Renaghan LM and Geller AN (1993) Graduate-level education: A survey of stakeholders. *The Cornell Hotel and Restaurant Administration Quarterly*, 34(4): 90-95.



- Fearn H (2008). The class of 2020?" *Times Higher Education*. Available at: <http://www.timeshighereducation.co.uk/404431.article> (accessed February 15 2014).
- Finch DJ, Hamilton LK, Baldwin R and Zehner M (2013) An exploratory study of factors affecting undergraduate employability. *Education+ Training* 55(7): 681-704.
- Fylan F (2005) Semi structured interviewing. In: J. Miles & P. Gilbert (Eds.), *A handbook of research methods for clinical and health psychology* (pp. 65–78). Oxford: Oxford University Press.
- Garrod B and Fyall A (1998) Beyond the rhetoric of sustainable tourism? *Tourism Management* 19(3): 199-212.
- Greene FJ and Saridakis G (2008) The role of higher education skills and support in graduate self-employment. *Studies in Higher Education* 33(6): 653-672.
- Gursoy D, Rahman I and Swanger N (2012) Industry's expectations from hospitality schools: what has changed? *Journal of Hospitality & Tourism Education* 24(4): 32-42.
- Helyer R (2011) Aligning higher education with the world of work. *Higher Education, Skills and Work-Based Learning* 1(2): 95-105.
- Henry BC (2012) ICT for sustainable development. *Science and Technology* 2(5): 142-145.
- Hunter C (1997) Sustainable tourism as an adaptive paradigm. *Annals of Tourism Research* 24(4): 850-867.
- Huq A and Gilbert DH (2013) Enhancing graduate employability through work-based learning in social entrepreneurship: A case study. *Education+ Training* 55(6): 550-572.
- Ip C, Leung R and Law R (2011) Progress and development of information and communication technologies in hospitality. *International Journal of Contemporary Hospitality Management* 23(4): 533-551.
- Jackson D (2010) An international profile of industry-relevant competencies and skill gaps in modern graduates. *The International Journal of Management Education* 8(3): 29-58.
- Jackson D (2013) Student perceptions of the importance of employability skill provision in business undergraduate programs. *Journal of Education for Business* 88(5): 271-279.
- Jang H, Reeve J and Deci EL (2010) Engaging students in learning activities: It is not autonomy support or structure but autonomy support and structure. *Journal of Educational Psychology* 102(3): 588 – 600.

- Jenkin TA, Webster J and McShane L (2011) An agenda for 'Green' information technology and systems research. *Information and Organization* 21(1):17-40.
- Kitchin R and Tate N (2000) *Conducting Research into Human Geography: Theory, Methodology and Practice*. Harlow: Prentice Hall.
- Law R, Buhalis D and Cobanoglu C (2014) Progress on information and communication technologies in hospitality and tourism. *International Journal of Contemporary Hospitality Management* 26(5): 727-750.
- Law R, Leung D, Au N and Lee H (2013) Progress and development of information technology in the hospitality industry: evidence from Cornell Hospitality Quarterly. *Cornell Hospitality Quarterly* 54(1): 10-24.
- Lewin C, Facer K and Tsai CC (2012) Learning futures: education, technology and sustainability—The CAL 2011 conference. *Computers & Education* 59(1): 1-2.
- Long JA (2007) *Researching Leisure, Sport and Tourism: The Essential Guide*. London: Sage.
- López-Gamero MD, Molina-Azorín JF and Claver-Cortes E (2011) The relationship between managers' environmental perceptions, environmental management and firm performance in Spanish hotels: a whole framework. *International Journal of Tourism Research* 13(2): 141-163.
- Mason P (2014) *Researching Tourism, Leisure and Hospitality for your Dissertation*. Oxford: Goodfellows.
- McEwen L, Jennings R, Duck R and Roberts H (2009) *Students' experiences of interdisciplinary learning*. Available at: [https://www.heacademy.ac.uk/sites/default/files/interdisciplinary\\_masters\\_0.pdf](https://www.heacademy.ac.uk/sites/default/files/interdisciplinary_masters_0.pdf) (accessed February 1<sup>st</sup> 2014).
- Melissen F (2013) Sustainable hospitality: a meaningful notion? *Journal of Sustainable Tourism* 21(6): 810-824.
- Melville NP (2010) Information systems innovation for environmental sustainability. *MIS Quarterly* 34(1): 1-21.
- Middleton H (2009) Problem-solving in technology education as an approach to education for sustainable development. *International Journal of Technology and Design Education*. 19(2): 187-197.
- Mihalic T, Zabkar V and Cvelbar LK (2012) A hotel sustainability business model: evidence from Slovenia. *Journal of Sustainable Tourism* 20(5): 701-719.

- Millar M, Mao Z and Moreo P (2010) Hospitality & tourism educators vs. the industry: A competency assessment. *Journal of Hospitality & Tourism Education* 22(2): 38-50.
- Millar M and Park SY (2013) Sustainability in hospitality education: the industry's perspective and implications for curriculum. *Journal of Hospitality & Tourism Education* 25(2): 80-88.
- Moscardo G (2008) Sustainable tourism innovation: Challenging basic assumptions. *Tourism and Hospitality Research* 8(1): 4-13.
- Mulder K, Ferrer D and van Lente H (2011) *What is sustainable technology? Perceptions, paradoxes and possibilities*. Available at: [http://www.greenleaf-publishing.com/content/pdfs/wist\\_intro.pdf](http://www.greenleaf-publishing.com/content/pdfs/wist_intro.pdf) (accessed February 1<sup>st</sup> 2014).
- Nolan C, Conway E, Farrell T and Monks K (2010) Competency needs in Irish hotels: employer and graduate perspectives. *Journal of European Industrial Training* 34(5): 432-454.
- Oleksiyenko A (2013) Opportunity structures and higher learning in a globally-connected place: tensions and ties between outbound and upward mobility. *Higher Education* 66:3: 341-356.
- Orlitzky M, Siegel DS and Waldman DA (2011) Strategic corporate social responsibility and environmental sustainability. *Business & Society* 50(1): 6-27.
- Peloza J, Loock M, Cerruti J and Muyot M (2012) Sustainability: How stakeholder perceptions differ from corporate reality. *California Management Review* 55(1): 74 -95.
- Pirzada K and Khan FN (2013) Measuring relationship between digital skills and employability. *European Journal of Business and Management* 5(24): 124-133.
- Pool LD and Sewell P (2007) The key to employability: developing a practical model of graduate employability. *Education+ Training* 49(4): 277-289.
- Rawlinson S and Dewhurst P (2013) How can effective university-industry partnerships be developed? *Worldwide Hospitality and Tourism Themes* 5(3): 255-267.
- Raybould M and Wilkins H (2005) Over qualified and under experienced: turning graduates into hospitality managers. *International Journal of Contemporary Hospitality Management* 17(3): 203-216.
- Roberts E (2009) Mind the gap: Aligning learning and graduate outcomes through industry partnerships. *Journal of Hospitality and Tourism Management* 16(1): 130-138.

- Rockstroh D (2013) *Are We There Yet? Questioning Whether Sustainability is the Destination or Journey for Design & Technology Education*. Paper presented at meeting of PATT27, Christchurch, New Zealand.
- Rosenberg S, Heimler R and Morote ES (2012) Basic employability skills: a triangular design approach. *Education+ Training* 54(1):7-20.
- Scheel C and Vazquez M (2011). The role of innovation and technology in industrial ecology systems for the sustainable development of emerging regions. *Journal of Sustainable Development* 4(6): 197 – 210.
- Solnet D, Robinson R and Cooper C (2007) An industry partnerships approach to tourism education. *Journal of Hospitality, Leisure, Sport & Tourism Education* 6(1): 66-70.
- Star C and Hammer S (2008) Teaching generic skills: eroding the higher purpose of universities, or an opportunity for renewal? *Oxford Review of Education* 34(2): 237-251.
- Tilbury D (2011) Higher education for sustainability: a global overview of commitment and progress. *Higher Education in the World* 4: 18-28.
- Tzschentke NA, Kirk D and Lynch PA (2008) Going green: Decisional factors in small hospitality operations. *International Journal of Hospitality Management* 27(1): 126-133.
- Veal AJ (2011) *Research Methods for Research and Tourism: a Practical Guide*. Harlow: Prentice Hall
- Wang J, Ayres H and Huyton J (2009) Job ready graduates: A tourism industry perspective. *Journal of Hospitality and Tourism Management* 16(1): 62-72.
- Wiek A, Withycombe L and Redman CL (2011) Key competencies in sustainability: A reference framework for academic program development. *Sustainability Science* 6(2): 203-218.
- Wilton N (2011) Do employability skills really matter in the UK graduate labour market? The case of business and management graduates. *Work, Employment & Society* 25(1):85-100.
- World Commission on Environment and Development (1987) *Our Common Future*. Oxford: University Press.
- Zehrer A and Mössenlechner C (2009) Key competencies of tourism graduates: The employers' point of view. *Journal of Teaching in Travel & Tourism* 9(3-4): 266-287.