

Exploring entrepreneurial architecture in UK universities; still a work in progress?

Abstract

Purpose

In UK higher education, there is considerable uncertainty due to multiple UK governmental policies over a short period - coupled with demographic change and the vote to leave the European Union. This pressures universities to meet third mission aims by engaging effectively with society and business, generating income in the process to address reduced funding. Support from the UK government includes over 20 years of funding for universities to develop entrepreneurial structures and processes, termed entrepreneurial architecture. While the government regularly collects data on funds generated through third mission activities, less is known about how entrepreneurial architecture is perceived by those inside the university. This paper meets that gap by exploring the perspectives of those employed specifically as part of entrepreneurial architecture implementation, as knowledge exchange intermediaries.

Design/methodology/approach

The study takes a phenomenological approach to achieve deeper insights into those routines and norms resulting from the application of entrepreneurial architecture (EA). This is a purposeful sample with what is reported to be an under-researched group (Hayter, 2016); those employed as internal knowledge intermediaries across 15 universities, (2 from each). These university employees are specifically charged with business engagement, knowledge exchange and research commercialization; their contracts are funded and designed as a part of the EA rather than for research or teaching. An initial pilot comprising 4 semi-structured interviews indicated suitable themes. This was followed up through a set of 3 interviews with each participant and a mapping of EA components at each institution.

Limitations

The benefits of this study method and sample include deep insights into the perspectives of an under-reported group. The purposeful sample might be usefully expanded to include other countries, other staff or to look in depth at one institution. It is a qualitative study so brings with it the richness, insights and the potential lack of easy generalizability such an approach provides.

Findings

Despite EA strategies, the picture emerging was that universities had embedded physical components to a greater or lesser degree but not the social architecture required to underpin it, shown by conflict between stated and actual routines and norms with consistent barriers to third mission work. Power and perceived power was critical as participants felt their own worth and status was embedded in their senior manager's status and power, with practical difficulties for them when he or she lost ground due to internal politics.

Practical implications

In designing organisations to achieve third mission aims, Entrepreneurial Architecture is important. Even where the structures, strategies, systems, leadership, and culture appear to be in place, however, the resulting routines and norms may act against organizational aims. Those designing and redesigning their institutions might look at the experience suggested here to understand how important it is to embed social architecture to ensure effective actions. Measuring cultures and having this as part of institutional targets might also support better results.

Social implications

The persistent gap in universities delivering on policy third mission aims is well documented. For these to be met, universities will need to ensure their entrepreneurial architecture is founded on strong underlying supportive cultures. Knowledge sharing by universities with business and community is unlikely when it does not happen in-house.

Originality/value

The study adds new knowledge about how Entrepreneurial Architecture is expressed at individual university level. The findings show the need for more research to understand those routines and norms which shape third mission progress in UK universities and how power relations impact in this context, given the pivotal role of the power exerted by the senior manager.

Introduction

Changing markets, increased competition, reduced funding, new regulations and shifting purpose are current realities for UK universities. These uncertainties include the impacts of governmental policies and the UK's exit from the European Union, coupled with difficult demographic changes in the home student base (PACEC, 2016). UK universities are expected to change to address these targets by transforming into more entrepreneurial institutions, with support supplied to form strategies to design and implement Entrepreneurial Architecture (HEFCE, 2011). This paper explores how entrepreneurial architecture is embodied in core functions in UK universities, through the cultural perspectives of those employed as a key part of that architecture.

As a term, Entrepreneurial Architecture (EA) summarizes changes at an institutional level, designed to support the evolution of more entrepreneurial entities to meet third mission aims (Britain, 1997; Foss and Gibson, 2015). The third mission goes beyond research and teaching, in calling on universities to engage business and society through dynamic knowledge exchange (DIUS, 2008; Foss and Gibson, 2015; HEIF, 2011 Nelles and Vorley, 2010). Although an entrepreneurial university is any university that undertakes entrepreneurial activities (Etzkowitz et al., 2000), there are levels of complexity involved (Philpott et al, 2011). The entrepreneurial university "encompasses teaching, research and services to society in terms of producing and diffusing new knowledge as well as applying it to industrial development" (Heinonen and Hytti, 2010, 284; Zhou and Peng, 2008).

Further, entrepreneurial universities are drivers of innovation and entrepreneurship (Guerrero et al, 2016; Philpott et al, 2011) contributing to social development and economic growth (Schulte 2004), by fulfilling teaching, research and entrepreneurial activities simultaneously (Etzkowitz 2004). An entrepreneurial university potentially has different core aims and values (Rinne and Koivula, 2005, 110), given that shaping a dynamic and responsive university requires a strategic rethinking of existing structures and processes (Clark, 1998; Etzkowitz, 2003). This redesign to meet third mission aims has been embedded in policies for 20 years in the U.K. These policies led to institutional targets and annual funding to promote innovation through better university partnerships with business and society.

These UK Governmental funds have been varied but all emphasized knowledge exchange and the application and commercialization of research. One example is the 'Higher Education Innovation Fund' which was established to support "all forms of knowledge exchange (including enterprise) which lead to economic and social impact" (HEFCE, 2011; funds homepage). This also identifies knowledge exchange as an "established mission of higher education, alongside and intertwined with research and teaching" through institutional strategy. More recent reports for 2016/17, show institutional strategies as key in determining the distribution of £160 million of Higher Education Innovation Fund across 97 institutions, of which 28 were awarded the maximum funding of £2.85 million (HEFCE, 2017).

These institutional plans which shape and deliver EA are seen as key to achievement of the third mission, but what do they include? Firstly, this is an institutional approach rather than a focus on departments or faculties. Secondly it will need to include all internal factors “that interact to shape entrepreneurial agendas within universities, i.e., structures, strategies, systems, leadership, and culture”; together these interact to integrate entrepreneurial mission across functions and into teaching and research activities (Nelles and Vorley; 2010; 162). In this way, EA provides routes for the university knowledge and innovation flow (Kay 1993), through an organizational framework encompassing institutional communication, coordination, and cultural factors – all oriented towards innovation (Burns, 2005; Nelles and Vorley, 2010).

Despite consistent UK policy emphasis on universities achieving this third mission through EA strategies, there is little exploration of how this has been embedded within universities (Brennan and McGowan, 2006; Feldmann, 2014). Existing measures cover the commercialism of new knowledge through to the delivery of professional training, consultancy and services, to activities intended to have direct social benefits (O’Shea et al, 2005). In the UK, “financial and numeric data are used as a proxy for university engagement with the economy and society as seen in for example contract research income” (HESA, 2016; coverage webpage). These measures do not show cultural aspects, however, important given earlier discussion of the problems for traditional institutions in adopting an entrepreneurial culture (Foss and Gibson, 2015; Martin and Turner, 2010; Slaughter and Leslie, 1997). Yet university cultures may be based on embedded institutional values and “collegial, professional and bureaucratic” norms and ways of working (Hay et al. 2002; 140) with cultural complexities which “simultaneously support and hinder faculty entrepreneurs in a variety of direct and indirect ways” Feldmann, (2014, 272).

Given the need to understand how the cultural component of EA is expressed, the study mapped all EA aspects but explored culture given its importance in innovation (Murray and Blackman, 2006; Tidd, 1997). The sense-making processes of those in business development and knowledge transfer roles within universities are therefore explored. The roles carried out by this group are embedded in EA development; by taking a qualitative route their lived experience of EA can be articulated and understood. The next section discusses the literature on EA before considering the way the research was conducted.

Entrepreneurial Architecture

The metaphor of architecture has been used in private sector contexts to describe the management of innovation (Tidd, 1997). Further, according to Tidd (1997, 178) “the sum structural characteristics forming the architecture of the firm” includes the internal organization of the firm, specifically functional links and the definition of business divisions based on product-market linkages plus links with other organizations, such as suppliers and customers and networks of collaborating organisations (Kay, 1993). Thus organisations need to embed entrepreneurial change at an organizational level, ensuring structures support key aims, as seen in Entrepreneurial Architecture theory, where strategic changes aim to deliver an entrepreneurial university able to meet third mission aims (Nelles and Vorley, 2010).

These changes are articulated in strategic plans which aim to deliver an institution which is ready to support the needs of regional companies and to build specific innovation strengths (Guerrero et al, 2015; Hellström, 2004; Howells et. al, 2012; O’Shea et al, 2005). Hence EA changes are focused on delivering an institution with commercial, dynamic and flexible attributes (Fayolle and Redman, 2014; Lehrer et al, 2009; Lockett et al., 2005). These reflect a centralized approach seen across an increasingly globalised higher education sector with a more uniform idea of what a university should do and how it should be organized (Fuller, 2005; Marginson and Considine,

2000; Pinheiro and Stensaker, 2014; Rinne and Koivula, 2005), with the US model dominating policies for university strategies globally (Kalar and Antonic, 2015).

Both the architecture theorists (Foss and Gibson, 2015) and those stressing the regional and national impacts on - and of - universities (Hayter, 2016; Howells et al, 2012) suggest the need for organisational structures and processes to support the development of an entrepreneurial institution (Hellström, 2004; Marginson and Considine, 2000; Rinne and Koivula, 2005). These will provide “a comprehensive internal system for the commercialization and commodification of knowledge” to gain external funding and prestige (Butera, 2000; Conceicao and Heitor, 2002; Jacob et al 2003; 1556; Shattock, 2003). This will integrate with other bodies to support the regional context (Culkin, 2016; DIUS, 2008; Howells et al, 2012). The internal reshaping that is represented by EA has been classified as having five components: structures, systems, leadership, strategies and culture (Foss and Gibson, 2015; Nelles and Vorley, 2010).

There is an emphasis on the tangible in these components. Structures include physical facilities - technology transfer offices, incubators, business portals and technology parks, all investments designed to encourage knowledge transfer and business start-ups. Systems include networks of communication between individuals and departments and the configuration of linkages between structures and administration. Strategies are embodied in institutional aims and are elaborated in plans, incentive structures and policy. The Leadership component emphasizes the “qualification and orientation” of key influencers within the organization, including administrators, boards of directors, department heads and researchers, rather than their role as change agents (Charan, 1990; Nelles and Vorley, 2010).

While these four components offer a detailed view of the ‘harder’ aspects in terms of systems, processes, buildings and IT, only with the fifth component - ‘culture’ - do softer factors emerge - institutional, departmental and individual attitudes and norms. These aspects fall within institutional theory, which provides a route to understand the legitimization of groups and organizations through their conforming to the rules and norms of the institution (Bruton et al, 2010; Scott, 2007). Here an institution is seen as comprising “formal rule sets, ex ante agreements, less formal shared interaction sequences and taken for-granted assumptions that organizations and individuals are expected to follow” Bruton et al (2010, 42). This therefore encompasses the three pillars proposed by Scott (2007) - a regulative pillar, based on sanctions and conformity to the rules, monitoring, and enforcement; a normative pillar, with values and norms formed by interaction; a cognitive pillar where individuals construct rules and meanings to limit beliefs and actions which are embedded and taken for granted rather than consciously formed (Powell & DiMaggio, 2012).

Institutional theory suggests that trust serves as the dominant mediator in the relationship between institutional norms and knowledge sharing (Wang et al. 2014). By setting up EA successfully, routines and norms are expected to be embedded which deliver the more dynamic, proactive and responsive environment necessary for entrepreneurial action. Indeed, successful organizational level change is dependent on social relationships, so much so that Murray and Blackman, (2006, 137) suggest a social architecture approach to ensure “the systematic evolution of innovative routines established through social networks the development of horizontal relationships, communities of practice where ideas were shared, and an embedded systemic culture of sharing.”

Given Foss and Gibson’s (2015) emphasis on the importance of culture in developing the entrepreneurial university, this paper explores perspectives of culture, through the views of those working in roles set up solely as part of EA – intermediaries working in business engagement and

knowledge exchange roles in 15 UK universities. While all members of the institution are included in delivering third mission aims, these intermediary roles are often funded solely by EA money from government, with third mission aims and targets. Set up outside of traditional research, teaching and administrative functions, these roles are as an essential part of EA structures and systems, housed often in central bodies - in special 'corporate,' liaison, knowledge exchange, business engagement or technology transfer offices. These intermediaries are described as important components of the entrepreneurial university ecosystem, supporting knowledge application via practical knowledge and social capital (Hayter, 2016). They also have unique perspectives in working across faculties and types of staff – research teaching, administration and management and are hence the target group for the study

Given that EA theory suggests that the university will have a culture with ingrained routines and norms supporting third mission aims, this EA-specific group might be expected to be embedded in a supportive entrepreneurial culture with the strong social aspects seen in Murray and Blackman (2006). By collecting their individual perspectives, shared mental assumptions working within their university can be voiced and understood (Kondra and Hurst, 2009; Schein, 1988). These assumptions guide entrepreneurial action and they are both formed and re-formed on an ongoing basis both by social interaction and by established routines and pattern governing how things are done (Ravasi and Schultz, 2006).

In this study, the ways in which these routines and patterns, rites and rituals, which are embedded in the respondents' everyday routines indicate organisational expectations and norms (Deal and Kennedy, 2000; Scott, 2007). While the literature on organizational culture is important, this is not the main focus for the paper. Rather the researchers seek to understand perceptions and assumptions with meaning conveyed about 'how things work around here' in the lived experience of those employed specifically to fulfil plans for institutional EA. The research aims therefore focus on how entrepreneurial architecture 'works' both in terms of physical components and in the perceptions of a group employed solely as part of the EA.

Methodology

Aims

This paper explores how entrepreneurial architecture is embodied in core functions in UK universities, through the cultural perspectives of those employed as a key part of that architecture. This does not imply that other employees are separate from the workings of an entrepreneurial organization but that these staff have no other function and are employed through government funding to deliver only third mission aims. This purposive sample allows exploration of perceptions of rules and norms determining "how various groups and organizations better secure their positions and legitimacy" (Bruton et al., 2010, 423, Scott, 2007).

Approach

Given that this study focused on the lived experiences of participants, a phenomenological approach was adopted with a qualitative research design. In this way, the researchers aimed to explore and understand the "essence or basic structure" of a particular human experience or phenomenon (Merriam, 2009) to try to gain insights into underlying meaning assigned to various aspects of EA culture. This was carried out with a purposive or purposeful sample; participants were identified and selected, to gain insights from a specific group with key knowledge in a particular domain, as seen in previous studies (Dey and Teasdale, 2015; Feldmann, 2014). The sample comprised individuals employed as knowledge intermediaries as part of the implementation of EA structures (Hayter, 2016).

The intermediary perspective supplements research involving academics (Kalar, 2015). The researchers acknowledge the diverse "tribes" co-existing within the institution as part of

research, teaching and administration (Audretsch, 2014; Florida, 1999; Rinne and Koivula, 2005). However, while researchers, teachers and administrators are key parts of the entrepreneurial university, intermediaries are only there because of EA. These intermediaries therefore offer unique insights into how EA operates at 'ground level' (Berger and Luckman, 1967; Martin, 1992).

Following up an earlier survey, 59 individuals were contacted and from these 30 took part, 2 each from 15 institutions. Here participants with commitment to participating in the longitudinal process and similarities in role and level formed the basis for the sample. In the end, this gave us a purposive sample of two from each of a group of 15 universities. A balance of men and women participating was originally anticipated but this proved difficult as there were fewer women in these roles hence only 8 of the 30 participants were women. Ages varied but participants were generally between 35-50, with a first degree (and in 6 cases with masters). Experience prior to taking up the role varied; while half (17) had come from other universities or had been in the same university for some time, working in careers and advisory services, placements and internships, or having outward facing roles in faculties, the others came from private sector firms. Once a sample had been identified, data collection took the form of a 3 stage process:

1. A mapping of the institutions against the five EA components identified by Nelles and Vorley (2010) by reviewing annual plans and reports, websites and social media. These were summarized and checked with participants during initial discussions, see Table 1.
2. An initial pilot via semi structured interviews with 4 individuals in business engagement roles from 2 institutions not involved in the overall study, using cues seen in the themes indicated in appendix A. These helped to refine ideas and suggest additional themes, especially power relations and their impact on 'getting things done'.
3. Using the themes identified during the pilot stage, 3 interviews were carried out over an 18- month period with 2 intermediaries from 15 institutions. Interviews were conducted at the home university or at events or other venues to suit the needs of the participants. Participants described 'how things worked' to explain prevailing organizational norms and behaviours (Payne, 1991; Scott, 2007) and explained the level and nature of sharing of values, knowledge and resources (Sathe, 1985).

The longitudinal approach in Stage 3 allowed deeper insights to emerge rather than relying on a 'snapshot' through a single data collection. Respondents could introduce, explain, revisit and re-explain issues and themes as well as checking their understanding of previous sessions and shaping discussions, as suggested in earlier research (Gioia et al, 2013). Interviews were conducted at the home university or at events or other venues to suit the participants, based on themes emerging from literature and from the pilot stage, using back-up cue questions and materials from the participant's website to support the flow of conversation. Respondents explained how events had happened, explaining organizational norms and the nature of the local and wider university culture (Schneider et al, 1994; Scott, 2007). In addition, data from interviews was supplemented by secondary data - reviews of available institutional documentation and online sources, websites and social media, focused on university engagement activities and the participants' context and role.

Interviews were recorded then transcribed. From the 90 interviews, researchers reviewed around 11,000 minutes of recordings. Data was firstly analyzed through a multi-coding process using NVivo software, informed by Strauss and Corbin's (1998) grounded theory as seen in O'Kane et al (2015). Open coding of the first round transcripts led to groupings related to:

- Practice - how things are done around here.
- Belief - what we believe, what we think and feel.

- Signals - how we know things from the institution.
- The university - how we see our institutions.

A further re-reading and recoding occurred to explore comments on entrepreneurship and culture. The transcripts were re-read with codes derived from the EA literature earlier in the paper, i.e., “responsiveness” “dynamism” “opportunity recognition” “innovation” “added value”. The team met to compare and reach agreement, removing overlapping codes and grouping similar codes as themes. These are discussed in the next section.

Results

The results are discussed as follows; firstly, the way EA had been demonstrated in physical structures and components is explained, following the format suggested by Nelles and Vorley (2010). Secondly, the cultural component in terms of practice, the beliefs underpinning these, together with the signals perceived by participants as to how behaviours should occur is explored. Thirdly the participants review EA in their institution.

1. EA in physical structures and components

University documents on and offline provided the source for initial mapping (Table 1), which was then sense checked with participants. Each university had adopted similar approaches in building facilities or replacing teaching and research space to house enterprise units, start-up spaces, incubators, accelerators and science parks. While these differed in size and occupancy levels, their aims in corporate mission statements and annual plans were almost identical. Facilities were also supported by similar central units. Although these offices or departments had wide ranging titles (some examples - corporate engagement, business engagement, knowledge transfer, knowledge exchange), their aims and targets, structures and funding were very similar.

For participants in the study, artefacts signalling culture included structures - business start-up facilities - plus strategies in annual overall plans, separate business engagement plans, marketing and promotional material, websites and online activities (social media and blogs). They also included the systems set up as part of EA – for instance, new Customer Relationship Management systems, software based and determining how non-IT systems were implemented. “Now we have a CRM system we’ve had to change what we ask inquirers to be able to complete it properly” (Respondent B). Technology systems were heavily relied upon for communications, with multi-stage systems mapping how inquirers entered the institution, were dealt with and managed by the KE office before emerging into the academic domain. Non virtual meetings took the form of committees, led and chaired by senior university staff (mainly pro vice chancellors, deputy vice chancellors).

Governance varied, as part of the Leadership component. In some institutions, the KE unit was described as a senior manager’s ‘baby’ with little external input beyond quarterly or half yearly presentation to governors. Others had well established steering groups and advisory boards which were comprised of externals plus those described as ‘key internal stakeholders’ – Deans and Head Administrators. Culture was often described and seen as a feature to be proud of for these institutions. Online and offline, in website details, marketing and PR documents, annual plans and reports, these universities were described variously as ‘entrepreneurial’ ‘proactive’ ‘dynamic’ ‘business friendly’ and ‘business facing’. Government funding proved to be a major driver for EA. HEIF is “funding for knowledge exchange ... to support and develop a broad range of knowledge-based interactions between universities and colleges and the wider world, which result in economic and social benefit to the UK” (HEFCE, 2017, coverage).

In the sample group, annual funding of around £2.4 million had been allocated based on previous achievements and a five-year institutional knowledge exchange strategy. HEIF varied across the institutions, with newer universities receiving less allocation in the year 2016/17 and in the last five years, as seen nationally. Universities had supplemented this by using surpluses from other activities, by selling or mortgaging land or other assets and by joint ventures with regional bodies and the private sector.

As suggested in the PACEC national review of strategic plans, priorities had moved on from structures and systems to focus on collaboration, especially with other HEIs and partnerships with industry. These followed the national trends with targets to deliver co-created research and curriculum and support the embedding of the university as an anchor institution in their region. (PACEC, 2016, 3.3). The older universities however placed more emphasis on international profile and on national impact rather than regional focus, investing in larger numbers of knowledge intermediaries and with targets for corporate engagement and international alumni in their strategies.

2. The cultural component

The cultural component of EA was described by participants in terms of practice and the beliefs and underpinning these. The language embedded in policy documents on the entrepreneurial university and the third mission was reflected in mission statements, business plans and core university documents with references to knowledge transfer, enterprise and business engagement. These documents formed part of the discussions with participants. They were artefacts signalling a commitment to business engagement, reinforced by senior managers having specific roles in enterprise and knowledge transfer, but participants felt that these artefacts were at odds with day to day experience. Hence they felt there was a 'reality gap' between these signals and 'the ways things really worked.' participants described subcultures which worked for and against overall cultures at each institution, in each case, describing their own unit as having a specific and different – and better - subculture from the rest of the university.

Many of the administrative functional units were seen as expanding in numbers and power while effectively preventing progress (for instance, in one institution HR was described as 'the evil empire' given their extreme slowness and apparent deliberate barriers to getting things done). Overall cultures were described variously as 'ponderous' 'Neolithic' and 'obstructive' but in two cases as 'absent' (that there was no dominant culture, because "there was no leadership across the organization").

The respondents also often felt that many fellow employees who were themselves not engaged with business regarded them with indifference or suspicion, often not seeing them as being at the same level. Many faculty colleagues resented what was seen as unearned status and power within the organization in 'having the VC's ear'. In their view, culture was talked about as entrepreneurial but was instead embedded in the way things were done; i.e., bureaucratic, risk averse, traditional and based on old and out-dated ways of doing things. These in turn were seen as being based on values connected to a past view of 'what universities and professors were for'.

Here negative attitudes, barriers to action and unhelpfulness from academics were seen as 'bad cultures'. Participants felt that where a 'bad culture' was displayed in a particular faculty, this was due to a senior manager in that area and fed through into all levels of staff. A

fragmented culture also meant that different units and faculties worked very differently in their approach and response to business and industry.

“It all depends on the senior manager, he can really block any attempt to get things happening” (Respondent O) “it's at odds with the targets for academics to write 4 star papers, professors will also take time for that because that's what they are judged on. There's only lip service for our side of things” (Respondent A)

Internal competition also led to ‘knowledge hoarding’ (as seen in Currie and Kerrin, 2004, 15), where employees avoid sharing knowledge if they feel it to be against their own interests (Hayes and Walsham, 2000). Trust between central departments and individual faculty departments was felt to be lacking so that even a database of contacts was missing in most institutions as academics did not see any benefit in sharing these centrally. Participants reported that academics felt that sharing would give others hard won benefits which they had had to build up over time. Also that if promises were made by another department to the company and then they let them down, this would inevitably affect them and their relationship with the firm. Similarly, different incompatible computer and manual systems and processes were problematic but these were exacerbated by resistance to adopt versions deemed to be set by the central ‘corporate’ business development team.

3. Views of EA

Participants felt that the EA had established some real assets for the university but that these were not integrated but were clearly separate. Science parks were managed by external bodies and private sector organizations, with no feed through of graduates or staff to set up new ventures there. Potential new ventures were curtailed and controlled via organisational processes and by what participants saw as the inertia obstructing quick progress to achieve key objectives. Hence, it was felt, SMT and the university business plan might make bold statements and the university might invest in incubators for business development, IPR specialists for spin-off activities and teams of people to act as go-betweens to smooth the process between university and industry. Underneath this though, the ‘real’ culture, as many termed it, was to control and if possible to avoid change and to stick with the status quo.

“It's all very well saying the university is entrepreneurial and getting awards but it doesn't count for much in reality” (Respondent G)

“We got a large structural funds grant to subsidize our work with companies and widen our catchment area. It took legal 4 months to say no after prevaricating” (respondent F)

“after subsidizing the building of the park they took three steps back and we have no spinouts or successful graduate ventures there” (Respondent E)

“bums on seats is the rule in the incubator. There is no academic involvement and only 1 in 10 of the many lifestyle businesses are from (this university)” (Respondent B).

Participants agreed with Clarke (1998) that an entrepreneurial university would be flexible and responsive but no participants felt that their institution fitted this descriptor, despite Entrepreneurial University nominations and awards from various bodies. Participants defined ‘what enterprise wasn't’ more easily than what it was - all participants suggested “there isn't a very entrepreneurial culture here” because the organization was slow, unresponsive and uncomfortable with the commercialization agenda and that sharing was talked about but not done. Over the period of research, all but two felt that the situation had worsened due to increased structures and bureaucracy.

“It's how universities respond to difficulties. They set up more committees”. (Respondent J)

Participants reported that their university had had disappointing Higher Education Business and Community Survey returns. This had led to lower status or reduced HEIF monies, causing them problems due to awareness across the institution of low achievement of goals and targets. In 5 of the universities, the senior management response had been threefold

- a) To increase targets considerably for KE income despite consistent failure to achieve lower targets
- b) To cut funds in some core areas to shift money to build new KE activities
- c) To employ additional KE intermediaries, including external industrial appointments; to increase structures and processes; and in 3 cases to rename departments to be more 'outward facing'.

Increased bureaucracy and new structures were commented on across all 15 institutions, 7 of which had new senior leaders. All universities had new senior roles in third mission work, e.g., external engagement / research and enterprise, with extra staff in this area as part of that person's team. While mission statements and associated documents explained these new structures and roles in terms of innovation and enterprise, however, participants saw them as ways to avoid action by the institution or as a natural part of “empire building” by new senior staff.

“We have a whole new set of senior people who have in turn employed other new people to support them. This really means that a whole new set of people, as well as those we had before, needs to be included at every stage. Getting decisions made is very difficult” (Respondent H).

“The new VC brought in a new senior team, many from his old institution. They're all trying to justify their existence so need to be seen to be consulted and included when you're getting things going. This is in addition to the previous people like deans, finance and legal” (Respondent L) “Extra layers mean everything is so much slower than it was before... Decisions can be put off and deferred indefinitely- which might be the point really as most of them aren't comfortable with risk or with commercial realities”. (Respondent F)

In no institution had reorganization included the views of the intermediaries themselves, nor those academics they felt to be leading the way in business engagement and knowledge exchange. Two universities had, however, set up cross-university senior management and leadership groups/ fora. The stated aim of these groups was to shape the way forward for the institution - to shape the vision/ tackle issues and explore the way ahead - but the respondents saw this differently:

“We were there over 4 hours – all the most highly paid roles in the university, until we came up with the answers the VC had in mind to start with; we are improving now though - we get the answers right earlier” (Respondent H)

“it's typical lip service to the idea of sharing ideas and working together, set up in a way that allows lots of discussion and the setting up of subcommittees, without actually committing to doing anything “ (Respondent J)

“in terms of progress these meetings seem to be there to delay action”(Respondent B)

“we have 3 new committees and 11 more staff in this area now but activity has actually decreased. All of this is to show the semblance of doing things while avoiding it in practice” (Respondent A)

Perceived exclusion from decision-making signalled their value to the university, with dual realities of what is said to be important and what is important. As might be expected from the senior leader impacts suggested by Charan (1990), senior leaders - and their perceived power and influence - were seen as critical since this impacted on freedom to act and on access to resources, as seen in studies on culture and leaders (Shearer et al, 2001). The Senior Team member with responsibility for enterprise was effectively “a side-lined middle manager” who was seen as having no power or influence (Respondent B). Others described how the person who should be championing their cause at senior management level was ‘managed’ by the rest of the senior team to limit their power and influence. This was also exacerbated by the manager in question not acknowledging this, so he or she kept making promises that could not be kept.

The lack of status that accompanied this side-lining of their senior manager was also interpreted by others in their organization and used to their disadvantage. Just as they felt the Deans had picked up on their senior manager’s relative unimportance in organisational politics, so others in the faculty perceived the process in the same way and mimicked this response. Deans did not meet with them and did not place a high priority on their requests so when meetings were arranged with Deans and associate Deans, these were often attended by others seen by participants as ‘lower in the pecking order’ and in some cases, postponed, cancelled, or ignored.

Where the senior manager was perceived by participants as having power, they were seen as being able to act effectively in influencing other SMT members and establishing the internal importance of their activities. Their senior manager had sometimes had to ‘flight their corner’ for organisational resources to ensure that physical or human resources were gained and that business engagement was seen as an activity for every school or faculty to consider. In one case, the original senior manager had been an advocate for business engagement with great power and influence only to be replaced by someone from outside the university sector who, they felt, ‘did not understand what games were being played’. This led to great uncertainty for participants from that institution, as they were not sure how things would work in the short or long term.

Discussion

The study was carried out to explore how EA had been established at 15 UK HEIs by mapping physical components and by exploring the perceptions of the cultural component identified by Nelles and Vorley (2010). Previous research (Foss and Gibson, 2015; Hayter, 2016; Howells et al, 2012) suggests the need for organisational structures and processes to support the development of an entrepreneurial institution (Hellström, 2004; Marginson and Considine, 2000; Rinne and Koivula, 2005). This study shows the efforts made to embed these structures and processes, but also identifies the gap in soft systems, especially effective internal systems for the sharing and potential commercialization of knowledge (Butera, 2000; Conceicao and Heitor, 2002; Jacob et al 2003; Shattock, 2003).

Here the internal reshaping that is represented by EA was demonstrated as five components: structures, systems, leadership, strategies and culture of which culture proved to be the most under-developed (Foss and Gibson, 2015; Nelles and Vorley, 2010). Participants described a complicated picture of the ‘real’ underlying culture exemplified in administrative functions (seen as ponderous, inflexible, and driven by other aims and values) which negated structures and processes in delivering third mission aims, emphasising the need to understand how the cultural component of EA is expressed and supported (Murray and Blackman, 2006; Tidd, 1997). These findings show that trust serves as the dominant mediator in the relationship between institutional norms and knowledge sharing (Wang et al. 2014), with successful organizational level change dependent on soft systems and social architecture (Murray and Blackman, 2006). This was suggested by the low trust cultures described by participants, where different and incompatible

computer and manual systems and processes were exacerbated by resistance to adopt versions deemed to be set by the central 'corporate' business development team. This lack of sharing and of leadership to embed social architecture (Murray and Blackman, 2006) to support the physical architecture was common to all institutions, despite many EA functions being the Vice Chancellor's 'baby' as seen in Table 1

Similarly, as part of this cultural component, the pivotal role played by the senior manager was also evident, seen through a lens of attributed power and influence. If the senior manager was outmanoeuvred or side-lined, this was evident to participants and interpreted by them as a lack of importance for their area. This was also signalled by restricted access to human, physical and financial resources and by being omitted from higher level communications, having meetings cancelled or downgraded to those seen as lacking status by the business engagement team. These interactions were seen as 'reality' separate from core university documents and structures, ostensibly committing the organization to third mission aims as an urgent priority

This study aimed to explore the way EA had been embedded in a group of UK universities. From this we found the literature supported in terms of EA components and the impacts of institutional theory Hence a university in which senior managers were seriously committed to business engagement might try to ensure that they acted as change agents in embedding social architecture (Charan, 1990, Murray and Blackman, 2006) to match considerable investment in physical EA components. This might be done effectively if a more open dialogue was conducted with core administrative functions to look at how and why they might support what the business engagement team were trying to achieve, given that all felt this was their major barrier to achieving a professional service, dealing with the 'evil empire' (HR and finance) perceived as hindering them at every step. In these HEIs, Us and Them countercultures existed at a micro level between units, functions and departments with little understanding of third mission aims.

Conclusions

The literature on Entrepreneurial Universities is still emerging and this study represents a contribution in a UK context. This paper's contribution relates to the application of entrepreneurial architecture to achieve enterprise goals by focussing on soft components and their importance. It also builds on work related to organisational culture and the impact of this on attempts made by institutions to be entrepreneurial. From an overall perspective, the study shows EA partially functioning. It offers a contextualized view of culture set within a climate of change, with investment in EA traceable for at least 10 years to deliver third mission aims of knowledge exchange and business engagement. The ability of organisations to change and respond to these potential opportunities resides in their people and their functions, to "mutually supportive interaction among transforming elements... an institutionalized volition, a collective will ... in responding to societal demands" (Clark, 2015, 2).

This carries implications for practice in terms of the importance of forming trust-based cultures and a shared view of third mission actions, without which EA is a poor investment as it seems unlikely that the third mission targets will be achieved. Policymakers inevitably focus on the easily measurable, such as amounts spent, income generated, numbers of companies engaged with and numbers of staff employed but the study shows how ineffective these are in discovering how EA is embedded and how it works in practice. Practitioners are therefore urged when writing policies for the sector to emphasize the need for an entrepreneurial culture and to include in this the need for clear senior leadership and support. In individual institutional plans, practitioners might also measure culture using established tools, to identify how trust-based and how enterprising employees felt norms and values to be.

Limitations

This study does not claim to encompass the richness of the work on the entrepreneurial university and academic-student actions. Instead, it focused on mapping progress on EA structures, systems and strategies. While these were in place to some level at all institutions, the cultural component was more varied. The sample comprises small numbers from each university, all in the same types of roles as part of a purposeful sample. The inclusion of different types of staff or the focus on one university as a case study might provide deeper and / or different insights into the university's organisational culture, as might a quantitative approach. Also, this is a UK-based sample so may not have resonance internationally, where universities may have evolved very different cultures to encourage enterprise. Further research might usefully include other staff, other universities and other countries in forming a view of the way culture supports EA.

References

- Audretsch, D. B. (2014), "From the entrepreneurial university to the university for the entrepreneurial society", *The Journal of Technology Transfer*, Vol 39 No 3, pp. 313-321.
- Berger, P. and Luckman, T. (1967), *The Social Construction of Reality*, New York, Doubleday
- Brennan M., and McGowan P, (2006), "Academic entrepreneurship: an exploratory case study", *International Journal of Entrepreneurial Behaviour & Research*, Vol. 12 No. 3, pp. 144 – 164.
- Britain, G. (1998) *Our Competitive Future: Building the Knowledge Driven Economy: The Government's Competitiveness White Paper: Business Summary*. Stationery Office, HMSO.
- Bruton, G.D., Ahlstrom, D. and Li, H.L., (2010), "Institutional theory and entrepreneurship: where are we now and where do we need to move in the future?" *Entrepreneurship Theory and Practice*, Vol. 34 No. 3, pp. 421-440.
- Butera, F. (2000), "Adapting the Pattern of University Organisation to the Needs of the Knowledge Economy", *European Journal of Education*, Vol. 35 No 4, pp. 403-419.
- Charan, R., (1990), "How networks reshape organizations--for results", *Harvard Business Review*, Vol. 69 No. 5, pp. 104-115.
- Clark, B.R. (1998), *Creating the Entrepreneurial University*, Oxford, IAU Press, Pergammon Clark,
- Clark, B.R., (2015), "The character of the entrepreneurial university" *International Higher Education*, March 25th No. 38.
- Conceicao, P. and Heitor, M. V. (2002) "University-based Entrepreneurship and Economic Development: A Learning-centred Model", *International Journal of Technology Policy and Management*, Vol. 2 No. 3, pp. 220–39.
- Culkin, N. (2016), "Entrepreneurial universities in the region: the force awakens?" *International Journal of Entrepreneurial Behaviour & Research*, Vol. 22 No. 1, pp 4-16.
- Currie, G. and Kerrin, M., (2004), "The limits of a technological fix to knowledge management, epistemological, political and cultural issues in the case of intranet implementation" *Management Learning*, Vol. 35 No. 1, pp. 9-29.

Deal, T. T. And Kennedy, K. K., (2000), *Corporate cultures: The rites and rituals of corporate life*, Basic Books

DIUS, Department for Innovation, Universities and Skills, (2008), *Innovation Nation*, Edinburgh, Her Majesty's Stationery Office

Etzkowitz, H., and Leydesdorff, L., (2000), "The dynamics of innovation: From national systems and 'mode 2' to a triple helix of university-industry-government relations", *Research Policy*, Vol. 29, No. 2, pp. 109-123.

Etzkowitz, H., (2003), "Research Groups as 'Quasi-firms': The Invention of the Entrepreneurial University", *Research Policy*, Vol. 32 No. 1, pp 109-121.

Etzkowitz, H., (2004), "The evolution of the entrepreneurial university" *International Journal of Technology and Globalization*, 1(1), 64–77.

Fayolle, A., & Redford, D. T. (2014), *Handbook on the entrepreneurial university*, Edward Elgar Publishing.

Feldmann, B. D. , (2014), "Dissonance in the academy: the formation of the faculty entrepreneur", *International Journal of Entrepreneurial Behaviour & Research*, Vol. 20 No.5, pp. 453 – 477.

Florida, R., (1999), "Engine or Infrastructure? The University Roles in Economic Development", in Branscomb, L. and Kodama, F., (Eds), *Industrialising knowledge*, MIT Press, Cambridge, Ma

Foss, L. and Gibson, D.V. eds., 2015. *The entrepreneurial university: Context and institutional change*. Routledge.

Fuller, S., (2005), "What Makes Universities Unique? Updating the Ideal for an Entrepreneurial Age", *Higher Education Management and Policy*, Vol. 17 No. 3, pp. 28-50.

George, J. M., and Jones, G. R., (2001), "Towards a process model of individual change in Organisations" *Human Relations*, Vol. 54 No. 4, pp. 419–444.

Gibb, A., (2011), "Concepts into practice: meeting the challenge of development of entrepreneurship educators around an innovative paradigm: The case of the International Entrepreneurship Educators' Programme (IEEP)", *International Journal of Entrepreneurial Behaviour & Research*, Vol. 17 No. 2, pp. 146-165.

Gioia, D.A., Corley, K.G., Hamilton, A.L., (2013), "Seeking qualitative rigor in inductive research: notes on the Gioia Methodology", *Organisational Research Methods* Vol. 16 No. 1, pp. 15–31.

Guerrero, M., Cunningham, J.A. and Urbano, D., (2015). "Economic impact of entrepreneurial universities' activities: An exploratory study of the United Kingdom", *Research Policy*, Vol 44 No. 3, pp. 748-764.

Guerrero, M. and Urbano, D., (2012), "The development of an entrepreneurial university" *The journal of Technology Transfer*, Vol. 37 No. 1, pp. 43-74.

Hay, D.B., F. Butt and D.A. Kirby (2002), "Academics as Entrepreneurs in a UK University", in G. Williams (ed.) *The Enterprising University. Reform, Excellence and Equity*, Buckingham, SRHE and Open University Press, pp. 132-141.

Hayes, N. and Walsham, G., (2000), "Competing interpretations of computer-supported cooperative work in organizational contexts", *Organization*, Vol. 7 No. 1, pp. 49-67.

Hayter, C. S. (2016), "A trajectory of early-stage spinoff success: the role of knowledge intermediaries within an entrepreneurial university ecosystem" *Small Business Economics*, Vol. 47 No. 3, pp. 633-656.

HEFCE, (2011), *Higher Education Innovation Funding 2011-15*,
<http://www.hefce.ac.uk/pubs/year/2011/cl.062011/>

HEFCE. (2017), HEIF 2016-17, <http://www.hefce.ac.uk/ke/heif/>

Heinonen, J. and Hytti, U., (2010), "Back to basics: the role of teaching in developing the entrepreneurial university" *The International Journal of Entrepreneurship and Innovation*, Vol. 11 No. 4, pp. 283-292.

HESA, (2016), HE-BCI record 2015/16 - Coverage of the record,
<https://www.hesa.ac.uk/collection/c15032/coverage>

Hellström, T. (2004), "Between a Rock and a Hard Place: Academic Institutional Change and the Problem of Collective Action", *Higher Education*, Vol. 48 No. 4, pp. 511-528.

Hofstede, G., Neuijen B., Denise D. O. & Sanders G. (1990), "Measuring organizational cultures: A qualitative and quantitative study across twenty cases", *Administrative Science Quarterly*, Vol. 35 No. 2, pp. 286-316.

Hogan, S. J., & Coote, L. V. (2014), "Organizational culture, innovation, and performance: A test of Schein's model", *Journal of Business Research*, Vol. 67 No. 8, pp. 1609-1621.

Howells, J., Ramlogan, R. and Cheng, S.L., (2012), "Universities in an open innovation system: a UK perspective" *International Journal of Entrepreneurial Behaviour & Research*, Vol. 18 No. 4, pp. 440-456.

Ravasi, D. and Schultz, M., (2006), "Responding to Organisational identity threats: exploring the role of Organisational culture", *Academy of Management Journal*, Vol. 49 No. 3, pp. 433-458.

Jacob, M., Lundqvist, M. and Hellsmark, H. (2003), "Entrepreneurial Transformations in the Swedish University System: The Case of Chalmers University of Technology", *Research Policy*, Vol. 32 No. 9, pp. 1555-68.

Kalar, B., & Antoncic, B. (2015), "The entrepreneurial university, academic activities and technology and knowledge transfer in four European countries", *Technovation*, No. 36, pp. 1-11.

Kay, J.(1993), *Foundations of Corporate Success* , Oxford: Oxford University Press.

Kim Jean Lee, S., & Yu, K. (2004), "Corporate culture and organizational performance", *Journal of Managerial Psychology*, Vol. 19 No. 4, pp. 340-359.

Kondra, A., Z. and Hurst, D., C., (2009), "Institutional processes of organisational culture", *Culture and Organization*, Vol. 15 No. 1, pp. 39-58.

Lehrer, M., Nell, P., & Gärber, L. (2009), "A national systems view of university entrepreneurialism: Inferences from comparison of the German and US experience", *Research Policy*, Vol. 38 No. 2, pp. 268-280.

Lockett, A., & Wright, M. (2005), "Resources, capabilities, risk capital and the creation of university spin-out companies", *Research Policy*, Vol. 34 No. 7, pp. 1043-1057.

Marginson, S. and M. Considine (2000), *The Enterprise University*, Cambridge: Cambridge University Press.

Martin, J. M., (1992), *Cultures in organizations; three perspectives*, New York, Oxford University Press

Martin, L. M., and Turner, P., (2010), "Entrepreneurial Universities – The key ingredient in the recipe for UK innovation? Realities of working in business engagement roles in academia" *International Journal of Entrepreneurship and innovation*, Vol. 11 No. 4, pp. 273-281.

McKenna, E. and Beech, N. (2002) *Human Resource Management: a concise analysis*, Harlow: Financial Times/Prentice Hall.

Murray, P. and Blackman, D., (2006), "Managing innovation through social architecture, learning, and competencies: a new conceptual approach" *Knowledge and Process Management*, Vol. 13 No. 3, pp. 132-143.

Nelles, J. and Vorley, T., (2010), "Constructing an entrepreneurial architecture: An emergent framework for studying the contemporary university beyond the entrepreneurial turn" *Innovative Higher Education*, Vol. 35 No. 3, pp. 161-176.

O'Kane, C., Mangematin, V., Geoghegan, W. and Fitzgerald, C., (2015), "University technology transfer offices: The search for identity to build legitimacy" *Research Policy*, Vol. 44 No. 2, pp. 421-437.

O'Shea, R. P., Allen, T. J., Chevalier, A. and F. Roche. (2005) "Entrepreneurial orientation, technology transfer and spinoff performance of US universities" *Research Policy*, Vol. 34 No. 7), pp. 994-1009

PACEC. (2016) The state of the English university knowledge exchange landscape
<http://www.hefce.ac.uk/pubs/rereports/year/2017/kelandscape/>

Payne, S. (1991), "A Proposal for Corporate Ethical Reform: The Ethical Dialogue Group", *Business and Professional Ethics Journal*, pp. 67-88.

Philpott, K., Dooley, L., O'Reilly, C. and Lupton, G., 2011. "The entrepreneurial university: Examining the underlying academic tensions". *Technovation*, Vol. 31 No. 4, pp. 161-170.

Pinheiro, R., & Stensaker, B. (2014), "Designing the entrepreneurial university: The interpretation of a global idea" *Public Organization Review*, Vol. 14 NO. 4, pp. 497-516.

Powell, W.W. and DiMaggio, P.J. eds., (2012). *The new institutionalism in organizational analysis*. University of Chicago Press

Rinne, R. and Koivula, J., (2005), "The Changing Place of the University and a Clash of Values, The Entrepreneurial University in the European Knowledge Society A Review of the Literature", Special Edition of *Higher Education Management and Policy on Entrepreneurship*, Vol. 17 No. 3, pp. 91-126.

Sathe, V.J. (1985), *Culture and Related Corporate Realities*, Irwin, Homewood, IL. Schein, E. H. (1988). *Organizational Psychology*, 3rd edition. London: Prentice Hall

Schneider, B., Gunnarson, S. K., & Niles-Jolly, K. (1994), "Creating the climate and culture of success" *Organisational Dynamics*, Vol. 23 No. 1, pp. 17–29.

Schulte, P. (2004), "The entrepreneurial university: A strategy for institutional development" *Higher Education in Europe*, Vol. 29 No. 2, pp. 187–191.

Scott, W.R. (2007). *Institutions and organizations: Ideas and interests*. Thousand Oaks, CA: Sage Publications.

Shattock, M. L., (2003), *Managing Successful Universities*, Buckingham, SRHE and Open University Press.

Shearer, C. S., Hames, D. S., and Runge, J. B. (2001), "How CEOs affect organizational culture following acquisitions", *Leadership and Organisation Development Journal*, Vol. 22 No. 3, pp. 105-113.

Slaughter, S. and L.L. Leslie (1997), *Academic capitalism. Politics, policies and the entrepreneurial University*, London, The Johns Hopkins University Press

Strauss, A. and Corbin, J., (1998), *Basics of qualitative research techniques*. Sage

Wang, H.K., Tseng, J.F. and Yen, Y.F., (2014). "How do institutional norms and trust influence knowledge sharing? An institutional theory" *Innovation*, Vol. 16 NO. 3, pp. 374-391.

Zhou, C., and Peng, X. (2008), "The entrepreneurial university in China: nonlinear paths", *Science and Public Policy*, Vol. 35 No. 9, pp 637–646.