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Editorial

The conference organising team would like to welcome you to the fourth Advances in Management and Innovation Conference held at the Cardiff School of Management. This year's conference, our first to be held online, builds on the success of the previous conferences. We are delighted to welcome presenters and conference delegates from across the world.

The conference has the following objectives:

- To provide opportunities for Cardiff School of Management staff: to share their research with School stakeholders and contribute to the culture of research and enterprise at the School.
- To complement the 'Advances in Management and Innovation Working Paper Journal' and to generate activity/working papers to be published in the journal.
- To contribute to a REF evidence-based research culture, in particular to use the conference to develop potential REF case studies
- To provide opportunities for Cardiff School of Management research students to share their research, receive feedback and contribute to the culture of research at the School.
- To create opportunities for the application/implementation of School research and enterprise activity in industry
- To support to the Cardiff School of Management Internationalisation strategy

The papers delivered at this year's conference consider a wide variety of subject matter from marine wildlife tourism to digital pottery, from Bloom's taxonomy to cyber security, and from tourism development in Faliraki to community asset transfers in Wales. We hope that you enjoy listening to the presentations, participating in the discussions and reading the abstracts in the conference proceedings (please note the abstracts are reproduced in conference programme order). We wish to thank our keynote speakers Professor Calvin Jones (Cardiff University) and Professor Paul Jones (Swansea University) for their valued inputs to the conference. The conference will close with a prize giving ceremony. Prizes are to be awarded for the 'Best Paper' and 'Best Presentation'.

Conference Organising Team
Nick Clifton, Claire Haven Tang, Rachel Mason Jones, Lyndon Murphy, and Adriana Snae

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Contents

(Re)thinking Tourism Discourse and Place: Beautific and Horrific Fantasies of Tourism Development in Faliraki, Rhodes

Aggelos Panayiotopoulos (Cardiff Metropolitan University)
Maurice Patterson (University of Limerick)

apanayiotopoulos@cardiffmet.ac.uk

Tourism has long been regarded as a panacea for place development, benefiting national economies and local communities. However, sceptical scholars (e.g. Turner and Ash 1975; de Kadt 1979; Smith 1978) since the early days of tourism theory have expressed concerns over tourism's negative impacts on places and communities (Belk and Costa 1995). This work highlights that negative social and environmental impacts (e.g. cultural imperialism, the commoditisation of culture, and environmental degradation) of inadequately planned tourism development counterbalance the positive economic benefits. Despite the considerable body of literature on the negative impacts of tourism, critics tend to focus on normative managerial solutions, without investigating the underlying socio/political and ideological dimensions of the problem. We turn to Political Discourse Theory (PDT), in order to examine these critical dimensions of tourism development and the way it shapes place. In so doing, we focus on the case of Faliraki, Rhodes in Greece, which, through its long and troubled tourism history, offers a rich context for the analysis of tourism development.

Drawing on Glynos and Howarth's (2010) concept of *logics of critical explanation*, we rethink tourism development and its impact on place. Three types of logics are identified for analysis: *social*, *political* and *fantasmatic*. Social logics characterise social practices, including the practices of consumption and exchange in a particular social domain (Glynos and Howarth, 2010). Political logics involve instituting, contesting and defending social practices (Glynos and Howarth, 2010). Finally, Fantasmatic logics are used in order 'to locate and unpick the ideological dimension of social relations, where the concept of ideology is understood as the logic of concealing the contingency of social relations and naturalizing the relations of domination in discourses or meaningful practices' (Howarth, 2010: 316). In this sense it unpicks the relationship between social logics and fantasy in order to examine 'why specific practices and regimes 'grip' subjects' (original emphasis; Glynos and Howarth, 2007: 145).

Fantasmatic logics consist of two dimensions: *beautific* and *horrific*. Guided by fantasmatic logics our analysis unravels the ideological layer of tourism development in Faliraki, reflected in discourses of tourism as progress. This is combined with Giesler's (2008, 2012) *intertemporal analysis framework* to situate these discourses spatially and temporally. This involves a spatial analysis of Faliraki, which looks at the different unofficial zones that have emerged; and a temporal analysis, which looks at how Faliraki came to be developed this way throughout the years. In so doing, we first identify the different phases of tourism development in the area. Then, we look into the conflicts/contradictions, continuities and discontinuities of those phases *vis-à-vis* each other, within the socio-political contexts in which they took place. This allows us to rethink the development phases in context and examine how local tourism development discourses are part of the broader dominant and potentially counter-hegemonic discourses.

A key theme of our analysis is the significance of *progress* as fantasmatic logic and how discourse on progress has evolved throughout the modern history of the place. The role of cultural institutions, such as the church, is paramount in shaping the discourse of progress in relation to Greek identity; initially it helped distinguish it from its rulers and later from its visitors. This involves the shaping and shifting of the meaning of progress from the Ottoman and Italian occupations of the island to its liberation, and up to date. A largely starving population, living on uncultivated land (Logothetis, 2004), was more likely to accept prospects of the improvement of material conditions, accompanied with freedoms and privileges in political administration and culture, as a positive process. This is reflected in Shanin's assertion that 'all societies are advancing naturally and consistently 'up', on a route from poverty, barbarism, despotism and ignorance to riches, civilization, democracy and rationality' (1997: 65). Thus, terms such as progress, growth, and development have entered the every day vocabulary of the local community and are rarely challenged. Furthermore, for locals, tourism represents progress. As a result, tourism development is rarely discussed critically. What is discussed is the type of tourism development that is seen to bring further progress. Discourses revolve around notions of mass, sustainable, eco-, alternative, quality etc. tourism. However, from a fantasmatic point of view, the idea of progress represents a challenge, as these notions of development represent conflicting fantasies.

To conclude, the analysis of the beautific and horrific dimensions of the fantasmatic logics of tourism, offers an alternative reading, which allows us to rethink tourism places as discursive spaces of ideological tension and conflict.

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United we stand- an approach to consolidating marine wildlife tourism codes of conduct in West Wales

Dr Jeanette Reis, Cardiff Metropolitan University

JReis@cardiffmet.ac.uk

Key words: marine wildlife tourism, codes of conduct, West Wales

Introduction

The aim of this paper is to explore how to consolidate marine wildlife tourism codes of conduct. This is particularly focussed on codes used by boat operators seeking Minke, Orca and Fin whale species along the coast of West Wales. A study by the author which was undertaken in 2019 (Reis and McLoughlin, 2019) identified 22 relevant marine codes of conduct, with 37 different recommendations which related to the migratory routes of species concerned. This vast range is confusing for boat operators and ineffective for marine wildlife tourism management.

Relevant background information

The most recent global marine wildlife industry figures cite that the sector attracts 13 million tourists, supports 3300 operators, generates $2 billion per annum and supports 13,000 jobs (MMC, 2019). Furthermore, Cisneros-Montemayor (2010) suggests that an additional $413 million per annum and a total of 19,000 jobs could be generated by expansion into emerging tourism regions.

Global trends are reflected at local level, as is seen in West Wales. According to Visit Britain (Visit Britain, 2019), 9.02 million people visited Wales in 2018, and 3.7 million of these visited the coast. Approximately £719 million was spent at coastal destinations, with an average spend of £180 per trip. In St David's, West Wales, 5 marine wildlife boat operators (Tripadvisor.co.uk, 2019), offer trips. A typical 2.5-hour trip around Ramsey Island would cost around £60 ($78) for an adult and £30 ($39) for a child (Ramseyisland.co.uk, 2019).

While marine wildlife tourism is undoubtedly positive for the economy, there are recognised negative impacts on wildlife behaviour, particularly feeding and resting activities (Marino, 2012). Injuries and mortality caused by vessel collisions have also been recorded (New, 2015).

Although marine wildlife national and international legislation exists, to manage these risks, it is very generalised and does not respond to local issues. Consequently self-regulation via codes of conduct have emerged. (Gjerdalen and Williams, 2000; Inman et al, 2016; Parsons, 2012). These operate at global, regional, national and local level (WCA, 2019).

Research approach

The preceding study (Reis and McLoughlin, 2019) used survey data (Hammond et al., 2002; Hammond et al., 2007; Hammond et al., 2013; JNCC, 2013) to identify relevant migratory routes and adjacent countries of the three whale populations being considered. Desk based research was then undertaken to identify local, national and regional codes of conduct for those countries identified. The search terms "marine code", "marine code of conduct", "whale-watch code of conduct", "whale watch code", "whale watch guidelines", "marine wildlife guidelines" and "marine wildlife code" were used. Finally, thematic analysis was used to categorise management measures cited in the literature. Frequency of occurrence and best practice was then identified.

Discussion and Results

Twenty two codes of conduct were identified, which included 37 management measures. Many of these contradicted one another in terms of recommendations for maximum numbers of boats, minimum distance, speed, direction of approach, stay time, advice on swimming with cetaceans, group division, feeding, chasing, direction of approach and avoiding juveniles (Reis and McLoughlin, 2019). The broad range and contradictions make it difficult for commercial boat operators to implement the codes.

In order to consolidate the number of recommendations in any future overarching code of conduct, it was decided to only include those management measures which had been cited by 10 or more of the 22 codes of conduct. These were then ranked in order of frequency. This approach captures the main recommendations, helps to prioritise and minimises contradictions. Table 1 shows the results.

Table 1. Priority Code of Conduct Measures, Ranked by Frequency of Citation

Number of codes recommending the measure (n=22)	Recommendation
17	No person or boat shall cause any cetacean to become separated from a group.
16	No person shall use motorised swimming aids for cetacean watching.
15	If a cetacean shows avoidance behaviour, it must not be pursued.
13	Do not swim with cetaceans.
13	Extra caution needs to be taken by the operator when calves are present.
13	Cetaceans should always be approached from the side and slightly behind, with the boat moving in parallel.
12	No deliberate chasing of cetaceans.
12	No person shall make excessive loud, disturbing or continuous noise.
12	Do not touch cetaceans.
11	Operators should not enter restricted zones or areas protected from boats or swimmers as designated by local, national, or international law, conventions or agreements.
11	Cetaceans always have right of way.
10	If cetaceans bow-ride alongside the boat, the boat should remain at a constant speed with no sudden changes in direction.

In addition, best practice was identified through the research. Results are as follows:

Table 2. Best Practice

Measure	Limit
Approach speed	300m, no wake speed
Maximum approach distance	100m
Maximum stay time	15 minutes
Maximum number of boats	1

Using this approach, the number of recommended management measures has been reduced from 37 to 12 and clarity around best practice for approach speed, distance, stay time and maximum number of boats has been provided. This is much more realistic for boat operators and more likely to be adhered to.

Conclusions:
The research presented here provides an initial approach for consolidating marine wildlife codes of conduct and a creating more manageable set of recommendations for commercial boat operators working along the coast of West Wales. As an early piece of research, it is recognised that there are a number of shortcomings. Firstly, the research was fairly simplistic and relied on subjective interpretation of a relatively limited sample size. Secondly, some of the sources of literature were dated and therefore might be redundant, and thirdly, reports were multi-lingual and so could have been mis-interpreted. It is also possible that codes of conduct were missed if they were only available in hard copy.

It is accepted that even if codes are streamlined, they still need to be supplemented by local education and training activities, not only for commercial boat operators, but also ideally, for recreational boat owners. Furthermore, while codes of conduct are fundamentally voluntary in nature, their effectiveness relies on clear links to existing wildlife legislation and recognition and adoption by statutory agencies with a monitoring role. Without these measures, the recommendations will sit on a shelf, along with all the others.

Despite these shortcomings, the codes have a vital role to play in reducing the negative impacts of marine wildlife tourism and sustaining the industry for future generations. Education, training and policy work around adoption of codes would be the obvious next step, but in the meantime, further research is required to further analyse these findings and explore factors that might influence adoption of codes.

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Transparency of VIP Event Ticket Packages: Exploring Best Practice

Jonathan Fry (Aberystwyth Business School), Ian Harris (Aberystwyth Business School), Kyriaki Remoundou (Aberystwyth Business School)

jof36@aber.ac.uk

Key words: Events, Ticketing, Hospitality, VIP, Marketing, Communication, Website, Journey

Introduction
Event promoters inherently attempt to balance the maximisation of profitability and the perception of customer value. This is particularly evident in the VIP ticket realm as VIP experiences are more aggressively priced and concert promoters are more skilled at commanding high prices from their best seating inventory (Tompkins, 2018). Moreover, care is required in the development, delivery and evaluation of integrated marketing communications which should be consistent (Batra and Keller, 2016). Juxtaposed against this extant objective is an understanding of the attributes that create and destroy the perception, and actual value, for the targeted consumer. This current work is an exploration, via a thematic document analysis, of the attributes positioned by the industry that include both tangible and intangible components which should also be evaluated in terms of attendee satisfaction.

Venue managers and event organisers priorities when surveying attendee satisfaction included 'staff helpfulness' (1st), 'value for money' (ticket price) (7th), 'food and drink/catering' (12th), in contrast to our findings where the second most common VIP package component of "memorabilia/merchandise" was the lowest prioritised criteria (Jaimangal-Jones *et al.*, 2018). The fact that VIP attendee expectations are likely heightened due to higher prices and the potential disconnect with criteria prioritised by industry and consumers suggests a research gap in pre-purchase decision making e.g. corporate hospitality findings that Generation X (35-44) prioritises food & drink primarily whereas exclusivity is prioritised mostly by 'older' attendees (45-54) (Prowse, 2019). Such insights should be concordant with consumer perceptions of monetary value of factors and formation of expectations resulting from promoter communications. Website design impact on the 'path to purchase' is a significant area for exploration e.g. encoding of information, product pages, and check out processes. Of the three different types of journey presented (Wolney and Charoensuksai, 2014), we advocate considered journeys for VIP tickets i.e. an extended pre-purchase stage when information is gathered from a number of sources.

Relevant background information
This is a stage of a PhD project investigating consumer behaviour and pricing considerations surrounding event ticket purchases.

Research approach
Desk based research analysed 200 entertainment VIP ticket packages.

Discussion
Considerable mark-up on face-value cost of tickets are anticipated for VIP packages, with the highest recorded for Ozzy Osbourne (1762%) (Ticketmaster, 2020). To justify inflated prices it is necessary to understand how attributes add value. The themes of transparency, seated, merchandise, food & drink, timings and photo opportunities are discussed further. Figure 1.1 shows the breakdown of the different types of entertainment events analysed, the majority being music (62%):

Figure 1.1 – Types of Entertainment Events

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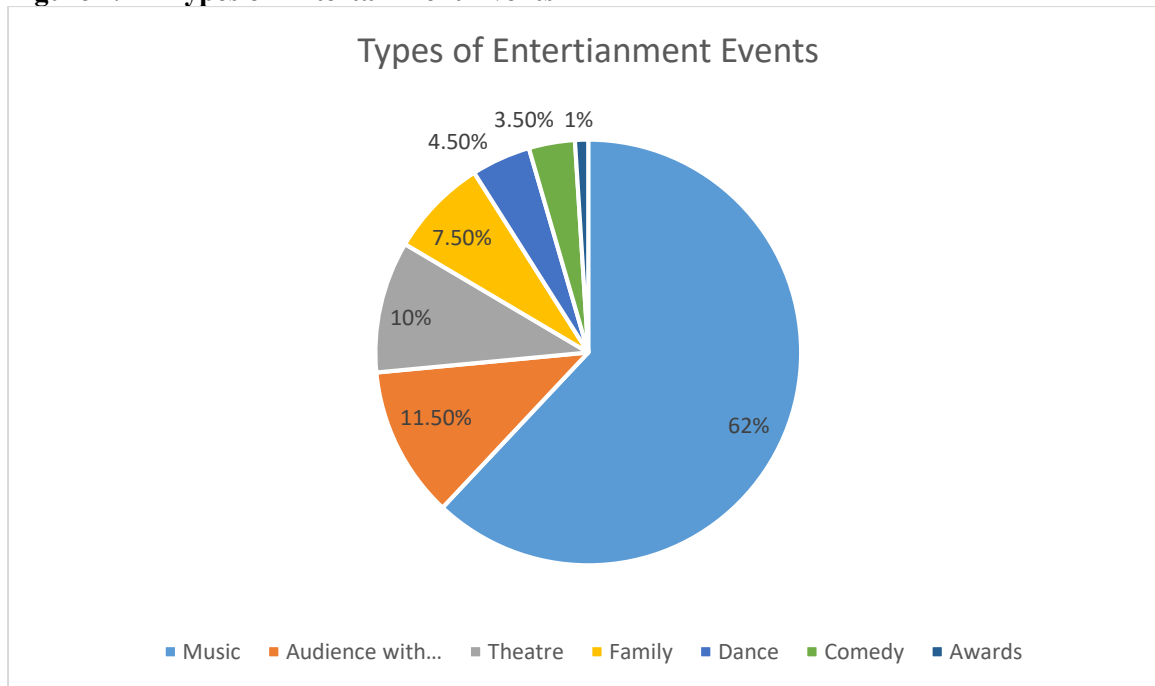
Transparency of Ticket Face-value

Only some ticket providers e.g. Ticketmaster were transparent in noting the face-value of tickets within the VIP package details. Interactive seating maps on some theatre websites presented options for face-value and VIP package for the same seat. Good practice is demonstrated by Keith Prowse which provides a package comparison tool/table on their website that helps manage consumer expectations. This pre-event focus, as well as during and post-event are important within the context of managing expectations "Managing VIP expectations is an additional principle guiding the attributes employed by event managers throughout the duration of the event process" (Jones and Moital, 2017 p125). For example, describing packages as 'limited availability' should be accompanied by the number available, one package provided clarity stating 'limited to 45 tickets per venue' (Lydon, 2020).

Seated or Standing Tickets

Out of 200 packages, 82% were seated and 18% were standing. Some packages stated 'best seats in the house' which seemed ambiguous. Although the exact seats are not disclosed, some providers specify rows but could be clearer e.g. Package A 'Rows 1-3' and Package B 'Rows 1-6'.

Memorabilia

Memorabilia was included in 70% of packages. However, exact items should be specified as most VIP Nation (2020) packages stated 'merchandise item designed exclusively for package purchasers'. In contrast, Hella Mega (2020) specifies a water bottle, bottle opener and drawstring bag.

Food & Drink

Food was included in 40.5% of packages, but it is argued that at least a sample menu should be available prior to purchase. The wording of packages varied greatly i.e; *two course – informal, premium dining experience, buffet, lite-bites, nibbles, canapés, snacks, appetizers.* However, some specified certain foods e.g. popcorn, ice cream and handmade chocolates. Phrasing as 'formal' or 'informal' is important when forming consumer expectations. Other good practice includes timings e.g. 'four course menu (pre) and gourmet menu (post)'. Drinks were included in 39% of packages but the wording varied e.g. 'Champagne', whereas others provided further details i.e. 1 glass. Others highlighted exclusions: 'beers, wine, soft drinks, selected spirits (excluding champagne and cocktails)'.

Precise Timings

Although The Ambassador Theatre Group (2020) and Delfont Mackintosh Theatres (2020) stated that their exclusive lounge/hospitality space can be used (up to 90 minutes and 45 minutes before the show), it was uncommon to see precise timings. Clarity is particularly important regarding the Meet & Greet (20%) i.e. before

or after the show and show duration. Apart from John Lydon (45 minutes) and Giovanni Pernice (90 minutes) (Swansea Council, 2020) there is no indication of timings or duration of components e.g. backstage tour, Q&A or Pre/after show party. This is significant not only regarding expectations but in gauging the extent of benefit e.g. value for money vs time as well as travel/transport arrangements.

Photo Opportunity

Although only within 26.5% of packages, details should be clear, particularly whether a professional photographer is present and whether a printed copy is provided. Good practice is demonstrated by Katie Melua: *'Katie will be available for a photograph using customers' phone or camera, with the photo taken by a member of the VIP team'* (St David's Hall, 2020). VIP Nation (2020) used asterisks to communicate restrictions which set and manage expectations from the start (path to purchase) e.g. GunsN'Roses "*No band members included in on-stage group photo".

Conclusions

Recommendations of how industry could be more transparent when implementing their marketing communications strategies include stating clearly the face-value ticket price, stating the number of packages available, clarity regarding exact row/seat, description of merchandise, including sample menus, noting drink exclusions, stating precise timings, clarity regarding 'photo opportunity'.

Package comparison functionality and interactive seating maps are advocated to facilitate a considered 'path to purchase'.

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The Challenges of Accessible Tourism Information Systems for Tourists with Vision Impairment.

Vicky Richards – Cardiff Metropolitan University vrichards@cardiffmet.ac.uk, Ziad Khan – Digital Accessibility Centre, Owen Williams – Wales Council of the Blind, Nic Matthews – Cardiff Metropolitan University

Keywords: Accessible tourism, tourism information systems, vision impairment, accessible information, information communication technologies (ICT)

Introduction
The tourism industry has experienced continued expansion and diversification to become one of the largest and fastest-growing economic sectors in the world (United Nations World Tourism Organisation, 2020). Despite this growth, the significance of tourism experiences and the Equality Act (2010), it has still failed to ensure equal participation for disabled people. Thus whilst the industry talks of the value of the 'purple pound', (disabled people); disabled citizens still encounter barriers to their participation in tourism experiences. These experiences include choosing and booking a holiday to accessing screens while travelling and interacting at visitor attractions; all regardless of the fact that the travel motivations of people with disabilities mirror those of people without disabilities and that, every tourist has the same diverse needs (Yau, McKercher & Packer, 2004).

Tourism is frequently characterised as a period of fun, of free time and of escape, yet it is an activity, which requires a lot of work and preparation, (Richards, 2013), encompassing pre-planning, travel and in-destination tourist activities (attractions, transport and hospitality experiences). Furthermore, tourism is more than an access issue (Yau, McKercher & Packer, 2004) as the foundation of any tourism experience is the combination of an accessible destination (Israeli, 2002), appropriate accommodation (Darcy, 2010) and accessible and appropriate information. Darcy & Dickson (2009:41) state that 'destinations must have knowledge management in place that presents information in a way that allows individuals with access considerations to make informed decisions for their needs.'

This paper will focus on the accessibility information needs of vision impaired tourists. Here there are specific issues for people with vision impairment as information is a point of access to the outside world and is evident in all aspects of daily life. For instance, **85%** of people with sight problems in Wales cannot read their own post (Wales Council for Blind, 2008). By comparison, to other people with disabilities, vision impairment creates an additional barrier in that information is often not in an accessible format.

Background Information
According to the Royal National Institute of Blind People, (RNIB,) (2020) every day 250 people start to lose their sight in the UK, estimating that there are 1.93 million people living with sight loss in the UK with the number of people with sight loss increasing each year and set to double by 2050 (RNIB, 2013).

There are many forms of visual impairment so that some people have no sight ranging to various forms of low vision. In turn this means individuals have different ways of seeing and use of this residual vision. Hence living with a sight loss makes it difficult to read printed information, which in turn can result in feeling isolated and excluded. Accessibility of information is particularly important in the holiday decision-making process: where

information is placed, in what format and the usefulness of its content (Richards, 2013) but also in the context of the emerging technologies around mobile applications, websites and Apps.

Hence a major element of holiday planning is gathering information about destinations, attractions and travel options therefore tourism information is crucial to holiday preparations and experiences. This is important to every potential tourist however the planning process is multi-faceted, for vision impaired people. Not only is the content and quality of information important, but so is its format, as much information is visual and 'eye catching' and thus often inappropriate for vision impaired people (Richards, 2013). In addition, the content of information provided by tourism providers is often inadequate for people with disabilities (Hunter-Jones, 2004).

The Internet and the development of assistive technologies for vision impaired people has opened up access to information from using email to browsing the internet and using websites. Types of accessibility features include the ability to change the size of the font, the colour of the print or background and for totally blind people they would need to be able to use speech recognition software seamlessly with the interface of the web page. However constantly emerging technologies in the forms of Apps, information screens and interactive web pages does create challenges for the vision impaired browser. Originally, according to Hackett et el (2005) a 'blind user' could access most of the information through text-to speech software but as design has advanced to include tables, images, films, text embedded with graphics which cause problems (Curran et al, 2007), it has become increasingly more challenging in relying on the assistive technology and skills of the web browser.

This paper aims to provide an insight into the accessible information needs of vision impaired tourists. It will delve into their user assistive technologies (mobile phones, tablets, speech, and magnification) in synergy with the development of Information and Communication Technologies (ICT) to help vision impaired tourists navigate the tourism information systems (for example, booking sites, information boards, travel apps, social media and websites) within the travel system . It will look at the various forms of technology, versions of that technology and what needs to be done to be accessible for all. The content will draw upon research conducted by Wales Council of the Blind with their regional groups along with the expertise of the Digital Accessibility Centre by following the vision impaired person's 'journey' through the information points of the travel system. Specific themes include:

1. Expectations of travellers are dependent on accessible information; A traveller, be it first time or frequent traveller, expects a basic expectation of being able to access information and booking portals to enable independent planning of a holiday, event, restaurant booking and so on.

2. Supply chain – basic itinerary: the ability to have access to online information around a destination (useful for DMOs in designing), book a basic flight then accommodation with a travel provider is a basic requirement. The next stage is further planned transport from home to airport/airport to accommodation is also fundamental to completing a basic itinerary.

3. Important contact information; being able to contact key service providers such as airline or accommodation providers quickly is essential to avoid anxiety and distress. Essentially being able to locate a clear telephone number.

4. Dependency on mobile communication and apps is very high – issues around design and usability. However, there are pitfalls if technology fails, such as mobile phones losing charge or areas of no signal. Understanding how to help travellers have contingency plans in such situations is key.

5. Awareness is key in informing service providers both travel and tourism of ensuring that accessible information is always present and consistent allowing users to navigate using different forms of assistive technology.

6. Encourage a co-produced approach to design and a universal design approach. Accessibility, as we know, comes in many forms. Information and communication for people with sensory loss is key and Tourism Information Systems must consider this at the earliest stages of planning.

7. Review accessibility of consoles (booking screens in tourism settings, accommodation, travel, interpreted experiences and so on) and what can be done to make them accessible (if it can be achieved). A reflection on

where the technology is doing well and where improvements can be made including the skills of providers and designers.

8. Awareness of the issues and needs remain a key component for what is needed for access and inclusion.

Conclusion

Accessible tourism is an issue for all, beyond the realms of access but shifting to a whole social inclusion approach. Changing the way we think about impairment and disability is therefore an essential co-requisite to institutional and structural change (Sapey, 2001) to ensure that not only do vision impaired people have access to tourism activities but actually feel included in them. Access to information is a crucial facet of that inclusion alongside being enabled to use the emerging technologies. The concept of Universal design advocates a process whereby access for all is central to design rather than an add-on (Darcy, 2010). It is imperative then that attention is given at every stage of conception and design of new products and features to ensure that the principles of universal and inclusive design are maintained (The World Blind Union, 2008).

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Filling in the 'Missing Middle' in Wales – Exploring how Welsh Medium-sized Enterprises Innovate?

John Barker, Nick Clifton and Gareth Loudon, Cardiff Metropolitan University

Contact Details: jbarker@cardiffmet.ac.uk

Introduction

The German economy has long been seen as a bastion of family owned, medium-sized, enterprise success, also referred to as the 'mittelstand'(Law, 2011). The success stories of companies such as Bosch (Schaefer, 2011)and Koenig & Meyer (Bayley, 2017) has led to the European aspiration to emulate this German achievement (Pahnke and Welter, 2018). The so-called 'Brittlestand' (Thompson, 2014; Walker, 2014) describes the British variant on this aspirational growth model, but the purpose of this paper is to understand if there is both a need and a reality of the Welsh variant, a Wittlestand?

Context

The picture of growth for medium-sized enterprises, and the economy in general, in Wales is less optimistic than the London-centric British economy. Historically low levels of productivity (Huggins and Williams, 2011; Welsh Government, 2017), expressed through below UK average gross value added (GVA), and low levels of headquartered research-intensive businesses (Cooke and Clifton, 2005) mean that innovation activity, which can be a route to greater productivity (Baughan, 2015), needs to be increased. This study explores both the activity and the specificity of innovation in medium-sized enterprises in Wales, which has importance for both the current and future dialogue with business owners and policy makers in the country. This area is currently underexplored in the literature, which tends to focus on the amorphous entity of the SME, rather than the constituent parts of the micro, small and medium-sized enterprise. This lack of growth in medium-sized enterprises in Wales has also been highlighted by in separate reports by both the Chartered Business Institute (CBI, 2011) and the Federation of Small Business (FSB, 2017), who coined the term the 'Missing Middle'. The study seeks to understanding how and why Wales' medium-sized enterprises innovate, or potentially don't engage in innovation activity. Uncovering new insights into this area can help the academic and business community to gain an understanding of what is needed from structural and non-structural mechanisms within Wales to help, at least partially, fill this gap and find the 'Missing Middle'.

Research

This study involved quantitative surveying of innovation stakeholders from 598 medium-sized enterprises in Wales with a total response from 60 organisations. The survey enquired about how the companies used internal resources (known as closed innovation), and external resources (known as open innovation) to create new products, processes and services. Results from the survey where then collated and analysed using appropriate statistical testing within SPSS.

Results

The study's results illustrate that a small majority of surveyed companies (54%) engaging some open innovation activities, although only 19% exclusively. Over one third of sampled firms are operating an apparently pragmatic combination of both open and closed innovation activities. Further planned research is important here to identify why businesses make these choices – do they represent approaches impacted by government funding or risk aversity, or a deliberate innovation strategy at the firm level?

Implications

The research highlights that the Innovation Wales (Welsh Government, 2013) policy needs to be updated to include specific interventions based on the size of business and the type of innovation to pursue, particularly in relation to the present and future iterations of the Smart Cymru Open Innovation Feasibility scheme (Business Wales, 2018) which funds proof-of-concept open innovation projects. The use of open innovation in a policy environment framed by the Well-Being of Future Generations Act (Welsh Government, 2015), and the Economic Action Plan (Welsh Government, 2017) which seeks to promote foundational activities and localised businesses trading has interesting implications for OI. Companies and public sector bodies engaging in this form of innovation could find themselves in a nationally-bound system which is to some extent still open, but not globally so as in Chesbrough's (2003) vision. This combination, and some might say contradiction, of policy and economic intervention will be interesting to review over time.

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A Wealth Study of Successful Technology Entrepreneurs in the United Kingdom

Brychan Thomas (University of South Wales) and Alun Thomas (Business Consultant)

Key words: wealth, technology, entrepreneurs, net worth, resources, assets, capital

Introduction

This paper has undertaken an up-to-date and academically grounded study into the wealth of successful technology entrepreneurs in the United Kingdom. Here we are concerned with the dimensions of wealth in terms of its measurement. The methodology used involved three stages to determine the nature of the wealth involved. Primary sources (literature) and secondary sources (business information) were investigated in the first stage to understand the measurement of the wealth of successful technology entrepreneurs. Analysis and synthesis of information undertaken in the second stage determined the net wealth for technology entrepreneurs in different areas of activity. The nature and importance of the measurement of the wealth of technology entrepreneurs were examined in the third stage to formulate conclusions. The research question addressed 'what is the average net wealth of successful technology entrepreneurs in the United Kingdom?' The contribution of the paper is to bring together findings of the study in terms of the measurement of the wealth of successful technology entrepreneurs.

Background

Wealth can be described as the amount of financial assets or possessions that can be transferred into a means for transactions to be made. The core meaning originates from the old English word 'weal' from an Indo-European word stem (AHDEL, 2009). In modern society wealth is important in all economies especially in terms of growth and development. Indeed, a person who possesses a substantial net worth of wealth is commonly known as 'wealthy'. The definition of net worth is the current value of assets less their liabilities, exclusive of trust accounts (m2n, 2018).

At a general level wealth can be defined as 'anything that is of value', and various definitions have been given for different contexts (Denis, 1996). The process of defining wealth can have ethical implications since wealth maximisation is often seen as a goal (Kronman, 1980; Heilbroner, 1987). A country, region or community that is seen to possess a large amount of resources or possessions of benefit to the good of those involved is perceived as 'wealthy'.

Inclusive wealth has been defined by the United Nations as a monetary measure including physical, human and natural assets (Economist, 2012). In terms of capital this includes natural capital (land, forests, energy resources and minerals), human capital (skills and education) and physical capital (infrastructure, buildings and machinery).

With regard to this study, in order to provide a clear understanding of technology entrepreneur, as the focus of the investigation, we have taken into account what is meant by technology and entrepreneur to formulate an appropriate definition. Accordingly, technology is defined as "the application of scientific knowledge for practical purposes, especially in industry" (Oxford Dictionary, 2019). Also, "technology refers to methods, systems, and devices which are the result of scientific knowledge being used for practical purposes" (Collins English Dictionary, 2019), and the "study of knowledge of the practical, especially industrial, use of scientific discoveries" (Cambridge English Dictionary, 2019). Further to this, an entrepreneur is "someone who starts their own business, especially when this involves seeing a new opportunity" (Cambridge English Dictionary, 2019), and "is an individual who creates a new business, bearing most of the risks and enjoying the rewards. The entrepreneur is commonly seen as an innovator, a source of new ideas, goods, services, and business/or procedures" (Investopedia, 2019). Taking into account these definitions we define a technology entrepreneur as a person who applies their business ideas using technology to make a profit and create wealth.

Research Methodology

The methodology for the study into the wealth of successful technology entrepreneurs in the United Kingdom was undertaken in three stages. By using a systematic process (Umphrey, 2002) appropriate methods for each research stage were used (Schumaker and McMillan, 1993). Analysis for each stage used the most suitable method, taking into account potential downfalls through not relating some hidden underlying trends. In order to answer the research question, primary sources (literature) and secondary sources (business information) were investigated in the first stage to obtain an understanding of the measurement of the wealth of successful technology entrepreneurs. Analysis of the Rich List (2019) (Sunday Times, 2019) and synthesis of information

were undertaken in the second stage to determine the average net worth of wealth for technology entrepreneurs in different areas of activity. A coding process was used to identify areas and enable the measurement of activity for comparison purposes. This was based on an alphabetical listing and number system. Also, the ranked order of technology entrepreneurs was according to calculated wealth. The third stage examined in detail the nature and importance of the measurement of the wealth of technology entrepreneurs to formulate conclusions.

Findings

The findings of the research show the average net worth of technology entrepreneurs in terms of their annual wealth. This is according to the technology areas of Chemicals, Technology, Pharmaceuticals, Industry, Internet, Plastics, Software, Aviation, Computers, Engineering, Telecoms, Biotechnology, Electronics, Energy and Mobile phones. It takes into account the ranked order according to calculated wealth. In response to the research question it was found that the extent of wealth of individuals in different technology areas was dependent on the amount of activity and development of the area and also the accumulation of wealth by individuals.

Conclusions

The paper has investigated the wealth of successful technology entrepreneurs in the United Kingdom. Here the dimensions of wealth in terms of its measurement have been studied. The methodology involved three stages including the first stage to obtain an understanding of the measurement of the wealth of technology entrepreneurs. Analysis and synthesis of information were undertaken in the second stage to determine the net value of wealth. In the third stage the nature and importance of the measurement of the wealth of successful technology entrepreneurs were examined to formulate conclusions. The contribution to knowledge of the research is that it provides a detailed comparison of wealth in different technology areas. The limitations of the study are that it only considers comparisons between different technology areas. Recommendations for future research are to undertake studies to compare the technology areas investigated in the research with other areas of activity. This will provide important policy implications for academics, professionals and government experts.

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Organising Effective Local Business Networks and Inter-firm Collaboration for Improved Firm Productivity Performance

Selyf Morgan (Cardiff Metropolitan University) and Nick Clifton (Cardiff Metropolitan University),

Key words: Networks; Collaboration; Productivity; Business Support

Firms become members of a variety of associations, business clubs, and networks. Membership of such bodies and organisations suggest that firms are persuaded of the effectiveness of such activity and of inter-firm collaboration. Collaborative activity can be important and include the use of shared resources, joint working, and mutually supportive exchange of information and expertise. Often such activities are performed on a relatively local scale, and although the internet provides a means of extending the spatial reach of networks, are often dependent on face-to-face and informal contacts. Government sponsored business support services have also aimed at similar objectives, and whether privately or publicly organised, networks appear to be thought to be a self-evident benefit to firms, to their sustainability, and their development.

Efforts to increase the performance of SMEs, particularly through government policy aimed at encouraging local collaborative and networking activity has, however, a very patchy record. At the same time, firms are themselves not necessarily good at searching out local potential partners and overlook potential mutual benefits that may accrue from such collaboration.

As part of research into the way that firms in Wales view their productivity we examined local networks and collaborative activity. We report on some of our findings and on existing support structures, both trade and public, and review their effectiveness. We also relate our research experience to collaboration support programmes elsewhere and make some suggestions on ways of identifying and spreading good practice.

Entrepreneurial Leadership: insights into women managers' entrepreneurial practices in Welsh small to medium voluntary organisations (SMVOs).

Kathryn Addicott Cardiff Metropolitan University kaddicott@cardiffmet.ac.uk

Key words gender; social entrepreneurship; leadership; third sector; Wales

Introduction
This presentation critically explores women manager's experience of leading in small to medium voluntary organisations (SMVOs) in Wales, providing insight into entrepreneurial practice in this context, drawn from a thesis on this subject (Addicott 2018).

Background
In Wales and the UK there has been increased demand for services in the voluntary sector due to key issues such as ageing population and exacerbated by austerity cuts to public services (NCVO 2016). This has been particularly acute for small charities, where leaders have reported increased workloads and beneficiary service needs, coupled with uncertainty and reduced government funding (FSI 2017). This study takes on board the criticism of universality of management and leadership theory by considering the distinctive, complex management challenges in the voluntary sector (Bish & Becker 2016).

A key, and often overlooked, dimension to discussions on what constitutes entrepreneurial practice is the debate around commercial and social entrepreneurship, and particularly the significance of women's roles in third sector enterprises/organisations. There is limited international research and theory regarding leadership and social entrepreneurship in this context (Hodges & Howeison, 2017), and even less with focus on women's role and practice (Teasdale 2011). It can be argued that many academic studies to date have used a gender blind analysis of social entrepreneurship (Lewis 2006). In addition, postmodern feminist critical literature frames entrepreneurship as a complex and dynamic phenomenon associated with social change processes, which can be understood without attention to economic or managerial logic (Calas et al 2009). Gender and entrepreneurship are then appreciated not as substances we can 'be' but 'situated' practices learnt and enacted in particular environments (Bruni et al 2004).

Research approach

A feminist Bourdieusian theoretical lens provides a critical and innovative means to explore women's habitus, agency and practice in Welsh SMVOs in dealing with challenges and opportunities of their environment (Bourdieu 1990; Krais 2006). Interviews incorporating a life 'her'stories approach and focus groups were undertaken with women senior managers engaged in achieving charitable organisational objectives and supplementary social enterprise activities. This draws on the life stories of individuals – capturing and giving voice to women's social and lived experience (Rooney 2006; Foss 2010) A qualitative research approach incorporating a social constructionist stance, and a critically feminist interpretive methodology, helps to foreground women's subjective perspectives, along with consideration of structural dimensions of their social world (Crotty 2003; Patton 2015). A grounded, inductive approach to thematic analysis was undertaken (Braun & Clarke 2006).

Discussion

The presentation provides new insights into women managers' agency in the negotiation and reconciliation of tensions in balancing retention of value-based mission with commercial activities, social and economic objectives, adaptation and innovation in service provision and income generation (Addicott 2017). It highlights how women are managing, leading and being entrepreneurial collaboratively, drawing on reflexivity, and enacting gendered entrepreneurial leadership by accruing and leveraging capitals to sustain their organisation and the wider third sector in order to address social inequality. In particular the work finds new insights into the role of emotion and particularly passion, both of which have scarcely been explored in female entrepreneurship studies. The presentation gives contextualised insight into their personal background which has informed professional practice, particularly the significance of role models, values and networking. It indicates the fundamental dimension gender plays in participants' habitus, subject to ambiguity, continuity and change as they engage with, adapt to and resist challenges faced.

Conclusions/implications

This presentation contributes to our understanding of management, leadership and entrepreneurship in the Welsh and UK third sector, from women's perspectives. The study answers the call for new methodologies and contextual explanation in studying new sites of entrepreneurship to challenge hegemonic, androcentric perspectives prevailing in international research (Ahl & Nelson 2010; Hughes et al 2012; Henry et al 2016). The study highlights the nexus between gender and entrepreneurship, and gender and leadership (Dean & Ford 2017). It highlights women leaders' diverse perspectives, but consensus on entrepreneurial behaviour's relevance to the third sector, and the importance of relationship-building and collaboration. This contributes to a picture of post-heroic, transformational gendered entrepreneurial leadership practice. While the research demonstrates these women managers' struggle against the neoliberal restructuring of the bureaucratic field, and its impact on the voluntary sector field, there is no evidence of domination of neoliberal logics. Instead there is evidence of resistance and adaptation allowing oppositional voices and practices to protect and retain value-based welfare practices. The presentation illustrates how diverse, creative strategies, collaboration between voluntary organisations, and developing strong relationship networks are central to this sector's adaptability, sustainability and success, to meet changing community needs and address social inequality, in the face of rising demand for services, reduced public sector funding, and higher competition for resources.

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Management Information Systems and Cyber Security in Government, Public and Private Institutions: Comparison of Developing and Developed Countries

Nisha Rawindaran, Ambikesh Jayal and Edmond Prakash (Cardiff Metropolitan University)

Abstract

The importance of cyber security in Malaysia, and the approaches in government, public and private institutions became the subject of a study, which is presented in this article. The study was through a general discussion held with interviewees including stakeholders on the state of play of cyber security in Malaysia exploring factors that affect how secure this cyber space is for both the end user, organisation and government compared to other countries in the EU and UK. The study also looked at Turkey and how it was able to move forward in the realm of cyber security from being a developing nation to approaches similar to a developed country. The literature as well as response of interviewees suggested that although the Malaysian government had measures in place to protect and place policy in place for its cyber citizens, it is yet to achieve the international standard following other developed nations. Findings from the study, showed that this could be due to three factors effecting its progress namely technology, organization and human factors. In this paper we take a look at two incidents that occurred during the currency of the research interviews, that highlighted the weakness in current implementation and impressions on how to manage the challenges of cyber security. In Malaysia, public institutions such as the government faced problems during the course of these major incidents that disrupted public / social life. There was the perceived lack of knowledge and funding to face these disruptions, to gain the expertise to put the right infrastructure in place and for continuous monitoring from within the country. Further, there are views that such cyber-attacks will not stop and will be a continuing story. In this paper we will also look at approaches that appear relevant in Malaysia as well as on a global context on ways in which we can protect ourselves through greater investments in education and communication.

Data Cleaning: Challenges and Novel Solutions
Vinden Wylde, Edmond Prakash, Chaminda Hewage and Jon Platts (all Cardiff Metropolitan University)

Abstract
The aim of this research is to propose a general and scalable framework of optimised solutions that can be intelligently deployed in parallel and proportionately to individual instances of bad data within data transmission architectures. There is adequate opportunity for the creation of bad data (missing data, wrong information, inappropriate data [wrong column headings], duplicate data) which clearly identifies and demonstrates the need for further study with additional innovative outcomes. We highlight possible directions in regard to data cleaning and look to create a tool that can detect, anticipate and amplify effective decision-making ability when governing the bridge between the internet (Cloud), local architectures (PC's, Routers, LAN's) and mobile devices / Internet of Things (IoT).

Introduction
With the overwhelming fact that 90% of all data currently in existence has been produced within the last two years, and the necessity for making decisive business decisions, powerful tools and insightful truths are revealed and created via Big Data Analytics and Visualisation methodologies to bring meaning and purpose to raw data. This competitive drive in seeking business advantages contribute to the availability of methods deployed by state-of-the-art Information Technology solutions. This includes the use of Artificial Intelligence (AI) in the creation of complex mathematical models, thus simulating business uncertainty with statistical probability to attain Knowledge Discovery in Databases (KDD) for example. Together, these methods, practices and principles play a key role in aiding entrepreneurs, politicians and business leaders alike to maximise a range of effective decision-making alternatives.

Methodology
A full and comprehensive literature review is undertaken to include utilising appropriate case-studies, academic journals, books, guidance documents, and credible internet based resources. This critical review contrasts and compares these sources to aide new knowledge discovery and to provide relevant and robust objectives pursuant to the findings. Case-studies provide context in application to real-world challenges and informs a body of works into producing a robust framework to assess outcomes.

The scope of work narrows-down into the most prevalent techniques and tools used for data cleaning across the public and private sectors of industry; then assess their application, notoriety, functionality and implication in relation to minimising bad data acquisition and maximising novel approaches to a number of solutions. After such experimentation, after identifying the gaps in the literature, a singular and novel approach to data cleaning will be proposed, developed and deployed to achieve the specified outcomes.

Background
Bad data impacts can have catastrophic outcomes. Some scenarios are highlighted below.

• For example in Tajer et al. [3], when a country or power company needs to estimate the state of its power grid security, non-linear state recovery techniques are utilised to carry out tasks designed to assess factors such as; informing user controls, updating pricing policies, identifying structural abnormalities and predicting loads. Detecting these instances of bad data either random (sensor failures), or structured (cyber-attacks [false data injection attacks]), whilst being able to successfully recover the state of a power system, fundamental challenges remain which have been documented and formalised since the 1970's. These two operations (detecting structured and random data) utilise state estimators (recovering phase angles and bus voltages) such as algorithms that leverage data collection using multiple measurement units across the grid, to include topological and dynamic information. Identifying bad data and deciding what protocols to employ when managing distortion in the data, fundamental performance limits are presented and become unknown which limits an effective recovery from a cyber-attack or a systems infrastructure failure.

• From the stock market perspective, trading data is accounted for via the use of common techniques to include carefully observing single point big errors (occurs discontinuously at a single point at intervals), single point small errors (does not occur consecutively at a single point at intervals) and continuous errors (errors occur in

several consecutive time points). Within thistimeseries data (sequence of random variables), errors are prevalent, and as a result, this data cannot be stored or separated adequately for access into a given database, therefore critical data-assets are lost due to these errors. Time-series data-cleaning present challenges via the amount of data and its error rate in sensor data acquisition for example [4].

- In a machine operation, many points are continually assessed in real-time. This is undertaken by numerous sensor readings and calculations per second, in the case of a wind power company, each machine can produce in excess of 2000 entry points of data sampled every 7 seconds. In combination with the rest of the company's machines and assets, this can mean the acquisition of in excess of 30 million pieces of data per day. In addition, network traffic classification [5] tools play a significant part of modern cyber security management. Inclusive of state recovery techniques, network administrators can also apply classification technologies to determine factors to include: network status, user behaviours and services, usage and anomalous incidents. This is utilised to ensure Quality of Service (QoS).

- The network tools company CISCO for example, have included traffic management technologies to their recent network devices in response to exponential threats. This well-established technique is also facing significant challenges. Traditionally, it identifies the origin of network traffic in relation to its port number (80: HTTP), however most applications use dynamic ports therefore the pay-load-based technique is mainly adopted by business today to navigate through the traffic. Deep Packet Inspection (DPI) identifies very specific patterns contained within a payload of IP packets, however, issues such as dealing with encrypted payloads and privacy remain as a result of DPI. Other techniques such as statistical classification, which extracts sets of statistics from live traffic, utilise Machine Learning (ML) for application identification.

- Amongst being deployed for detecting criminality, another technique consists of outlier detection. This method can be used for detecting fraudulent transactional data, medical data analysis, stock markets and network intrusion. Outliers (observation of data inconsistent with parent dataset) contained within the domains of Big Data, Uncertainty data and High dimensional data, can also be unavailable, missing or erroneous.

- Further cleaning techniques can be deployed such as Distance-Based and Cluster-based outlier detection algorithms. Via the utilisation of these algorithms, i.e. utilising clustering based on a similarity check approach, we can remove outliers and key attributes in a subset of data rather than the full range of dimensional attributes of a given dataset. In healthcare for example, the cluster-based approach outperforms the distance-based approach thus providing better accuracy in identifying outliers. At present, the most research being undertaken is in regard to clustering algorithms, or cluster analysis. This technique uses information retrieval to extract data and then illustrates associations between objects. The full paper will develop a Distance-Based and Cluster-based outlier detection algorithms [1,2]. The development will be a template that is suitable for different data domains. 5. Conclusion When considering real-world scenarios and applications of Big Data/Big Data methodologies, a current problem of mislabelled training samples can drastically affect the accuracy of statistical classification. However, as the volume, veracity, velocity and variety of data types exponentially increase over time, data scientists apply more and more resources to cleaning and preparing such raw data prior to processing. This presents a significant challenge in ensuring that consistent, accurate and robust outcomes are delivered within reasonable time-constraints. Therefore, it is proposed that creating more effective processing capabilities via 'Data Cleaning' solutions and architectures, would aide scientists and business professionals alike in making effective decisions in real-time.

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Digital Pottery: Novel Information Systems and Workflow Process for Virtual and Physical Artistic Visualizations of Sound on Ceramics

Sarah Dashti, Edmond Prakash, Fiaz Hussain and Fiona Carroll
(Cardiff Metropolitan University)

Keywords: Information Systems, Deformable-Shape, Data-physicalisation, Sound, Interactive-modelling, AR / VR, 3D Printing, Ceramics.

Introduction

Data-physicalisation is a current popular technique of representing an actual data visualisation into a 3D physical data form [1]. This research is interested in physicalising the full effects of sound data on ceramics. To achieve this, our research will design, develop and demonstrate a widely deployable interactive Digital Pottery system; in detail, and it will use deformable shape modelling to extend physical ceramics. It will capture visual sound parameters through creative technologies such as augmented, virtual and rapid prototyping [2, 3]. Clay as material presents challenges of preserving sound deformation on a non-rigid liquid form real-world constraints such as gravity and evaporation prevent the consistent capturing of the dynamic visual patterns created during the sound deformation on a ceramic vessel. By sound deformation, we mean deformable shape modelling representing computer algorithms through developing new techniques, that will assist on augmenting realistic shape and surface transformations. The innovative deformable shape modelling explores methods of integrating sound data with 3D modelling towards producing a Texture mapping technique for a volumetric sound-structure [4]. The shape and texture are the primary sources of information to object recognition, and this approach brings more understanding of how sound travels through non-rigid forms. This technique creates a more natural parametrization of realistic fabricated graphics into interactive physical and 3D shapes [5]. More so, the new technique preserves not only deformation form but also the user can display the deformation with AR devices as an audio visualizer on the interactive prototype surface as a tracker.

Objectives

The ultimate goal is to address the systems complexities and challenges that arise from (i) modelling - the detailed physics-based shape modelling to include sound shape forms as a way of Data Physicalisation with physical ceramic material properties, (ii) interaction - real-time visualisation in AR/VR devices to enable complex virtual and physical interaction (iii) making - realise it by physical making through ceramic rapid prototyping. To address these challenges, over main objectives are:

- Modelling: To develop a multi-scale representation to model the shape, the physics of audio, surface texture, real-time rendering as well as physical prototyping.

- User interaction: To develop a multi-modal interaction that simulates physical-virtual that captures real-world deformable pottery making (addition/subtraction) using tangible hand and finger transformation.

- Making/ceramics: The objective is to make physical making central to this process by emphasising the material and the rapid prototyping, which in turn influences the above two objectives.

Background

The research background analysis focuses on the representation of data-physicalisation of interactive deformation [6]. Also, the representation of sound deformation exists in both technology and art fields. Not only the importance relies on how to control deformation digitally through creative technology but also acknowledging the understanding of new patterns in the innovative fabrication of animated designs. Art holds the representation power over the years on art movement. On Holocaust Memorial Day, a British artist Clare Twomey of international standing held the power of representation on the unfortunate incident of millions of people killed in the Holocaust and Nazi persecution, and genocides in Cambodia, Rwanda, Bosnia and Darfur [7]. Showing more
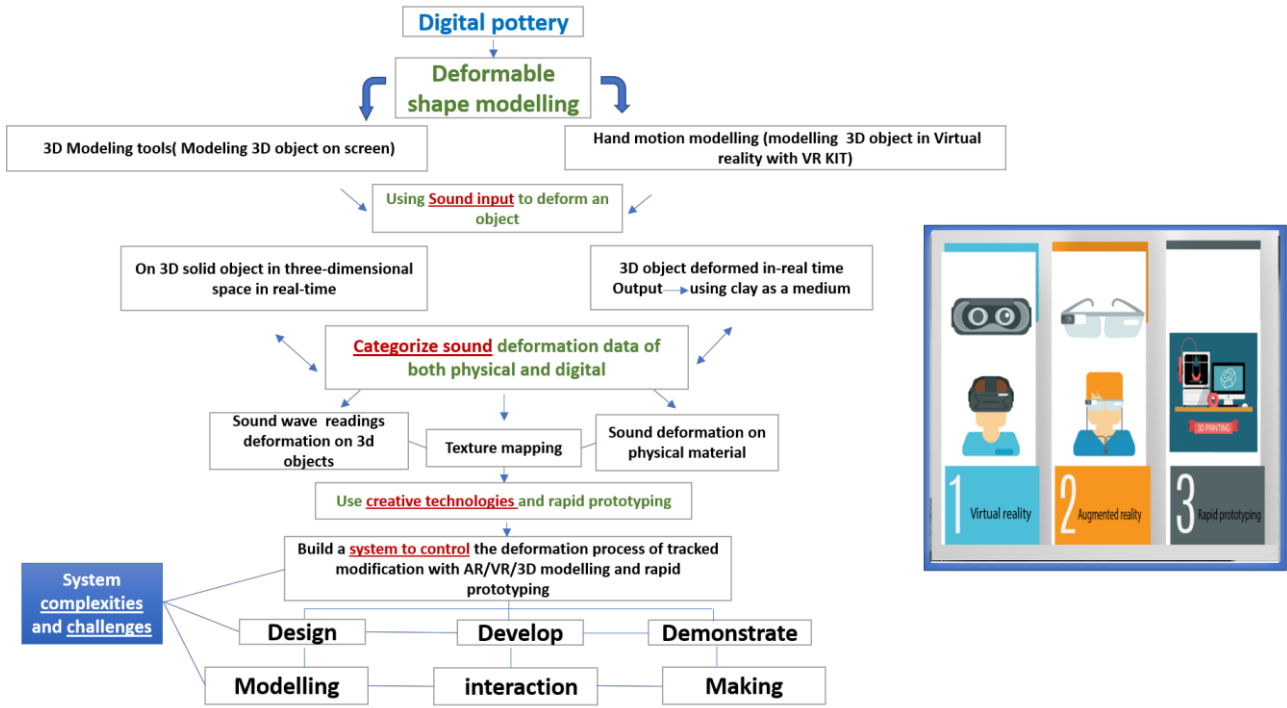
Figure 1: Information and Workflow Process in Interactive Modelling.

of the representation power on how powerful, simple objects made from ceramics can behold high emotions. Today we can represent data artistically as a way of a human connection through creative technologies. Bringing the realistic quality of deformation towards digital objects among physical interaction remains to dominate the field of Real-time computer graphics in the past decade. Deformable shape modelling research focuses on producing and generating an illusion of motion with 3D characters and the surrounding environment. Exciting discoveries of deformable models such as efficient modelling for interactive deformation of non-rigid 3D objects, convey a practical method of surgery simulation, helping surgeons and patient, communicating results of how wound healing would happen even before the actual surgery is done [8].

Texture mapping techniques are propagating on vast areas of deformation, allowing 3D object digital-fabrication with high-quality details. More so, Texture mapping of volumetric mesostructured explores how a 3D object bends with creating deformation to the surface structure as it would do in reality [9]. The project investigates tracked sound deformation across realities with clay as a physical and digital medium carrying the physical interaction towards bidirectional digital fabrication [10, 11], creating a bridge between Art & Technology. Figure 1 shows the block diagram of the information workflow.

Research approach

The research process is in creating Data-physicalisation of a tracked deformation data of sound energy with natural clay, nevertheless due to real-world constraints such as gravity and evaporation, the maintenance of the deformed shape is prevented from maintaining the deformed texture. The research is a multidisciplinary case study combining several felds of science, art and technology, highlighting Data-physicalisation with human interaction through creative technologies. More so, the project explores new methods of Physical Visualisations of texture mapping techniques for volumetric sound-structure using displacing mapping bumps with sound animation. The data collection is through experiments using physical and digital clay sound interaction, showing the dynamics of motion movement in 3D texture on the surface, developing a visual sound generator (see Figure 2). The digital pottery system contains designs tools, VR and 3D modelling to utilise the proposed texture- mapping representing sound energy travelling in digital form, creating a unique texture deformation. From the research undertaken by Chen et al. [12], 3D printing is the best option of capturing more of an accurate detail on ceramics. The AR technology enhances the clay-sound experience by enabling the audience to explore the mechanism of deformation by a variety devices such as using tablets, mobile-phones or AR glasses as a way of interactive Data-physicalisation of hybrid objects - part physical and part digital.

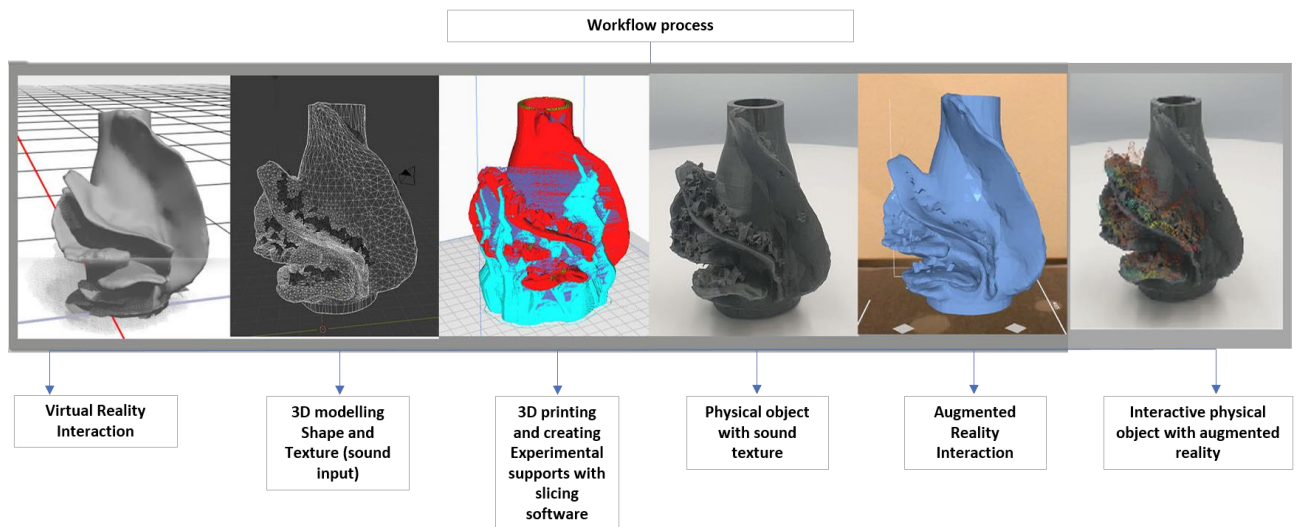Figure 2: Ceramic plate records using custom-built machine for etching sound waves, By Segal and Maayan.

Figure 3: Snapshots from different stages of the pipeline.

Results and Discussion

The experimental trails of each process made the practice more focused on how to create a new texture mapping within 3D modelling software. In addition, the experiments led to categorizing sound into two classifications, from audio visualizer and physical visualizer creating a more realistic texture mapping of sound structure. The difficulty arises on collecting the accurate data deformation from clay in deferent density status from liquid to semi-solid but nevertheless, finding the right mathematics among frequency generator and oscilloscope, would be the best way of conducting the accurate deformation data.

25

Conclusions

The results in Figure 3 of the proposed system model shows a promising result of tracked deformation across realities, creating a link between the physical and digital object. Now digital fabrication captures the essence of sound energy by the concept of creating an object with mixed realities through animated sound texture mapping. The workflow processes has been accomplished using standalone information systems for modelling, deformation, AR/VR and rapid prototyping, which in future work will be integrated in a seamless manner.

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DHEMP: A Blockchain Driven Digital Health E-Market Place for Medical Data Trading

Mohamed A. Maher (Cardiff Metropolitan University and Balsamee Ltd), Edmond Prakash (Cardiff Metropolitan University), Prikshat Verma (Cardiff Metropolitan University), Imtiaz A. Khan (Cardiff Metropolitan University)

mohamed.maher@soulintec.com

Keywords EHR, Blockchain, Market Place, EHR4CR

Introduction

This paper presents a conceptual e-marketplace framework for health data using distributed ledger technology (DLT) with a low-to-mid fidelity design approach. This research argues a paradigm shift in relation to ownership of the health data, from hospital to individual patients[1]. This proposed shift forges the foundation for a new distributed enterprise ecosystem where ownership, extent of access control and commercialisation of health data will be governed by individual patient[2] and on the other end data consumers (i.e. medical researchers) can access and use this high quality data by offering the agreed price without infringing the strict regulations associated with use of patient data. Smart contracts and cryptographic technologies associated with blockchain technology will be the building block for this e-marketplace where transaction of commodity (i.e. data) and payments will be automated and transparent while maintaining the privacy and security of individuals[3,4].

Background

Digital information technologies in the last decades have revolutionised the health care system by capturing patient information in great detail and at a much larger scale at one end and on the other application of big data and machine learning techniques to generate automated reports and diagnosis of diseases[5]. Despite these technological advancements, both the data producer (patients) and the consumer (researchers) are yet to derive commercial or scientific benefit from the big data because of the underlying fact that neither the producers nor the consumers own this data and moreover both of them don't have pertinent access to the data. Currently hospitals – the third party owns patient data that not only limits the commercialisation opportunities and scientific utilisations of the data for wider good but also contravene with General Data Protection Regulation (GDPR) of European Union that underpins the customer (in this case patient) as the owner of their personal data who should control the access, rectification and erasure of data. These practices thus have resulted in data silos across the globe depreciating the value of huge quantity of health data and consequently limiting the opportunities of further scientific breakthroughs. "*Patients will become managers and controllers of their own data, based on the confidence in their engagement with the healthcare data economy with a good level of trust and accountability*"[6].

Research approach

This research proposes a low-to-mid fidelity design approach to prototype the conceptual framework. The authors undertook extensive requirement analysis focusing on health data generation processes, types of data generated, data collection, pre and post processing approaches and archiving approaches with emphasis on data security and blockchain applications for secure EHR sharing of mobile cloud-based e-health systems[7]. This scoping was based on our current expertise of running Balsamee – a medico-logistic digital platform that supports delivery of wellness and healthcare in community setup by empowering the patient and family members to engage with the health system. Requirements gathered from the scoping were critically evaluated against current health data handling ecosystems. Also, at the same time, the authors evaluate the applications of different DLT based applications used in conjunction with electronic health record (EHR), especially from commercialisation and anonymisation perspective[8].

Discussion

Based on the scoping we have generated the following design for the e-Marketplace
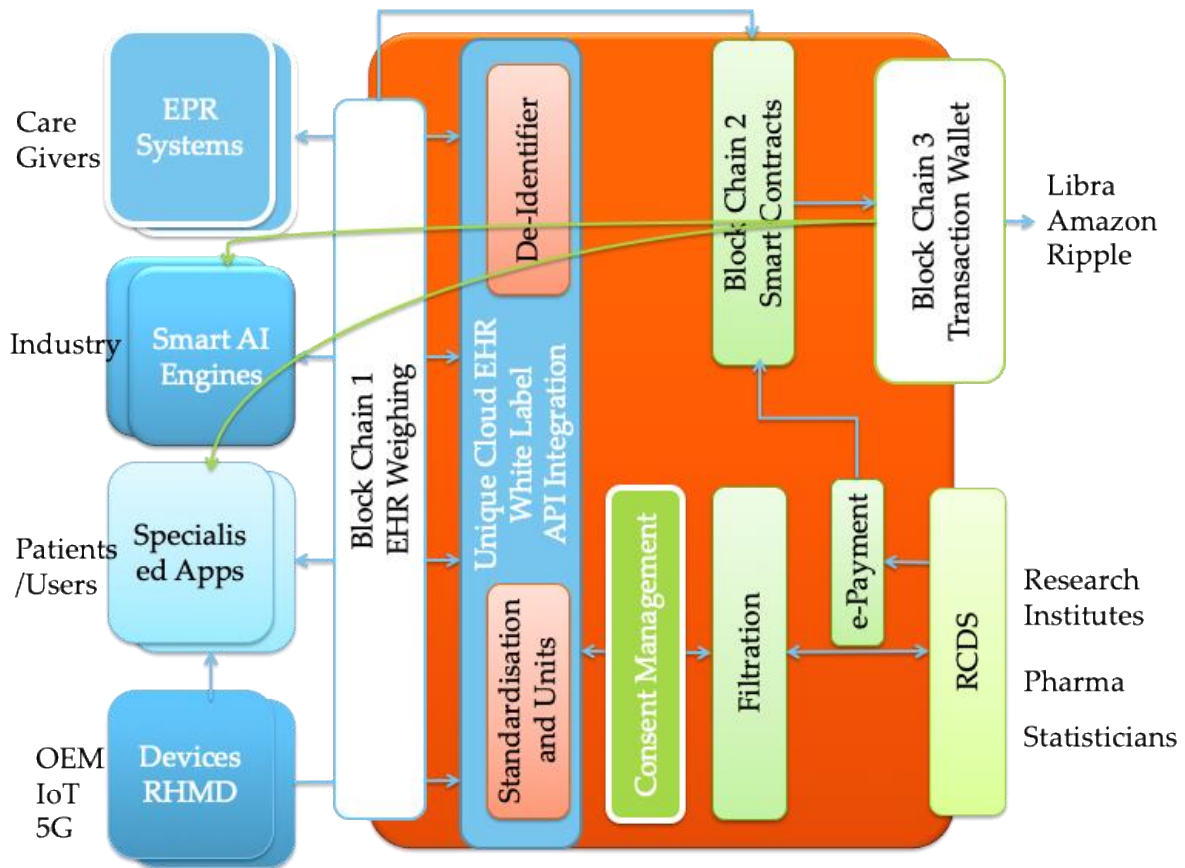
Fig 1: *Mid fidelity design of DHEMP:* The left (blue) side outlines different data producers. Middle (orange) part is the core technologies that anonymise and standardise health data derived from myriad instrument and places. The right section identifies the data consumers (e.g. researchers) and the corporate cryptocurrencies through which data producers will be paid.

DHEMP configuration is based on specialised App, that incorporates standardisation and de-identification layer that has the capacity to gather data from different sources in different formats. Smart contracts within DHEMP will inscribe the share of the revenue in computer language and whenever individual patient data is used by researchers, agreed percentages will be automatically paid through corporate cryptocurrencies like Amazon or Ripple. The concept of bypassing the third party and collecting and distributing revenues through blockchain and smart contracts has already been implemented in music industries as it traverses through vinyl age to Spotify age where music are directly published by the musician without any involvement of third-party music publishers like HMV. For example, futuristic artist Imogen Heap (Grammy winner) is publishing her music through a project called "Mycelia" that utilises blockchain and smart contract technology that at one hand accumulates revenues for each song from steaming and derivatives (i.e. ringtone, stage performance etc.), and on the other hand the generated revenue is shared with all corresponding stakeholders (i.e. singer, song writer, composer etc), according to the percentage agreed in smart contract. The research proposes to develop similar transplant for equitable micropayment in this case[1].

Conclusion
Health Data is a trillion-dollars treasure sitting ideally in different data silos across the globe[5]. A combination of legislations and myriad fear of data security breach hinders the utilisation of these data. By changing the ownership structures of data, DHEMP model proposes to introduce the potential of new avenues for tapping into this resource, that can benefit individual patients financially and at the same time benefit the society scientifically. Using blockchain and cryptocurrencies will enable to include health data in a more productive way and more importantly the individual ownership will

provide the financial impetus to individual patients or data producers to generate high quality data, that can be used for more productive analysis.

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Information Security in Internet of Things (IoT) domain

Mahmod Salem Ahmed Alossta, Liqaa Nawaf and Ambikesh Jayal*
M.Alossta@outlook.cardiffmet.ac.uk lllnawaf@cardiffmet.ac.uk ajayal@cardiffmet.ac.uk
Cardiff School of Technologies, Cardiff Metropolitan University

ajayal@cardiffmet.ac.uk

Keywords Information systems, Information security, Internet of Things, Data Security, Cryptography, Encryption

Introduction

This research deals with the information security in the era of Internet of Things (IoT) which is an area of growing importance. IoT applications and connected devices are growing rapidly in the past few years. Although the IoT has many advantages in our social life, there are potential disadvantages especially for the security and privacy of the end-users which still considered as major concerns associated with IoT environment (Skarmeta and Moreno, 2013). There are technical challenges that threaten the security and privacy of IoT end-users and need to be solved such as the shortage of design in hardware and software, law power and battery capacities and inadequate protection of the transmitted data in the networks.

This research aims to measure the awareness and knowledge of the end-users about the threats associated with IoT on end-user's privacy and security. This research aims also to investigate whether those end-users are concerned to maintain their security and privacy and secure their devices against IoT threats or not. Moreover, this research will also investigate the awareness of the end-users about the data protection legislation which is very important to preserve the security and privacy of the end-users.

Relevant background information

The security architecture of IoT becomes a big challenge nowadays and has different issues such as privacy, access control, variable authentication, management and storage of information. Data protection is a very essential in IoT as there are different layers used to transfer and receive data and

different techniques used to transmit this data in the network, as an example Wireless Sensor Networks (WSNs) and Radio Frequency Identification technology (RFID) are the most prominent technologies used in IoT.

There are many threats to the personal data of IoT end-users when collected, sent over the networks and stored in the cloud. All these threats show the necessity to work from all IoT stakeholders to reduce these threats and ensure the security of those end-users. As a result of the extensive use of this technology in the recent years, increasing the awareness and knowledge of these threats as well as awareness of legislation on the data protection for IoT end-users is an important step to be taken in the near future, which will increase the level of maintaining the security and privacy of end-users.
Hence, this lack of maintaining the security and privacy for IoT end-users led to the need to answer the research questions by investigating the awareness of IoT end-users of the existing threats associated with IoT and to measure their knowledge about these threats and data protection legislation to take the necessary measures to maintain their security and privacy in the best way.

Research approach
A survey with 72 participants, randomly selected from students and industry which included a combination of both genders aged between 18 to 50, was conducted as part of this research. The targeted participants were the consumers who are using IoT devices and/or working and living in environments that use IoT such as smart applicants, smart vehicles, smart homes, medical and health care, or any other IoT applications.

Discussion
The survey result shows that most of the participants were well educated and some of them had good knowledge about information security .The survey also demonstrates the participant`s awareness to maintain privacy and security when they use the IoT technology.

The analysis and discussion show that the knowledge of those participants about the IoT threats and how to protect their IoT devices from the several types of online threats was very limited and need to be enhanced. Moreover, the analysis and discussion show that the participants did not have enough knowledge about how they could secure their IoT devices against online threats nor what actions they could adopt to secure their IoT devices and maintain their privacy and security.

Conclusions
This research has found that addressing end-user's expectations, measures and awareness is very essential to achieve successfulness in IoT technology and manage security and privacy adequately. Additionally, this research has found that maintaining the security and privacy of the end-users will not be achieved only by addressing the vulnerabilities in the IoT devices and find technical solutions to how to overcome it, but also could be achieved by enhancing the awareness of the end-users about the threats associated with this technology, enhancing their knowledge about the importance of information security and increase their skills about how they could secure their devices against these threats to maintain their security and privacy.

The research has shown that most of the previous studies and research focused on alerting the existence of vulnerabilities and threats related to this technology from a technical point of view and the methods that should be followed to overcome these vulnerabilities and reduce these threats. Raising the level of awareness and knowledge of end-users is important to overcome the vulnerabilities associated with this technology and to maintain the security and privacy of end-users against these threats, which will contribute to the reduction of these threats and increase the success of this technology for optimal use in the future. Below are some recommendations to secure the IoT devices and enhance the awareness of end-users and other stakeholders.

Encryption of data
Data should be encrypted by the IoT end-users to maintain its confidentiality (if this data is not encrypted automatically by the IoT devices). Users should be learning how to encrypt their personal

data prior it is transmitted. Additionally, IoT service providers should apply encryption mechanisms to the collected data and ensure that this data is secured adequately in the cloud (i.e. end-to-end encryption). Users should be aware of dealing with service providers who ensure that users' personal data will be encrypted before being sent over the network.

Awareness of data protection legislation
Awareness of the existence of legislation to ensure data protection for IoT end-users is very important. All stakeholders to this technology are obliged to know about such legislation, which may contribute to the increased protection of information security and requires all parties to take their best measures to maintain the privacy and security of IoT end-users.

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The Higher Education Journey: preparing students for the saturated Graduate Market and Beyond

Fiona Neeson

Key words employability, student vision, retention, capturing learning gain, Higher Education (HE), stakeholders, work placements, Teaching Excellence Framework (TEF).

Introduction
This paper is part of a wider study which considers the potential challenges of preparing students for the graduate market and investigates the perceived issues that need to be addressed in Higher Education Institutions (HEIs). This is examined by considering what is done currently within the curriculum and what can be further enhanced with regards to work placements and employability in preparation for the graduate market.

Relevant Background Information
To date research in this area has considered the Higher Education Academy (HEA) frameworks in particular, embedding employability into the curriculum and also the Teaching Excellence Framework (TEF), along with focus on graduate attributes and capturing the learning gain (Matheson & Sutcliffe 2016). TEF stipulates an increase in the number of students in HE and the subsequent change in the HE landscape. In the early nineties only 19% of young people followed a programme of study in HE, compared to 40% reported in 2013, with over 50% recorded in 2019 (Kershaw, 2019).

Aim and Objectives
Aim
To identify whether work placement in HE is currently efficient in preparing students for the graduate market and then identifying improvements and how they could be implemented in a HEA employability model. To develop and implement a model of employability for Cardiff Metropolitan University (CMU) students through an examination of the role that work placement plays in preparing students for the graduate job market.

Objectives
To conduct primary research to students, staff, stakeholders and Alumni to identify current trends and expectations
.
To conduct primary research to understand the expectations of employers and understand their needs and requirements.

To question students and graduates via interview to analyse what their view is of the current approach to work placement assessment.

To undertake a critical assessment of case studies within FE and HE to identify best practice in employability strategies as delivered in the lecture by Grey, 2020.

To develop a working model and implement this within employability activities within the Tourism, Hospitality & Events (THE) Department at CMU.

Discussion
The HEA Framework considers areas of good practice (HEA 2017) and how these may be embedded within HEIs. This could suggest that there is not one model which fits all situations. This project seeks to examine the ten focus areas of the HEA (2015) framework for embedding employability in education within the context of CMU.

HEA embedding employability (HEA 2015)

One particular aspect is that of the type of placement; whether it is paid or unpaid and whether it is course related or more generic. Also, it needs to be considered whether individuals transferable skills are sufficiently developed. Results suggested that the most employable are those who had undertaken work-based learning and that paid work had a more positive transition in the labour market.

Internships are not embedded in the curriculum at CMU, they are standalone schemes, which give a snapshot of a real-life business environment, some are over a period of 3 months and others on a year-long basis. Placements are however compulsory and embedded in the second year of study as a core module where there is a 15 day minimum requirement. Heyler and Lee (2014) found that internships resulted in an increased integration into industry than of those students who had a lower attainment. This questions further, the view of HEPs regarding students from the top end of HE that become employed sooner after obtaining curriculum-based placements. In July 2015, the HEA, published a series of Frameworks, including one for flexible learning in higher education as shown.
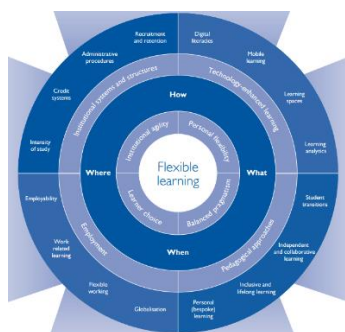
Framework for flexible learning in higher education, HEA, 2015.

The expectation is that in most instances a graduate will be more employable and more successful in the labour market than non-graduates (Naylor, Smith & Telhaj 2015).

Research Strategy

In order to obtain a clearer understanding of how best to enhance the student journey into employability at CMU, there are additional aspects which need to be researched further. These include identifying aspects of best practice in other HEI's and identifying useful components to contribute towards an improved framework.

CMU careers are currently working on Exchange 1 which is focussed on capturing data via the Graduate Outcomes survey. Mike Grey, Head of University Partnerships in Gradconsult, considers areas of best practice in HEIs within the Employability Conundrum (2020). The Institute of Student Employers (ISE) consider that up to 74% of employers are degree agnostic and many graduate positions are open to any degree discipline (2018).

Additional consideration is required on the social mobility of students where up to 70% of students stay in their local area after graduation. London being the only major city in the UK to be oversupplied. Proposed solutions to this are Industrial Work Placements. Sandwich style placements have increased by 50% between the 2009/10 intake and 2017/18. HESA confirming 180,705 students enrolled on Sandwich placements in 2017/18.

Many case studies and best practice examples are still predominantly skills focussed with emphasis on transferable skills as a vehicle to employability. There is some discussion on the quality of placement and ensuring that the experience enriches the student employability journey. Alumni should be interviewed to ascertain how they are applying their skills in a varied number of sectors to obtain a clearer picture of the graduate market. Employers will be integral to this research to form an advisory board on which to base curriculum design for sustainable employment.

Conclusion

There are several contextual features which contribute to research in this area. These include the retention of students either in the natural progression through HE or returning after a year in industry. Also understanding the apprenticeship style route and what the benefits and concerns are of this option. There is also consideration of the newly evolved T-levels from September 2020 (BBC 2020).

This is an ongoing research project based on CMU students, with the initial pilot being considered in THE, and how to prepare them for the graduate market in the current climate. It is anticipated that the outcome of the research will contribute to a workable model underpinning the HE journey into, the somewhat saturated, graduate market and beyond. Once the model is operation it will be trialled across CMU.

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Impact of Capstone in enhancing Masters Students experience in UK/EU HEIs: using Bloom's taxonomy

Oyegoke Teslim Bukoye otb34@bath.ac.uk (University of Bath), Michael Oyelere (Coventry University) Nasir Aminu (Cardiff Metropolitan University)

Key words Capstone, Critical thinking, Dissertation, Experiential, Live project, Professional Practice.

Introduction

This project was funded by BAM Grants Scheme 2017 – 2018. The project aims to assess the impact of Capstone enhancing Masters Students' experience through the development of critical thinking skills using Bloom's taxonomy. To achieve this aim, the study focuses on the following objectives: (a) to examine different Capstone options (traditional dissertation or experiential capstones) and how they help learners to develop and use critical thinking skills, and (b) in the light of the above, the study explores impact on Masters Students' experience

Relevant background information

Developing HE students' critical-analytic thinking skills such as apprise, dissect, explore, review scrutinise, analysis, evaluate, probe, examine, assess, investigate, reflection, reasoning and interference has long been a goal of education in general; and both management education (Kolb and Kolb, 2005; Rousseau and McCarthy, 2017) and simulation education (Lovelace, Eggers and Dyck, 2016) in particular. These researchers amongst others have shown that developing the right skills in students is taking centre stage as a key strategic decision for most business schools globally. Consequently, there's the growing need to manage these expectations amongst business schools and review bodies such as PTES.

The concept of a Capstone unit has gained prominence in institutions around the globe. Aside from the United States of America where the idea emanates from, it has now gained currency in the Higher Education system in Australia and some European Educational Institutions. Within Business Schools, the aim of Capstone unit can be summarised to include: develop realistic business decisions making ability, apply critical-analytic skill to solve problems and demonstrate communication skills in realistic business contexts. The overarching objectives of Capstone unit are focused on enhancing graduate employability and assuring graduate outcomes (Cullen, 2016).

In UK Business schools, the quality of teaching and learning are now under intense scrutiny due largely to the decline in graduate recruitment in the recent past. Institutionally, there's the growing demand to rank business schools based on their postgraduate delivery by PTES. In addition, MSc programme criteria that are been implemented by the specific Professional, Statutory or Regulatory Body (PSRB) insisted on outcome-based assessment that demonstrates graduating students ability to apply critical analysis and thinking skills to solve a real-world business problem. For instance, the Chartered Institute of Personnel and Development (CIPD) advanced level HRM in context requires learners to be able to understand, analyse and critically evaluate real-world situation. As with most business schools offering MSc programmes in the UK, efforts are made to integrate PSRB requirements in their curriculum, particularly those that focus on critical-analytic and thinking skills.

Research approach

The data employed in this study are from some European Union and UK business schools. Survey questionnaires are used during the study. The survey was administered mainly to Masters level students within these business schools. The response rate was very high; this was due to the technique employed for the administration of the instrument. A total of 119 questionnaires were completed across four business schools in Europe and the UK. Our use of multiple business schools allows us to investigate our study from multiple perspectives, rather than from a single viewpoint (Yin, 2003). Also, the use of

"gatekeepers" made identifying and contacting respondents less stressful. The planning and administration of the empirical data took place between April 2018 and August 2019.

Findings and Discussion

When examining the Capstone programme from the Universities visited, the study finds that different universities adopt different forms of Capstones as shown in Table 1. The UK business schools began Capstone extensively within the last five years with different approaches classified under two major categories, namely traditional dissertation and experiential Capstone (such as Live Projects, Practice Tracks, New Business, Capstone Project and Professional Practice). On the other hand, the business school considered in Europe has been embedded Capstone in their delivery over several years through internships, placements and Erasmus programmes. Figure 1 show that majority of the participants in UK universities undertook traditional dissertation options (UK Uni 1, 54%; UK Uni 2, 53% and UK Uni 3, 64%). However, we observe that other forms of experiential Capstone were adopted. Live Project in form of practice tracks, new business and Capstone project was predominantly adopted across the universities (UK Uni 1, 465%; UK Uni 2, 43%, UK Uni 3, 27% and EU Uni, 54%). Professional practice, such as placement, has limited numbers within the three UK universities. On the other hand, the EU University had less dissertation students (EU Uni 1, 8%) and more went for the experiential option (92%). Furthermore, since the overarching objectives of Capstone unit are focused on solving realistic business problems and enhancing graduate employability (Cullen, 2016).

Our results in Figure 2.1 indicate that the dissertation students in the UK mostly **remember** what they learnt on Capstone (UK Uni 1, 80%; UK Uni 2, 75% and UK Uni 3, 57%), while some are indifferent or disagree completely such as UK Uni 1, 20%; UK Uni 2, 25% and UK Uni 3, 43%. However, the EU students all understood what they learnt. On the other hand, in Figure 2.2, we can observe that there are higher levels of understanding with the experiential option. It is interesting to know that Masters' student in both UK Uni 1 (90%) and EU Uni (84%) remember what they learnt during their experiential Capstones.

Similar outcomes across was noticed for stages 2 to 6 of the Bloom's taxonomy, which implies that majority of the masters' student across the universities agreed that experiential Capstone allow for more **understanding, application, analysis, evaluation and creation** of new knowledge to demonstrate mastery of subjects compared to the traditional dissertation (see Figures 2.3 to 2.12). This is an expectation business schools seek to imbibe in masters' student (Klimoski and Amos, 2012).

Conclusion and Implications

Our findings on this ongoing study indicates that stand-alone dissertations are not sufficient conditions for developing CTS in students, which extends the works of Cullen (2016) that the overarching objectives of Capstone unit are focused on enhancing graduate employability and assuring graduate outcomes. Students on experiential capstones demonstrate critical thinking skills quite well, which confirms the works of Lovelance, Eggers and Dyck (2016) that critical thinking in an experiential environment helps to enhance performance, encourage participation, allows creativity and novelty.

By seeking to explores ways to enhance Masters student experience through Capstone, our study can be considered as one of the frontiers to systematic analysis of how Capstone can enhance critical thing skills amongst masters' students. In so doing, we respond to an increasing body of recent literature clamouring for improved delivery in postgraduate studies in UK HEIs (Kolb and Kolb, 2005; Rousseau and McCarthy, 2007; Lovelace, Eggers and Dyck, 2016, McPeck, 2016 and PTES, 2017). Our contribution to policy and practice within business schools is done extensively and provides insights into how delivery can be measured through Capstone, going beyond the recognised PTES benchmark for measuring postgraduate delivery. This helped to highlight the importance of Capstone in the overall experience of Masters' students. For UK HEIs to encourage CTS in masters' programme, there's the need to move from the monologue approach of Dissertation and focus more on the Experiential approaches. The study is ongoing to further explore datasets extensively within more UK/EU HEIs.

There's the limitation of access to primary data from UK/EU HEIs due to different capstone timings across these HEIs (as a result of block versus semesterised delivery).

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List of Table/Figures

Table 1 – Types of Capstone

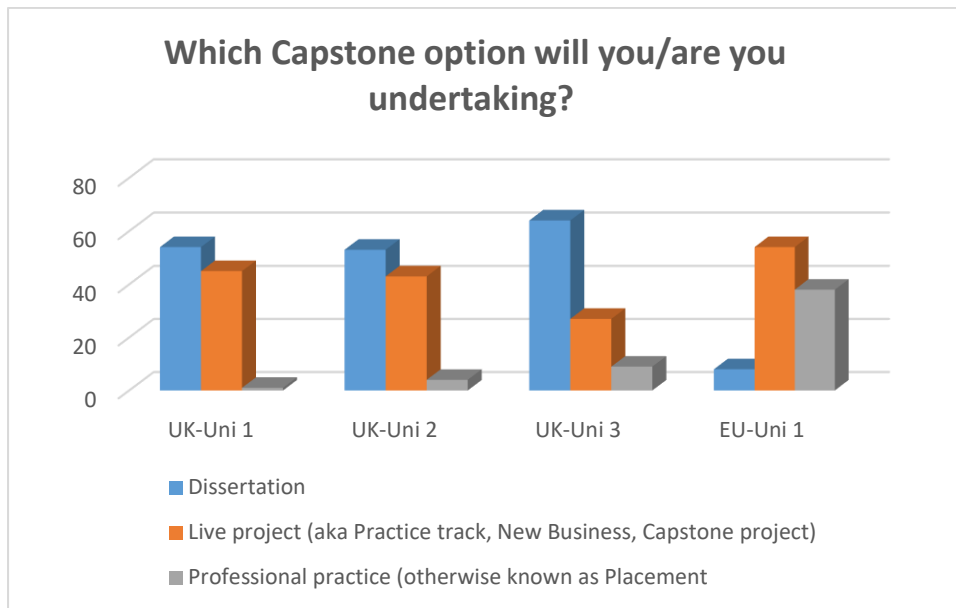| UK/EU	Capstone type
UK	They adopt different approaches i.e. • 2-options (Dissertation and Experiential (in form of Practice tracks i.e. consulting projects) • 3-options (Dissertation and Experiential e.g. Live projects (LP) (consulting) & Professional Practice (PP) (placement)) • 4-options (Dissertation and Experiential e.g. New Business, Capstone project (consulting) & Work placement)
EU	3- options were adopted: • Dissertation – this is in form of: ❖ IM Thesis - Master thesis project. Aim is to apply your knowledge learned from the master courses to solve a real business related problem • Experiential: this is in form of: ❖ Integration project - In a small team you will apply your new knowledge and skills ❖ Thesis project – consulting, i.e. explore and solve a real company issues, project must meet academic and practical objectives. For example, real customs issues like safety, security, trade facilitation, sustainability with compliance, e-commerce, customs supervision or corruption

Figure 1: Capstone options undertaken

Which Capstone option will you/are you undertaking?

- Dissertation
- Live project (aka Practice track, New Business, Capstone project)
- Professional practice (otherwise known as Placement

Figure 2: Critical Thinking Skills (CTS) – six stages of Bloom's taxonomy

Fig 2.1: CTS 1A - I am able to REMEMBER what I learn during my Capstone - DISSERTATION

UK-Uni 1 ■ UK-Uni 2 ■ UK-Uni 3 ■ EU-Uni 1

Fig 2.2: CTS 1B - I am able to REMEMBER what I learn during my Capstone - EXPERIENTIAL (LP/PP)

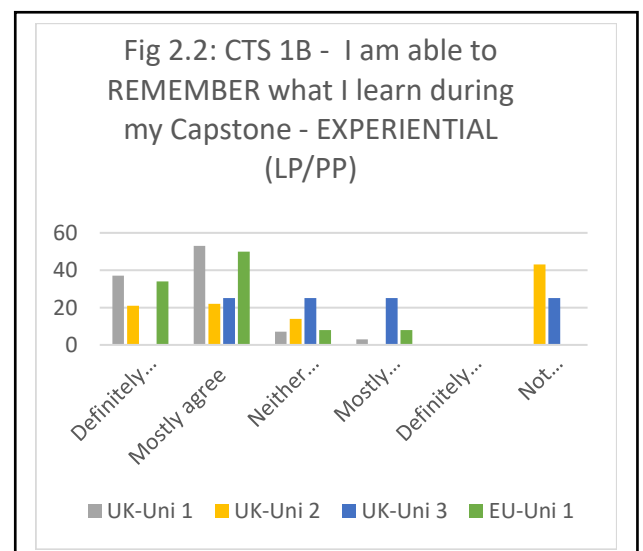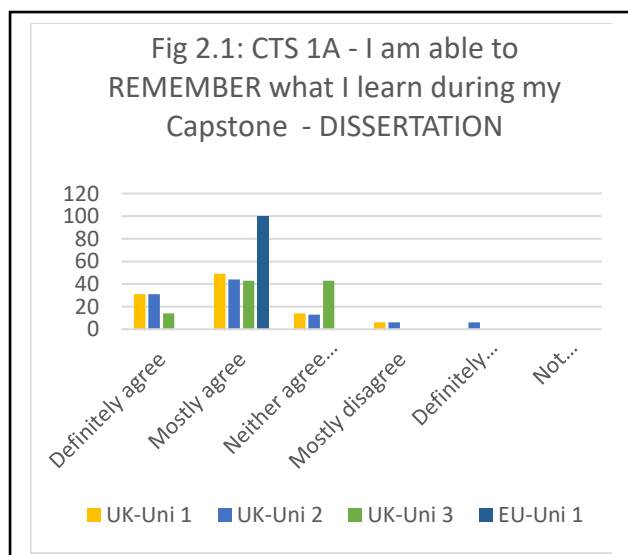UK-Uni 1 ■ UK-Uni 2 ■ UK-Uni 3 ■ EU-Uni 1

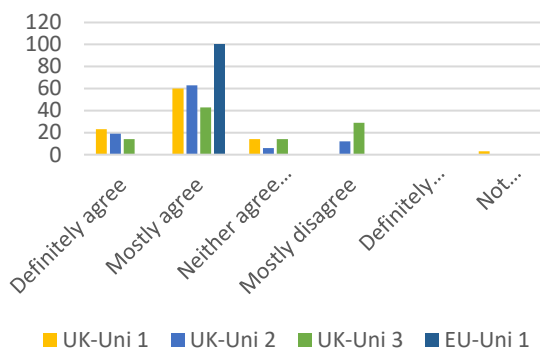Fig 2.3: CTS 2A - I UNDERSTAND what I learn during my Capstone - DISSERTATION

Fig 2.4: CTS 2B - I UNDERSTAND what I learn during my Capstone - EXPERIENTIAL (LP/PP)
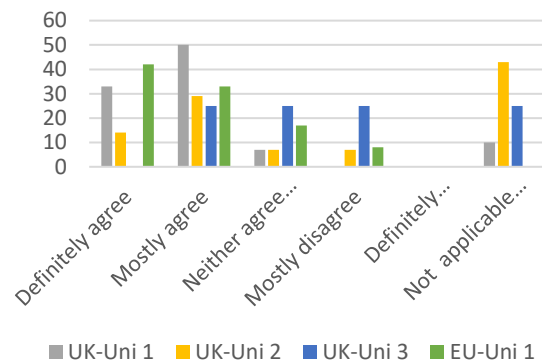

Fig 2.5: CTS 3A - I can APPLY or use the knowledge gained from my Capstone - DISSERTATION
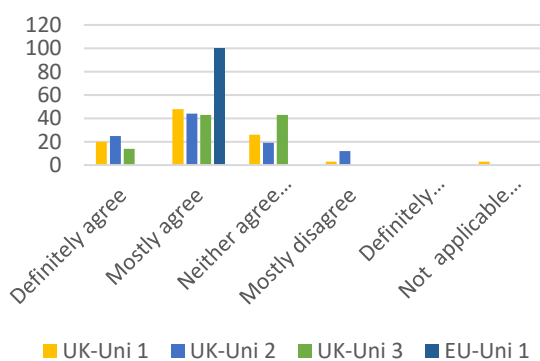

Fig 2.6: CTS 3B - I can APPLY or use the knowledge gained from my Capstone - EXPERIENTIAL (LP/PP)
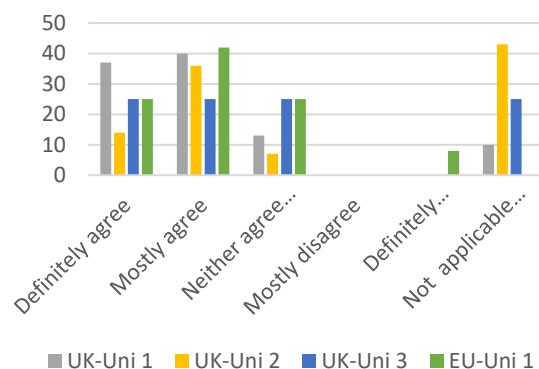

Fig 2.7: CTS 4A - I have the ability to ANALYSE issues properly through my Capstone experience - DISSERTATION
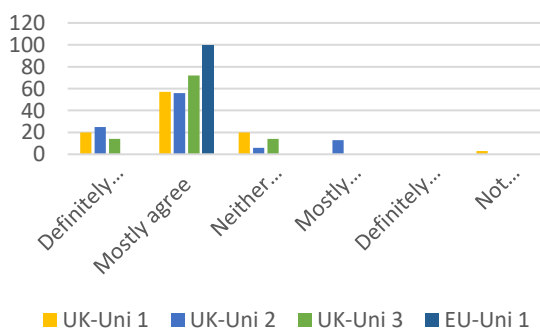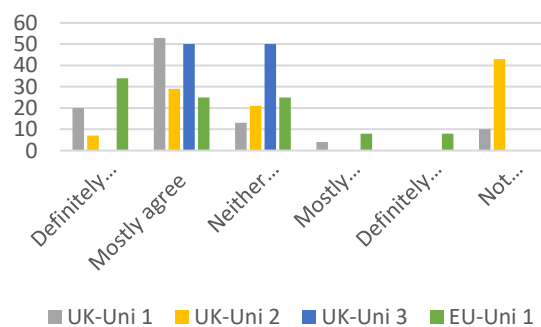

Fig 2.8: CTS 4B - I have the ability to ANALYSE issues properly through my Capstone experience - EXPERIENTIAL (LP/PP)

Fig 2.9: CTS 5A - I have the ability to EVALUATE and draw valuable conclusions based on my Capstone experience - DISSERTATION

Fig 2.10: CTS 5B - I have the ability to EVALUATE and draw valuable conclusions based on my Capstone experience - EXPERIENTIAL (LP/PP)

Fig 2.11: CTS 6A - I am now able to CREATE new knowledge and skills from my Capstone experience (which demonstrates mastery of my course) - DISSERTATION

Fig 2.12: CTS 6B - I am now able to CREATE new knowledge and skills from my Capstone experience (which demonstrates mastery of my course) - EXPERIENTIAL (LP/PP)

Self-evaluation in a Peer Learning Environment: An Active-learning Process

Nasir Aminu (Cardiff Metropolitan University) and Mohammed Hamdan (Cardiff Metropolitan University)

NAminu@cardiffmet.ac.uk and MHamdan@cardiffmet.ac.uk

Abstract

Keywords: Active Learning; Peer Learning; Effective Feedback; Self-evaluation; Peer-evaluation

We use group work to measure the effectiveness of students' feedback on their assessment. We posit that students perceive self-assessment in a group work as a tool that represents fairness. By focusing on learning in peer assisted learning environment, the study was conducted by two differentiated observations on the effectiveness and validity of peer assessment practice. Our methods and findings differ with previous findings. Over two academic sessions, we applied a group learning model to investigate if students can self-evaluate accurately in a peer learning environment. We collected primary data and secondary data for our deductive research. Our analysis included both qualitative and quantitative analysis. On empirical findings, there was no significant difference between the peer and staff moderated marks in both cases that supports the validity of peer assessment practice. We also found that peer learning improves students' quality of assessment as they reflect on their work better.

Identifying the Characteristics for Leading and Achieving Sustainability in HEIs

Andrew Thomas (Aberystwyth Business School), Claire Haven-Tang and Mark Francis Cardiff Metropolitan University

Key words Higher Education, leadership, economic sustainability, sustainability framework

Introduction
The objective of this paper is to identify some of the qualitative characteristics required of HEIs to achieve improved business sustainability. While recognizing that identifying a generic and comprehensive list of such features is difficult, due in the main to the wide variation in differing institutional circumstances and their strategic solutions, it is felt by the authors that sustainable businesses evolve by surviving bad experiences and by imprinting the lessons learnt on the institution's collective memory against a future need. That is not to say that a particular solution will work twice in the same or some other institution, even if the circumstances were identical, and that is because of the many extraneous factors that surround the human activity system that is an institution.

Therefore, studying an institution's situation can permit HEIs to garner many useful lessons and ideas for adapting proven strategic solutions. Accordingly, this paper outlines the case of a single HEI, the difficulties it faced during the University's enforced austerity programme and, how it is working to overcome these issues to become a sustainable institution. The results, observations and conclusions drawn at the end of the paper relate to a particular department within the University and attempt to identify and list the specific and generic features involved in a solution which is allowing the department to work its way towards sustainability. Therefore, the objectives of the study are to: (1) to identify the sustainability factors that HEIs require in order to achieve sustainable business systems, (2) to establish an outline sustainability framework for further development in HEIs

Relevant background
The implementation of business improvement strategies brings its own challenges. Antony *et al* (2012) identify a number of key issues in the implementation of Lean Six Sigma in to HEIs. Their work outlines: The strategy of achieving business improvement is not clear to many senior leaders and this is

primarily due to the lack of awareness of the benefits of Lean in non-manufacturing environments; a lack of commitment and political tensions that exist in HEI executive teams makes it difficult to foster a culture of continuous improvement; a lack of process thinking and process ownership since process thinking is not at all prevalent in many HEIs and, establishing processes at the workplace requires a change of mindset. A lack of visionary leadership is a fundamental barrier in the successful introduction and deployment of improvement initiatives (Snee, 2010, Snee and Hoerl, 2002); the culture prevalent within HEIs limits the opportunity for the staff to feel that they are part of the organisation and openly talk about their improvement suggestions; a lack of communication at various levels across the HEI; lack of resources (time, budget, etc.) and, weak linkages exist between the continuous improvement projects and the strategic objectives of the HEIs. However, although many challenges and barriers exist, the benefits are many and include (Radnor and Bucci, 2011): positive changes in the culture in specific areas of the HEIs where staff have understood the concept of Lean and realise that Lean has given them the tools to enable them to arrive at effective solutions; the empowerment of staff thus enabling them to make key decisions and enact changes to their business processes; enabling HEIs to tackle the quick wins and create immediate impacts, which free up capacity to enable staff to look at improving other processes; gave the opportunity staff to be involved in process improvement activities and focussed on internal processes.

Research approach
The paper employs a case study approach that shows the work undertaken in an example HEI towards achieving business growth.

Discussion
The paper outlines the need for a new leadership style that is required within HEIs to drive sustainable business change. Through the development and adoption of a sustainable framework shown in Figure 1, the example HEI has been able to redefine its strategic intent and operational systems and focus on growth and continual development and improvement.

Figure 1 – School Sustainability Development Framework
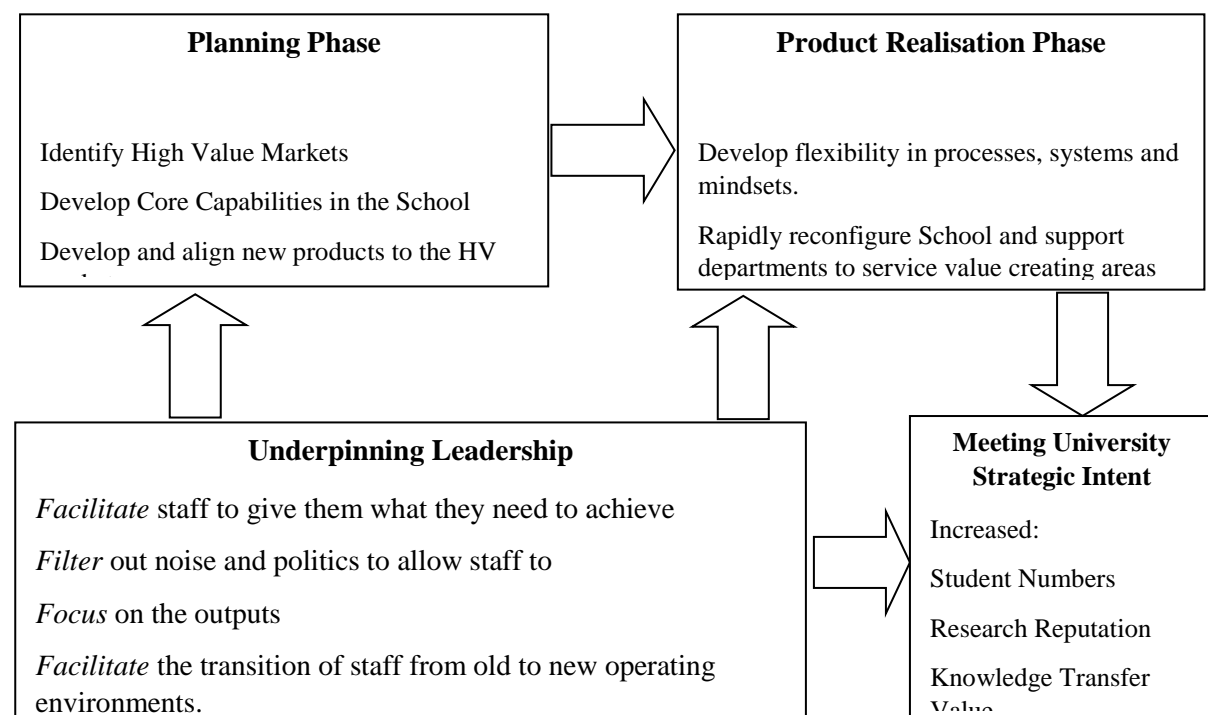
Conclusion/Implications

The following sustainability dimensions were observed during the research phase of this work.

Factor 1 The development of a coherent undergraduate and postgraduate curriculum that is correctly aligned to high value student markets (School)

Factor 2 Open minded management team willing to develop and support new and innovative programmes of study (University and School)

Factor 3 Inclusiveness, or the recognition that all personnel within the HEI make a contribution and that this can be encouraged by training together with involvement, to make these efforts more effective (University and School)

Factor 4 An awareness of the importance of minimising operational costs and the availability of adequate financial resources to fund profitable programmes of study (School)

Factor 5 The availability of flexible, intelligent and innovative human resources (University and School)

Factor 6 The presence of excellent inter-personnel attitudes and communications (School)

Factor 7 The application of a flat management structure and the empowerment of the workforce to self-organise and create the new environment(School)

Factor 8 The development of a clear and simple strategic plan that creates the correct environment for staff to transition from old systems to the new operating environment (School)

Factor 9 The positioning of effective leadership with energy to drive change and break down barriers in other departments so that the new vision can be achieved (School).

Factor 10 Development of new skills and capabilities in order to deliver the new curriculum (School).

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The impact of part-time student employment on the non-student working population in the hospitality sector

Claire Evans (Cardiff Metropolitan University); Felix Ritchie (UWE); Hilary Drew (UWE); Caroline Ritchie
(cevans@cardiffmet.ac.uk)

Key words: student employment, part-time, hospitality, interview, focus group, qualitative

Introduction

The purpose of this paper is to assess the impact of part-time student employment on non-student employment in the service sector, with particular reference to the hospitality sector.

Background

The demand for youth labour has fallen dramatically over the past three decades due to a decline in manufacturing, a rise in the service sector and an increase in technological developments through globalisation, which have affected both skill requirements and the occupational profile of employment (Green et al 2016) resulting in employers' increased demand for non-standard forms of employment. (Maguire and Maguire 1997). This has tended to attract older workers, primarily female, who use part-time work to fit around caring and domestic responsibilities (see Crompton *et al.*, 1990; Crompton &

Sanderson, 1990; Rubery, 1998). However, not all sections of the youth population have been affected equally (Canny 2002).

Since the 1990s, there has been a significant increase in higher education students engaged in part-time employment. The most common source of part-time employment for students is found in retailing, and hotel and catering establishments (Curtis and Lucas, 2001). Indeed Lashley (2005) found that 65 per cent of all students working part-time were employed in the retail or hospitality sectors; industries, argues Milman (1999), that possess relatively low entry thresholds and the opportunities for unskilled positions. The underlying increase in the supply of student labour has been largely attributed to the numerous changes that have taken place regarding the student funding mechanism (Watts and Pickering 2000). Various reasons have been attributed to the increase in demand for this type of labour: Curtis and Lucas (2001) and Walsh (1990) contend that employers' demand for students centre on their desire to reduce wage costs; McMullen (1995) supports the view that student employment reduces employee benefits compared to full time, permanent employees; Lucas and Ralston (1996) argue that students provide employers with a highly flexible workforce in terms of increasing or decreasing hours in line with business demands; and, functional flexibility where part-time students might undertake tasks for which they were not originally employed (Lucas, 1997). Finally, Canny (2002) found that students working part-time bring certain qualities to employment that might be lacking in other employees a similar conclusion reached by Lammont and Lucas (1999) who considered that employers perceived students to be intelligent, articulate, good communicators, easy to train and willing to follow instructions. However, little research has focused on the interaction of the two core elements engaged in part-time work; student and non-student employees.

Research Approach
This paper adopted a qualitative approach of primary data. Using three university cities (Bristol, Cardiff and Newport) a series of student focus groups and employer interviews were conducted to assess the impact of student part-time employment on the non-student work-force engaged in the hospitality sector.

Conclusion
Our initial findings reveal a novel result: employers do not perceive that part-time students provide additional benefits over non-students in terms of personal skills such as communication, motivation or intelligence, however there is clear evidence of mutuality and reciprocity (Dabos and Rousseau 2004). Although workers and employers often differ in their perceptions and interpretations regarding the terms of employment (Coyle-Shapiro and Kessler 2002), some degree of mutuality or shared understanding is essential for the parties to achieve their interdependent goals (Rousseau 1995; Dabos and Rousseau 2004). Our study reveals that both part-time students and employers share beliefs in terms of the transient nature of the employment. This allows the student to prioritise their academic workload whilst the employer is able to protect their non-student part-time work force who require a regular income and hours for family support reasons. The employers' feeling of responsibility towards their non-student, non-permanent staff is at odds with the usual negative criticism directed at flexible employment contracts which are a dominant feature of the current UK economy.

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Sustainable Planning for Tourism: An Evidence Informed Approach

Emmet McLoughlin emcloughlin@cardiffmet.ac.uk, Cardiff Metropolitan University, Kelly Maguire Liverpool John Moores University

Abstract
The development of tourism has undoubtedly produced several negative effects, on the natural environmental (Lee and Hsieh, 2016; Needham and Szuster, 2011), together with economical (Cooper et al, 2008; Hanrahan and McLoughlin, 2015), social, cultural and seasonal income/employment (Logar, 2010; McLoughlin et al, 2018) impacts. Sustainable development has therefore become a necessity in the field of tourism planning, and destination management. While this connection between tourism, sustainability and planning has never been closer (UNWTO, 2004) and continues to garner increased attention within academic circles (Dredge and Jenkins, 2011). Without an evidence informed approach, policy makers would be unable to anticipate future planning needs, thus potentially damage the future long-term sustainability of the tourism product (McLoughlin, 2017). The European Tourism Indicator System (ETIS) is the European Commission's most recent development, designed specifically for destinations to monitor performance and help destinations to develop and carry out their plan for greater sustainability with long-term vision (EC, 2016). Yet, sustainability in theory is different to sustainability in practice, and indicators supply the necessary information on complex phenomena, in this case tourism (Graci and Dodds, 2010). Therefore, the ETIS acts to enhance sustainable performance at destination level through the promotion of economic prosperity, social equality and environmental protection. Such an approach is paramount for example; many destinations are now facing challenges with tourism intensities (Byers, 2016; Clampet, 2017; Goodwin, 2016; Jordan, 2016). While the concept of sustainability continues to receive positive reaction from policy makers, politicians and scientists

(Bell and Morse, 2008; UNWTO, 2004). While, limited research has been dedicated to examining the ETIS, particularly in Ireland (McLoughlin, 2017, McLoughlin, Hanrahan and Duddy, 2018), there is even less research pertaining to the ETIS in the context of the events industry (Maguire, 2018). Furthermore, despite its importance, there also exists a fundamental gap in knowledge concerning which body is responsible for implementing the ETIS at destination level (McLoughlin and Hanrahan, 2019).

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Improving Contingent Workers' Engagement Within The Welsh Hospitality Industry: A Case Study Approach

Elena Peshkova Cardiff Metropolitan University

Key words Gig economy, contingent workforce, HRM, engagement, Wales, hospitality industry

Introduction

De Stefano (2015) defines the Gig- economy as "crowd work", and "work-on-demand via apps", under which the demand and supply of working activities are matched online or via mobile apps. Taylor's report that refers to the Gig economy trends mentions people who can make money from assets that they own or their ability to do a specific type of work, using apps to sell their labour (Taylor, 2017). Therefore, the Gig economy is the economy which relies on temporary workers who advertise their abilities to do specific tasks online, using different platforms. However Gallup Inc.(Gallup, 2018) suggests to divide the gig workforce into two groups: *Independent gig workers* (freelancers and consultants) who often enjoy the advantages of non-traditional arrangements, and *Contingent gig workers* (on-call, contract and temp workers) who are usually hired for temporary work, paid according to hours worked, and neither of them draws none of the benefits that are commonly available to permanent employees (Gallup Inc., 2018). Thus, the gig economy has the broader definition. This research specifically focuses on contingent gig workers. A contingent worker is usually hired for temporary work, paid according to hours worked, and draws no benefits that are commonly available to the regular employees.

Background

Tourism plays a vital role in the economy of Wales (Crown, 2013; Davies, 2016; WG, 2016). In 2015, direct tourism Gross Value Added (GVA) was £2.8 billion for Wales which was 5.3 % of total Welsh GVA (ParliamentUK, 2017). The tourism and hospitality industry faces many labour problems, with staff turnover at 19.6 % (ONS, 2012) being the most notable (Haven-Tang, 2004; People1st, 2015; Pranoto, 2011). Hospitality managers acknowledge that high staff turnover affects the customer experience (Kent, 2017; Pranoto, 2011), and seek to alleviate this problem by recruiting contingent workers (Weeks et al., 2018). A contingent worker is hired for temporarily conducting a specific task, and is not considered an employee of the organisation. Hospitality managers focus on the cost and efficiency of the contingent workforce rather than on their workplace engagement (OnRec, 2008). However, worker engagement plays a crucial role in any organisation, as an engaged worker is more emotional and intellectual committed to an organisation (CIPD, 2010) and performs better than one that is not engaged (Kular et al., 2008). Existing research on engagement focuses on permanent employees (Gallup, 2018). This study will explore the unique challenges facing the improved engagement of the contingent workforce. The contingent workforce, part of the gig economy, is becoming increasingly crucial to the long-term longevity and growth of the business.

Research approach/Methodology

There are three phases planned for research.

Phase-1 (February - April 2020) was a pilot study. The online survey was conducted among CSM students who were working while doing their degree. Students have been chosen as a target audience because the majority of them are seeking some type of gig work during studies due to the flexibility that such employment offers. The link to the questionnaire was disseminated through the students' email with the support from lecturers. The aim of this phase was to provide additional insight into the resources and routes used by such students to find gig-work (such as on-line platforms), along with greater insight into their gig-work employment destinations. This phase of the study involved a three-parts online questionnaire to identify the attitudes towards Platform-based gig work, get inside information of gig-work employment destinations followed by an investigation into the level of contingent workers' engagement in the hospitality industry. To assess the level of engagement the Utrecht Work Engagement Scale (UWES) 9 item questionnaire (Schaufeli et al., 2006) was used. The UWES-9 is the most commonly used instrument for measuring employee engagement. It formulates

engagement as a persistent and pervasive affective-cognitive stat (Schaufeli and Bakker, 2004).The tool was suitably adapted for the contingent type of work. As this questionnaire did not aim to gather statistical data, the anticipated size of the sample was applied a purposeful sampling technique. The purposive sampling technique is the deliberate choice of a participant due to the qualities the participant possesses. It this case it is a student who engages with the Gig - economy. It is a nonrandom technique that does not need underlying theories or a set number of participants. This type is generally used in case study research (Yin, 2014).

Phase 2 (April – July 2020) is a semi-structured interview with different stakeholders where information will be obtained from three key stakeholders, namely; businesses, contingent workforce and hospitality students. In order to get access to real hospitality organisations the researcher is going to use the university's network. Furthermore, the researcher will carry out in-depth qualitative interviews with a selection of contingent workers, including some of those who had taken part in phase one, in order to probe more deeply into the realities underlying their engagement, and clarifying the puzzling findings from the online survey.

The cost of workers turnover has been one of the driving forces behind the push to raise employee engagement (Bridger, 2018). This statement will be a key that helps to open doors and establish firm cooperation with businesses during the study. Thus the research that allows reducing the level of workers turnover will be interested and beneficial for any organisation. Series of the semi-structured interview will be organised during the second part of the research. Potential participants will be supervisors, managers, and contingent workers. After analysing this data, the researcher will get a vibrant view of workers' needs, managers' concerns and attitudes toward the risk of hiring contingent workers and their current experiences. All the information will assist in creating a model which increase the contingent worker engagement that leads to reduce turnover.

Furthermore, the researcher is going to analyse and monitor the contingent workers turnover of chosen organisations. It will be done in parallel with semi-structured interviews. This analysis and turnover monitoring will assist in testing the model during phase 3 of the research.

Phase 3 (July – October 2020) of the research is to use the model to implement an intervention in the daily business routine of several organizations in order to establish the effectiveness of the above model. From July to October, It is an excellent time to test the model because it is a high season for hospitality industry and organisations require an extra workforce.

Working process on result and conclusion
Data is still being analysed. The result and conclusion of the quantitate research will be completed by the end of May 2020. Phase 2 is ongoing now.

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A mixed methods approach to investigating participation (and non-participation) in Community Asset Transfers in Wales

Gary Samuel Cardiff Metropolitan University gsamuel@cardiffmet.ac.uk

Abstract
Community asset transfers (CAT) may be considered the logical corollary of neo-liberal ideology in the UK, in serving as a means for social enterprises and community organisations to assume the management of public sector assets such as libraries and sports centres. Various studies attempt to map these schemes and/or evaluate their efficacy. An initial systematic review of literature however, has identified potential deficiencies in the extant body of literature, suggesting studies are predominantly focused on those organisations participating in CAT and post the point of transfer. Moreover, the evaluation of efficacy may be considered facile as some studies purport to adopt a mixed methods approach and yet the level and detail of quantitative data collected, analysed and presented may be considered inconsequential. Few studies seem to offer meaningful insight into the rationale for non-participation and arguably fewer still truly evaluate quantitatively the impact of CAT on organisational and financial sustainability. There is a cogent argument therefore, that further research is needed to address these fundamental and pertinent questions.

Introduction/Purpose
The purpose of this paper is to examine how the use of a systematic literature review has informed the proposed area of research for a Doctor of Management programme of study to evaluate the rationale for participation and particularly non-participation by social enterprises in Community Asset Transfers (CAT) in Wales.

Literature
A systematic literature review methodology (Tranfield, 2003) was adopted using the following focal literature; social enterprise, asset transfer and localism. There is a significant body of literature considering social enterprise, both from a UK and international perspective, including seminal pieces by Dees (1998) who develops a social enterprise spectrum and Kerlin (2006) who compares USA and European models, and to a lesser extent literature relating to localism as the corollary of austerity policies. However, literature studying asset transfers, may be considered embryonic and a growing empirical evidence base. Within this body of literature, there are a number of principally qualitative studies evaluating community asset transfers (Hobson et al., 2019; Thomas and Trier, 2016; Findlay-King et al., 2018).

Other studies considering asset transfers in the UK include Murtagh's (2015) study of the political situation in Northern Ireland and its impact on policy and implementation of asset transfers. Skerratt and Hall (2011) review village halls in Scotland and develop a community capitals framework. Wales has the four-stage evaluation of asset transfers (Thomas and Trier, 2016) and schemes in England are considered by Hobson et al. (2019), Findlay-King et al. (2018) and Hatcher (2015). Significantly, the focus of these studies may be considered at best synchronous with the transfer itself and in most cases focused on events following transfer.
Noteworthy theories and concepts emerging from this nascent literature include the view that asset transfers are the inevitable corollary of neo-liberal ideology, austerity and public sector spending cuts (Levitas, 2012; Hobson et al. 2019; Nicholls and Teasdale, 2017). Other concepts include institutional thickness regarding the prerequisite organisational and community capabilities required to oversee a transfer and manage an asset (Hobson et al. 2019). This concept is mirrored in other studies which consider organisational capacity and availability of social capital within communities (Findlay-King et al. 2018; Nichols et al., 2015).

Discussion

It is worth first considering definitions of both asset and social enterprise. The term asset seems to be ill-defined in the context of asset transfers, with various interpretations offered. Many studies refer to assets including elements of service provision, such as music services and libraries (Nichols et al., 2015; Forbes et al., 2017; Hatcher, 2015), while others refer to an asset only, such as a disused building (Fischer and McKee, 2017). Even fewer studies address whether assets may in fact be considered liabilities (Gilbert, 2016; Fischer and McKee, 2017; Rex, 2019).

Similarly, there is divergence in definitions of social enterprise as illustrated by Teasdale et al. (2013) who suggest that up to 90 per cent of the 70,000 social enterprise identified in the 2012 annual survey of small businesses could be considered private enterprise. Indeed, there are many definitions, including Defourny et al. (2014, pp.24-25) comparing the more precise British definition with the EMES International Research Network approach using a looser set of indicators. For the purpose of this research however, social enterprise will be considered from the pluralist perspective of commercial enterprise anchored in the local community exhibiting social responsibility through clearly defined and demonstrable social objectives.

A number of studies attempt to provide a 'comprehensive' map of the asset transfer landscape in the UK; notably Quirk (2007), Aiken et al (2011) and, in Wales, Thomas and Trier (2016). In addition, there are studies focused on individual schemes and cases across the UK (Rex, 2019; Forbes et al., 2017). Perhaps of significance to this study however, is the literature suggests limited research exists seeking to understand the rationale for participation, and particularly non-participation, prior to a transfer occurring. To contextualise this, there may be as many as 1,700 social enterprises operating in Wales (Wales Co-operative Centre, 2017) and undoubtedly the majority of social enterprises are not participating in CAT, and this number excludes third sector organisations more widely.

There is a cogent argument therefore, supporting the need for research to analyse and understand the factors shaping decision making for both participating and non-participating organisations. Indeed, Creswell and Creswell (2018, p.112) use the term deficiencies in the literature to 'make the case even stronger for a study'. Further, the data collection methodology adopted for published studies is largely qualitative in nature (Rex, 2019; Hatcher, 2015; Sellick, 2014). There are a small number of mixed methods studies, including Ambrose-Oji et al. (2015) and Skerratt and Hall (2011), but on further analysis the quantitative data in these studies lacks sophistication in its collection, analysis and presentation.

Implications for Proposed Research Methodology

Analyses suggest there is an opportunity to contribute to the ongoing academic and practitioner debates on asset transfers by conducting research which includes non-participating organisations and uses a more robust mixed methods research methodology. The research will follow an explanatory sequential design (Creswell and Plano Clark, 2018), which is consistent with a number of studies (Hobson et al. 2019; Nichols et al., 2015; Skerratt and Hall, 2011). It consists of an initial screening survey collecting quantitative baseline data, including participation and financial data for example, followed by qualitative data collection using semi-structured interviews to explain the reasons for this. Potential opportunities are emerging to evaluate more objectively and quantitatively the efficacy of CAT, by analysing the primary quantitative data with other secondary data such as socio-economic metrics using the Welsh Index of Multiple Deprivation (Welsh Government, 2019) for example, to determine any correlation between deprivation, participation in CAT and organisational sustainability.

The research will reflect a theoretical replication design (Saunders et al., 2016) using multiple case studies drawn from contrasting organisations, i.e. those participating and not participating in CAT. The study is also cross-sectional in nature, in that it uses multiple case studies at a single point in time (Bryman and Bell, 2015, p.61). Furthermore, there is the potential to develop the research into a longitudinal study beyond the completion of this doctoral study. It would seem prudent therefore, to collect detailed quantitative data, such as financial performance, as part of this study, which may serve

as a baseline from which to more objectively measure the outcomes associated with, and efficacy of, participation and non-participation in CAT over a longer timeline.

Conclusion

The on-going systematic review of literature suggests there is a deficiency in the body of literature which warrants further investigation and research. This analysis of literature has informed the research proposal and its constituent research questions and methodology, principally to explore the rationale for non-participation in Community Asset Transfers in Wales. Moreover, further analysis of the research methodology adopted in published studies suggests there are unmet opportunities to employ a more rigorous mixed methods approach combining meaningful qualitative and quantitative data collection, analysis and presentation.

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Help or hindrance? An exploration of the bi-directional relationship between social enterprises and area-based initiatives - the case of the Communities First programme in Wales.

Lyndon Murphy (Cardiff Metropolitan University), Gary Samuel (Cardiff Metropolitan University), Brychan Thomas (University of South Wales) and David Higgins (University of Liverpool)

Abstract
This project analyses the function of an area-based regeneration initiative as a catalyst in the creation and management of social enterprises. The work uses a multi-theoretical framework in an attempt to understand the role played by stakeholders such as the Communities First programme in the creation and management of social enterprises. An interpretivist stance is adopted to analyse the complementary role social enterprises may play in the mission of the Communities First programme and vice-versa. The work examines the extent to which social enterprises worked to support the work of the Communities First programme (an area-based initiative) in Wales. Of particular interest to this paper is the work of Defourny and Nyssens (2006) who consider a function of a social enterprise to provide a means for bridges to be built between actors in the third sector. This contributes to a fuller understanding of stakeholder influences at social enterprises and their relationship with area-based initiatives such as Communities First. It also highlights the potential for social enterprises and government supported institutions to form relationships and consequently improve each other's organisational efficiency, effectiveness and sustainability. Further, it raises an awareness of the over-reliance on government funding which may damage social enterprise sustainability.

The concept of social enterprise stimulates much debate (Ridley-Duff and Bull, 2011). Interpretations tend to be broad and vague. For instance, Ebrahim (2014) considers social enterprises to be businesses with a social mission with a main commercial revenue source that is market focused. If this definition were to be applied then the majority of social enterprises included in this research project would not be classified as social enterprises but as charities or forms of co-operative organisations. Chell (2007) holds a different view considering social enterprises to operate on a spectrum from grant supported organisations through to commercially viable social enterprises.

Thirty key informant semi-structured interviews were undertaken to investigate whether or not social enterprises supported the work of Communities First and whether the actions of Communities First helped create and sustain social enterprises. Case studies were developed to analyse and evaluate bi-directional relationships between social enterprises and Communities First. The findings reveal that social enterprises performed a bridging or spanning function between community need and desirable community outcomes. The research contributes to development of an understanding of the relationship between social enterprises and their stakeholders with especial reference to area-based regeneration initiatives. The policy implications included the need for policy makers to be mindful of the function area-based initiatives have in social enterprise creation.

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