Managerial representations of achieving a competitive advantage in architectural practices: a UK perspective

John Bruen
Bruen Architects, Belfast, UK

John P. Spillane and Jim Bradley
Irish Construction Management Research Centre, Faculty of Science and Engineering, University of Limerick, Limerick, Ireland, and

Tara Brooks
School of Natural and Built Environment, Queen's University Belfast, Belfast, UK

Abstract

Purpose – This study aims to uncover managerial representations of achieving competitive advantage in architectural practices operating within the United Kingdom (UK).

Design/methodology/approach – A sequential qualitative methodology is applied, underpinned by nine managerial interviews in five architectural practices, which are analysed using computer-assisted qualitative data analysis software.

Findings – In all, 108 representations are identified, with highly rated concepts including reputation, client satisfaction, fees and staff resources discussed in detail. The need for architectural practices to develop a competitive advantage within their sector is increasingly apparent, particularly during times of market turbulence. A total of 20 themes identified are clustered into four main groups focused on People (including Calibre of Staff, Attract Graduates; Qualified Staff); Product (including Emphasis on design, Specialisation, Competitive Fees): Process (including Low Overheads, Office Efficiency) and Potential (Reputation, Ability to Undertake Large Projects, Repeat clients, Ability to expand, Parent Company, Market Understanding and New Offices).

Originality/value – Despite numerous studies conducted on this subject, there has been no research to date documenting managerial representation on achieving competitive advantage in the context of architectural practices in the UK. This paper closes this gap in knowledge by contributing to underlying research on competitive advantage, focusing on the managerial representations within UK architectural practices.

Keywords Architecture, Mind mapping, Strategic advantage, Qualitative analysis

Paper type Research paper

Introduction

Management decision making is at the core of any business activity and is one of the most important activities engaged by management professionals (Straub and Welke, 1998). This premise applies regardless of the level at which the practice operates, its size and position occupied within its respective sector. The significance of management decision making cannot be underestimated, as it has both positive and negative connotations, which can reverberate throughout a business (Schwarz, 2000). This process can therefore have far

reaching implications for an organisation, impacting for example on issues such as, strategy formulation, competitiveness, profit margins, survival and expansion, among others (O' Regan *et al.*, 2005; Olszak and Ziemba, 2006). This also includes small to medium enterprises that are also faced with difficulties (Stals *et al.*, 2018). Kolkman *et al.* (2005) outline that as part of the decision-making process, managers create mental models to simplify the complex environment within which they operate, to aid the decision-making process. Managerial representations or cognitions help form these mental models and they can be influenced by several factors such as, managerial bias (Lyon *et al.*, 2000), experience of the decision maker (Perkins and Rao, 1990) and company environment (Trim and Lee, 2008).

The aim of this study is to formulate within the sample organisations, managerial representations for achieving competitive advantage in relation to other architectural practices within their market environment. Various authors have written on the subject, paying attention to management decision making (Chau *et al.*, 2003), cognition in relation to competitive advantage (Fahy, 2002), strategy in widespread business and sociology journals (Davis *et al.*, 2000; Ray *et al.*, 2003; Barney and Hesterly, 2008) and Corporate Social Responsibility aspects (Othman and Hafez, 2019). Furthermore, studies by Othman and Hafez (2019) and Epead and Othman (2014), provide a strategic context in architectural firms, but from a marketing perspective. The work of Othman and Sorial (2017) focus on the integration of disabled architects for the purposes of achieving competitive advantage in architectural firms in Egypt. However, much of this research on managerial representations of competitive advantage have focused primarily on corporate/commercial business founded on profit as the main driving force, with no evidence of managerial decision making and strategy formulation in relation to the architecture profession in the UK (Day and Nedungadi, 1994; Hoffman, 2000; Tzokas and Saren, 2004). Where such studies are undertaken on a competitive advantage in architectural firms, focus is on quality management (Shouman and Othman, 2014) and innovation and sustainability (Othman, 2010), and not architects as managers within their respective architectural practice. To bridge this gap, this study looks at architects as managers of architectural practices, and how they think, in relation to achieving a competitive advantage over their rivals within their market. In doing so, this study looks beyond the managerial decision-making process and factors in other elements which corporate managers in other sectors would not have been exposed to, nor must deal with, which are specific to the architectural profession. These factors include the meaning of a profession, development of the architectural profession in the United Kingdom (UK), the profession versus business challenge, the construction market, architectural education and architects as managers.

Initially, an extensive literature review is undertaken, to gain a detailed insight into managerial cognitions and decision making, as well as knowledge specific to the architectural profession and the built environment. Primary data collection and analysis is undertaken through nine in-depth semi-structured interviews with managers of five architectural practices, varying in size and workload. Given the small sample size, this paper provides a pilot to the development of a broader study on the subject. In doing so, this study is used as a validation for further research in the area, developing on the qualitative method applied herein. Using computer assisted qualitative data analysis software, 108 representations are identified. The results are of interest to architects and built environment professionals in the UK and further afield. This research also provides a basis on which to develop the subject of managerial representations within architectural and other practices, to identify and catalogue the various factors on which competitive advantage is achieved within the sector. Prior to doing so and to provide context, it is necessary to review managerial decision making and also competitive advantage, in addition to the associated literature.

Managerial decision making

Decision making is inherent in, and underpins all human interactions (Hastie and Dawes, 2009). This premise is founded on the ability of individuals and their distinctive capacity to make decisions, all of which, is an essential part of achieving goals and desired outcomes (Hastie and Dawes, 2001). Harrison (1999) defines a decision as "a moment in an ongoing process of evaluating alternatives for meeting an objective, at which expectations about a particular course of action, impel the decision maker to select that course of action most likely to result in attaining the objective". Various authors have considered how decision makers conclude and arrive at their decisions (Einhorn, 1970; Shanteau, 1988; Lavis *et al.*, 2003). Hastie and Dawes (2009) summaries the numerous theories on decision making, by indicating that it is based on rationality, probability, maximisation of utility, explicit or tacit assumptions, all of which is based on rational or irrational reasoning.

Human performance in decision making has been the topic of research from several different perspectives (Wickens, 1992; Busemeyer and Myung, 1992). It is a complex process that involves taking information and assigning meaning to it from how it relates to other knowledge or experience. From a psychological standpoint, it is necessary to examine individual decisions in the context of a set of needs, preferences an individual has and values they seek (Miner and Petocz, 2003). From a cognitive perspective, the decision-making process must be regarded as a continuous process integrated in the interaction with the environment (Schwenk, 1988). From a normative perspective, the analysis of individual decisions is concerned with the logic of decision making and rationality and the invariant choice it leads to (Kahneman and Tversky, 2000). The human decision-making process can also be affected by cognitive or personal biases, that is, wishful thinking, framing, outcome bias, among others (Chang *et al.*, 2009). Cognitive biases are instances of evolved mental behaviour (Aycan, 2002). Some are most likely adaptive, because they lead to more effective actions or enable faster decisions. Others are due to a lack of appropriate mental mechanisms, or from the misapplication of a mechanism that is adaptive under different circumstances.

In the context of modern business, the impact of big data cannot be overlooked, since every business now has access to a flow of data that is becoming richer and more voluminous. Rather than making decision-making better, this increase in information may in fact cause problems, because interpreting the information and using it to make decisions is far more complex than just acquiring the information (Lebiere *et al.*, 2016). This means that there is a need for the development of so-called cognitive models of prediction to assist in decision-making, especially as the decisions faced in an architecture practice are usually multi-attribute, multi-alternative, value-based decisions (Busemeyer *et al.*, 2019).

Architects, as designers, make numerous work-related decisions on a daily basis. The process of designing a building, public space, lighting, human interactions and so on, involves many decisions to be taken on many levels. Cuff (1991) outlines, on a very simple level, a typical design process involving three main stages; initial concept stage, design development and working drawing or implementation phase. As every project is unique, and architecture highly contingent (Till, 2008) these three basic stages vary from project to project.

Logical decision making is an important part of all science-based professions, where specialists apply their knowledge in a given area, to making informed decisions (Rao, 2008; Verma, 2009). Professional decision making is often seen as being the skilful application of technical knowledge within ethical limitations (Bruen *et al.*, 2013). Different professions refer to decision making differently, that is, architecture may refer to decision making as design (Simon, 1977) and business professions may refer to it as strategy formulation (Koppenjan and Klijn, 2004). Architects face a somewhat unique challenge in relation to the decision-making process within their everyday work. Architecture as a profession, is struggling to maintain its status as a profession and is being challenged by other

professions, emerging professions, new procurement techniques and with the advancement of Building Information Modelling (Dorta *et al.*, 2008; Brown *et al.*, 2010; Dare-Abel *et al.*, 2015). This is also compounded by the ever-running debate on whether the profession is a scientific or creative/artistic based profession, or both (Myerson, 1998; Dorta *et al.*, 2008; Doucet and Janssens, 2010; Goulding and Rahimian, 2015). Architecture is considered by many as a scientific profession, whereas others consider it a creative or artistic profession (Anthony, 2002). This can be down to the lack of a concrete agreed body of knowledge underpinning the profession, which many other professions possess, such as medicine, dentistry, law and so on, and which their decisions are based (Anthony, 2002; McNeill, 2006). The subjective nature of an architect's work, the creative mind-set of many of its members, lack of specialised knowledge, as well as the many external factors, such as financial, social, economic, all have an influence on the decision-making process of an architect (Volker, 2010; Keršulienė and Turskis, 2011).

Competitive advantage

As Porter (1985) argues, competitive advantage is at the heart of a practice's performance in competitive markets and architectural practices are no different. Competitive advantage is essential to all forms of business to ensure long-term survival and prosperity (Schuler and MacMillan, 1984). Porter (1980) postulates that competitive strategy is at the core of overall business strategy and that sustaining a competitive advantage should be central to an organisation's competitive strategy.

Differing interpretations and definitions exist for the term in recent literature, much of which focuses on business strategy. Hunt (2000) states that modern business strategy maintains that the strategic imperative of a practice is superior financial performance and that this goal can be achieved through a sustainable competitive advantage in the marketplace. Barney (1991) argues that 'a practice is said to have a competitive advantage when it is implementing a value creating strategy not simultaneously being implemented by current or potential competitors.

Central to a practice achieving a strategic competitive advantage are its competencies. The resource-based view proposes that a practice's internal process creates a "resource bundle" which can become the means of attaining and sustaining a competitive advantage (Bates and Flynn, 1995). Barney (1991) states that a practice's "resource bundle" related to all assets, capabilities, organisational process, information knowledge, among others, that are controlled by the practice and enable it to create and pursue effective strategies and competitive advantages. These resources included physical capital resources (physical technology, plant and equipment, geographic locations, access to raw materials), human capital resources (training, experience, knowledge, judgement, intelligence, relationships, among others) and organisational capital resources (formal systems and structures as well as informal relationships among groups). Ibrahim *et al.* (2007) also notes that technology advancements can also provide a competitive advantage to respective practices, while the need to consider smart city and information communication technologies is also worthy for consideration (Riganti, 2017). As architecture is a knowledge-based profession human capital resources, that is, intangible resources, play a large part of a practice's achieving a competitive advantage and effectively executing strategy. Human Resources within a practice should be seen as central to the resource-based theory of competitive advantage. The people working within the practice must have the competencies to address and overcome challenges and take advantage of opportunities presented to them (Davis, 2017). Retention and development of the best employees with the most extensive and applicable experience, knowledge and networks allows competitive advantage to be developed and appropriately leveraged by the practice.

Research design

The purpose of this study is to gain a deeper understanding of managerial representations of competitive advantage, in relation to UK architects as managers of their practices. To do so, architects' perspectives in this area are probed. Prior to, and to complement this process, an extensive literature review is undertaken, to affirm the gap in knowledge, while also developing the researcher's knowledge of the subject. Next, the method of data collection and analysis is outlined. Quantitative research involves scientific research that is usually concerned with numbers, mathematical models and statistics, which is often used to test a theory or hypotheses with measurement central to its approach of data collection (Black, 1999). Qualitative research is more subjective in nature and aims to provide a more in-depth understanding of the subject matter, that is, the why and how of a decision, as opposed to just the what, where and when (Flick, 2009). It is non-directional, and any questions posed should be open-ended, rather than "yes or no" (Onwuegbuzie and Leech, 2006), to elicit the necessary information.

Based on this, a qualitative research approach is adopted, as the objective is to reproduce a comprehensive overview, based on the viewpoints of those who manage architectural practices; an approach advocated by Bruscaglioni *et al.* (2015) and Lloréns-Montes *et al.* (2004), among others. With this subject being unexplored within the context of UK architectural professionals, an exploitative qualitative research approach is applied, as this is deemed to be the most appropriate, where there is a lack of existing literature (Chew and Osborne, 2009). Existing contextual research from the business and manufacturing sectors is considered, reviewed and interpreted. Qualitative research is also applied where there is a comprehensive analysis of a small sample size, as in this case. To complement this approach and supporting methodology, an in-depth interview process is applied, as it is appropriate in obtaining detailed information from architects as experienced decision makers within their respective architectural practice. The identification and selection of practices to act as case studies is of critical importance. A sequential, two-tiered approach is adopted, similar to that applied by both Spillane and Oyedele (2013) and Murphy *et al.* (2014), where criterion sampling is first employed in the identification of potential case studies. The criteria employed includes the following: An architectural practice operating within the UK (as the study relates to architectural practices whiten the UK); organisation structure encompassing clear hierarchy with management positions clearly defined (to aids in the identification and discussion of managerial hierarchies which drive strategic decision making within the respective architectural practices); operating with three or more staff (to ensure that there is an element of internal management within the organisation); the architectural practice can be categorised based on organisational size (to aid in discussions on organisation structure, be it matrix, divisional, linear, functional, etc.) and finally, willing to participate in the research proposed. To provide context, the Architects Council of Europe (2019) reports that, at the time of writing, there are 7,515 architectural practices operating in the UK, of which 4,407 are sole practitioners, 981 have just two staff and the remainder, of which are included the target of this study, 2,127 firms employ three or more. Initially, eight practices are identified from this above population of 2,127 firms, but random sampling is applied to shortlist five, to remove researcher bias, given that all participants are known. Given that just a small percentage of the overall architectural practices which operate within the UK, contribute to this study, the experimental nature of this paper must be noted and acknowledged. However, to gain a varied response, a variety of types of architectural practices are identified and included in the study, as follows.

The first architectural practice, has been established for over 40 years and employs 40 staff members, working on projects spanning healthcare, education, leisure, residential, commercial, ecclesiastical, conservation and arts/theatre sectors. In total, three architectural managers are interviewed in this practice: all three being partners with 12,

14 and 16 years' experience respectively. Each of the respective interviewees manage their associated sector in which the architectural practice operates, be it public and private (residential, industrial, commercial) sectors. The second architectural practice, employing 12 personnel, is established for three years and works predominately within residential, interior design and small commercial projects, with two management staff participating in the research. Both participants in this instance have overarching managerial responsibility for the architectural practice and engage in both the day-to-day operation but also, long-term decisions within the practice. The third organisation is a large practice which employs 270 people across seven offices. They are established for ten years, working across numerous sectors. Two participants are interviewed, both of whom are senior staff members and are responsible for the management of two separate offices within the firm. The fourth case study is with a practice established for just two years, a solo practitioner who set up his own business and works alone, primarily on residential and small commercial projects. The fifth and final case study architectural practice was established fifteen years ago and employs 18 staff members, operating across healthcare, education, leisure, residential, commercial, ecclesiastical and master planning sectors. One interviewee participates in this instance, who is the office manager, responsible for both the daily and long-term decision-making for the firm. In the context of the number of years in which the respective participant architectural practices are in operation, it is the intention of the researchers to obtain a wide and varied range, to provide sufficient scope for considering both new and well-established architectural practices in the study. Although some architectural practices are relatively new, those who participate in the interviews, have extensive experience and in the case of the practice established two years previously, they have managed and operated other architectural practices, prior to establishing the target organisation. Given the ethical considerations that are taken into account in this study, participants agree to contribute under the agreement that identifying characteristics such as geographical location, etc. would not be documented, to assure anonymity while also maintaining confidentiality of both the participants and their respective architectural practice.

As the interviews conducted are semi-structured in nature, no direct questioning is undertaken. Topics and associated questions are presented around the various themes identified in the literature. The interviews are undertaken over a three-month period, from May to July. Each interviewee is questioned individually, on site within their respective organisation, with shorthand annotations taken at the time of the interview. Where more than one interviewee is undertaken per case study (case study 1, 2 and 3), the resulting cognitive mind maps are combined and analysed collectively; thus, portraying the results regarding the architectural practice surveyed. Finally, all five cognitive mind maps are combined, to produce one large cohesive output, depicting managerial representations of achieving competitive advantage in architectural practices within the UK. In doing so, this provides the opportunity, not to generalise the findings across various firms and their associated diverse structures, but to gain a holistic insight into the plethora of factors that emerge, regardless of the size, complexity and/or the sectors in which the respective organisations work. This, therefore, provides the reader with a viewpoint of managerial representations of achieving a competitive advantage in architectural practices, regardless of organisational size, complexity, sectors operated, among other factors.

Qualitative analysis

For this study, cognitive mind mapping analysis is undertaken on both the maps for each case study and also the overall combined mind map produced. In facilitating this, Banxia's™ Decision Explorer™ is selected as the software of choice, due to its ability to graphically

portray an extensive amount of textual information, in a concise manner, while also facilitating various qualitative analysis techniques. To extract the core data, domain and central analysis is employed. This approach is undertaken to aid in identifying the most important concepts for further scrutiny. Domain analysis is used to identify those concepts that have numerous links indicating that the concepts have been discussed extensively throughout the interview (Banxia™, 2002). Central analysis is used to identify the importance of each concept in relation to the wider group of concepts (Banxia™, 2002). Both methods are undertaken for each architectural practice and for the overall map that encompasses all practices. On completion, a list of concepts common to both the central and domain analyses is compiled for each architectural practice interviewed and for the overall composite cognitive map. Subsequently, a comprehensive list of factors is formed, which represents the most widespread concepts identified.

The overall composite map, covering all the architectural practices interviewed, is subjected to further analysis in the form of a "Hieset" (hierarchical) domain and central analysis, as per the individual practice maps. The Hieset analysis investigates all the root concepts in a set specified, and traces all the explanations of each concept until either a tail or another concept in the Set is reached (Banxia™, 2002). The most important concepts identified by the "Domain" and "Central" analysis are investigated through four "Hieset" maps. Figure 1 graphically illustrates the methods employed in the context of each of the case studies outlined.

Case study comparison
Through Hieset analysis, it is possible to consolidate all the highly ranked concepts for each architectural practice, to compare the most important factors that the practices feel help them achieve a competitive advantage. Table 1 documents these concepts and the associated architectural practices that relate to these factors.
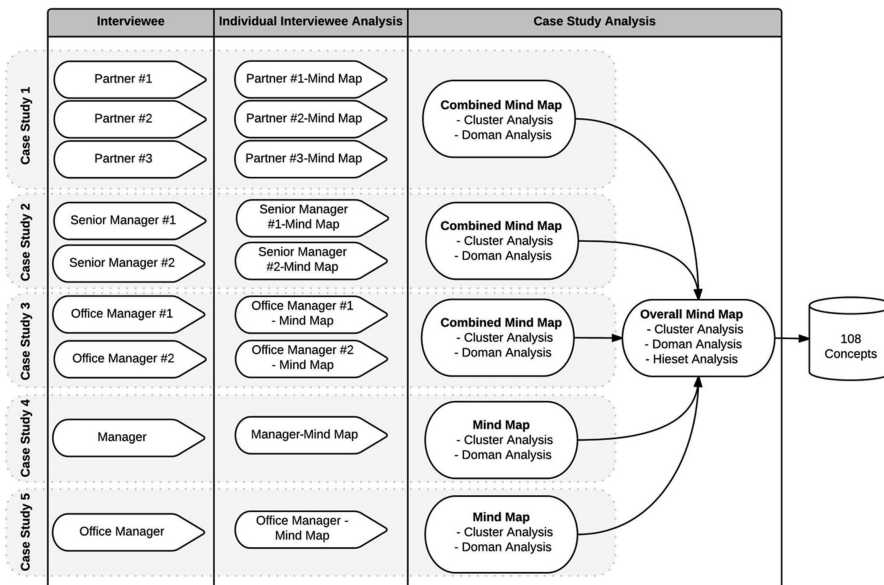

Figure 1.
Methods employed in
the research

Competency	Case study 1	Case study 2	Case study 3	Case study 4	Case study 5
Calibre of staff	High calibre of staff	Experience of partners	Overall quality of staff	Experience gained in previous practice	Overall quality of staff is high
Reputation	Practice reputation	Good/growing reputation	Reputation of overall practice	Good reputation in local market	Excellent reputation in Northern Ireland
Undertake large projects	Ability to undertake large projects		Ability to undertake large projects		
(Inter)National awards	Numerous national and international awards				
Good win rate	Good competition win rate				
Diverse workload	Diverse workload				
Client satisfaction	Very high client satisfaction rate	Client satisfaction, service and referrals		Continuous client satisfaction	Client satisfaction high
Attract graduates	Ability to attract top graduates				
Qualified staff	Highly qualified staff				
Competitive fees		Competitive fees		Ability to be competitive on fees	
Repeat clients		Repeat clients		Repeat clients	
Low overheads		Low overheads			
Ability to expand		Ability to expand			
Parent company			Benefits of parent company experience and resources		
Emphasis on design			Emphasis on design in all work		
Office efficiency				Office efficiency	
Market understanding				Understanding of local market	
Specialisation				Specialisation on domestic design	
New offices					Opening of new offices
Ambition to expand					Ambition of practice to expand

Table 1.
Comparison of means of achieving competitive advantage between case studies

Discussion

The list of 108 concepts are documented in Appendix to the paper according to the results of which, using Hieset analysis, 20 themes emerge (Table 1) and are discussed as follows.

High Calibre of staff

The importance of the overall quality of staff reverberates throughout each of the interviews. This includes the ability to attract top staff and graduates, continuous training of staff, experience of staff, staff commitment, creativity, technological expertise of staff, etc. Depending on the type of practice, the staff can help a practice obtain a distinct competence and hence a competitive advantage in a particular area. For example, experienced staff may contribute to a reputation of reliability and consistency of projects for the practice (Sarbeng, 2014), which may attract a specific client base. Highly creative staff may contribute to a reputation of a creative practice, with strong ideas which benefit the client. Technically strong staff may contribute to a practice's reputation of reliable delivery of projects. Ideally, every practice would have aspects of all three competencies (Winch and Schneider, 1993), but many practices recognise that they are particularly strong in one area and concentrate on that particular competence, as a means of achieving a competitive advantage. Practices may change from one type of main competence naturally as the practice grows and ages, for example, creative to more experience based. Regardless of what competency an architectural practice claims to possess, it can be sourced back to the practice's staff in some form, as it is from the quality and ability of the staff that contribute and ultimately form these competencies and enable the practice to achieve a competitive advantage. This premise reverberates throughout each of the interviewees and associated practices that participated in this study; further emphasising the importance of high-calibre staff to gaining and maintaining a competitive advantage. Khalil *et al.* (2017) echoes this sentiment, arguing the importance of talent management being a fundamental aspect. It should be noted that the quality of the staff be judged not only on their technical ability, something that scientific and technical companies can focus in on to the exclusion of other skills, especially the so-called "soft" skills. There need to be people in the practice who are highly skilled in the formation and maintenance of relationships, of being able to communicate and coordinate across the range of personnel involved in projects and to do "business" tasks such as accounts and running the social media aspect of the practice. The skills matrix required to run a successful practice must be understood and resourced so that the skillset to facilitate competitive advantage is not only available but continuously developed, kept relevant and promoted to the market segments in which the practice is active.

Reputation

All five practices recognise reputation as a means of gaining a competitive advantage. The importance of reputation to an architectural practice cannot be over emphasised, as it cannot be bought and can take many years to build (Sussangkarn and Vichyanond, 2005). It can be very difficult to measure this intangible asset, but its effects on a company's performance can be significant (Eberl and Schwaiger, 2005). The reputation of a professional service business, in this context, an architectural practice, is built on factors such as quality of service, reliability, professional conduct/ethics, practice ethos, honesty and value for money. Practices 2 and 4 are at a relatively early stage of their development and have recognised the need to establish a good reputation as a major priority in their early years. They perceive that this can be done by starting out on smaller projects and gradually moving onto larger work as their name and reputation grows. Practice 2 undertakes the approach of rejecting unsuitable work that would compromise their principles and would be to the detriment of what they want their practice's reputation to be. This is an indication of how high the practice rank the premise that

a good reputation is fundamental to their future success and the lengths they are willing to go to achieve it. Practices 1, 3 and 5 all recognise that they have an established reputation and try to exploit its potential to maximise the potential benefit derived. This established reputation enables the practices to be invited to selected competitions and competitive interviews; factors which form much of the practice's work, particularly in the case of Practice 1. This also benefits Practices 1 and 3 when tendering for large projects or government frameworks. The reputation also attracts top construction practices when they are looking for design consultants to partner with for design and build projects. Practices 1 and 3 have established strong reputations in a number of different sectors and this has contributed to both practice's growth in the recent years. The importance of reputation was given even greater importance when considering the recovery from the last economic recession, where many new practices emerged. Although newly developed practices can be very competitive on fees, they lack the reputation of established practices and find this a considerable weakness in gaining commission for projects. Reputation is very hard to imitate, unlike pricing or fee structures which can be imitated by a keystroke on a spreadsheet.

The ability to leverage reputation can also be linked directly to the network of the individuals in the practice. If the practice has staff that bring with them a large network of clients, this is of significant value to a firm when considering competitive advantage. If there is access to a highly experienced network of other professional services firms then this can also add to competitive advantage as such a network may well be a validation of the standard of work delivered by the practice, as well as giving them access to the high value clients of other professional firms that work together to deliver value for the client. The social network of senior management can also have an effect on how they "see" decisions as they are influenced by the social network, and this can in turn affect the entrepreneurial decision making that can impact on the overall competitive strategy of the practice (Fernandez-Perez *et al.*, 2016).

Ability to undertake large projects
Practices 1 and 3 state the experience and ability to undertake large projects as a means of obtaining competitive advantage over many of their competitors. This affirms the premise that there are only a limited number of practices who have the resources to undertake work over a certain size; an idea reiterated by Cheung *et al.* (2002). In this respect, practices 1 and 3 have access to a lucrative market with limited competition from local practices. These projects include large-scale government projects such as prisons, school public-private packages, healthcare, transport and government frameworks work, as well as large-scale private developments. However, it is noted that in the current economic climate, more competition is coming from offices outside of the UK. Practice 1 has, on a number of occasions, created joint ventures with large practices external to the UK, to tender for substantial work; an approach which has proven successful. The practices' local knowledge, expertise and reputation, coupled with the additional resources of the partner practices, have opened up new markets for the practice. The ability to undertake large projects is also linked with the formal quality management and resources of the practice, that is, quality accreditations, financial stability, sufficient turnover, as well as the staff resources with the relevant experience.

To ensure that competitive advantage is maintained there is a need to ensure that the capabilities within the practice (technical competencies, i.e. what the practice can do well) are aligned with the capacity of the practice (how much of work can they handle). The easiest way to increase capacity (and perhaps capability) is to form strategic alliances, whether for specific project types or specific client types, and so be able to tender for projects that would otherwise be beyond the practice's reach.

Numerous national/international awards and good competition win-rate
Practice 1 states that gaining recognition through awards results in a competitive advantage over their rivals. Mayo (1996) suggests that winning awards gives a practice a distinct competence or competitive advantage; thus, enhancing a practice's reputation. A track record of award achievement and good competition win rate suggests that a practice is design led with a high level of creativity. This would also tie in with Practice 3's "emphasis on design in all work", as a means of obtaining a competitive advantage. Receipt of awards, particularly from professional bodies such as the RIBA, RSUA, RIAI and RICS, can be seen as professional acclaim from an architectural practice's peers. This is often the main motivation to practice, and it often has a positive result for the practice as a business. While this may not be of fundamental importance to some clients, it may make a difference in gaining access to clients who wish to commission a prestigious building and rely on reputation and professional acclaim in their selection process. It may also benefit practices being shortlisted for competitions. As a result, a practice's creativity, and external recognition for this, can be seen as a distinct competence in obtaining a competitive advantage and differentiating it from other practices.

Diverse workload; Specialisation in Domestic Design (Niche Markets); Ambition/Ability of Practice to Expand/Open New Offices; Local Knowledge
A diverse workload is highly rated by Practice 1, in gaining a competitive advantage over its rivals, while Practice 3 cites that it is a factor. Practice 4 considered its specialisation on domestic design, a niche market, as a competency that enables it to achieve a competitive advantage. Although directed more at manufacturing industries, Michael Porter, in his model of generic strategies (Porter, 1980, 1985), argues that practices can operate in two different dimensions. Porter concludes that, firstly, one can gain a competitive advantage by competing as "cost leaders" (the easiest competitive advantage to copy as mentioned above) or manage to "differentiate" their product from their competitors and secondly gain a competitive advantage through "competitive scope" by competing across a full range of products (sectors in architectural practice's cases) or alternatively focus on a narrow niche (as a specialist practice). Porter (1980, 1985) argues that practices that fail to choose, are likely to perform poorly, due to being in a point of transition or indeterminate state. Practices 1 and 3 operate over a diverse range of sectors including ecclesiastical, health, transport, education, leisure, arts and historic. Both practices, due to their size, have the ability to have dedicated teams of architects that specialise in each particular area, and as such, can be seen to have identified a number of niche markets and directed the development of their respective practices to capitalise in these areas. Therefore, each of these markets offer the practices an area in which they have developed a strong competence and reputation, subsequently leading to obtaining a competitive advantage. Practice 5 identifies an ambition to open new offices as a means of achieving a competitive advantage. This is a clear indication that the practice wishes to grow, as part of its overall strategy and has the energy, initiative and ambition to do so. This drive and ambition is perceived as an integral element of the overall strategy in which they ultimately want to gain a competitive advantage over their rivals. This is a common trait in many newly founded or relatively young architectural practices, who work for reduced fees, enter numerous competitions or gain other sources of income, as indicated by Practice 2.

High client satisfaction rate; strong project delivery; repeat clients; client referrals
Practice 1, 2, 4 and 5 all rate high client satisfaction as a means of achieving a competitive advantage. Achieving a high rate of client satisfaction is essential for a practice if it is to prosper and it is generally achieved through the delivery of a quality service. The provision of architectural services is somewhat unique, as the client interacts with the architect during the

provision of the service and as such the market transaction is relational rather than junctural (Winch and Schneider, 1993). The client appoints an architect to provide a creative and innovative solution to satisfy their requirements and meet their aspirations. Client satisfaction is subjective (Auchterlounie, 2009), and can lead to client loyalty, repeat business, client referrals and enhancement of the practice's reputation (Smyth and Kioussi, 2011). This is essential in any form of business, as it offers the practices further business opportunities. In some cases, particularly smaller practices, such as Practice 4, it can make up the majority of a practice's workload and therefore is crucial to their success. The level of repeat clients and referrals is a good indicator of a practice's reputation and success. It is also a good indicator of the ability of the practice staff to develop and maintain excellent relationships with clients to become a preferred provider /partner thereby eliminating some of the market pressure when tendering for new jobs. Once again, the quality of such relationships is heavily dependent upon the quality, ability and capacity of the staff and their ability to build trust through the delivery of projects that satisfy their clients.

Competitive fees, low overheads, office efficiency
Practices 2 and 4 state that competitive fees are a main source of achieving a competitive advantage and Practices 1, 3 and 5 also reference this aspect, but to a lesser extent. Since the abolition of mandatory fee scales by the Monopolies and Mergers Commission and Office of Fair Trade in the 1980s, the need to think competitively for architects has grown immensely. Very few projects are now procured without some form of fee tendering or negotiation. Public projects in particular, must be tendered, in order to ensure "value for money". Prior to this, the mandatory fee scales enabled all architects to undertake work with no competition on fees; practices were selected purely on their reputation and quality of their work. It is therefore imperative that the practice fully understands the value drivers for the client and shows how they can meet them. This is especially valuable if they can uncover value drivers that the client had not previously thought of – especially in the non-commercial sector where clients are perhaps naive.

In the previous economic recessionary market in the period 2007–2010, rivalry and competition between architectural practices was intense, and has not abated since. In this context, the ability to offer clients a service at a lower price is an obvious means of an architectural practice gaining an advantage over its rivals, but it is the least sustainable and easiest copied strategy. Interestingly, Practices 2 and 4 highlight this aspect when attracting clients and establishing a reputation and client base, in order to enable company growth. The ability of any practice to be competitive on fees also depends on issues such as keeping office overheads low and efficient management of the design process and office. There is a need for the practice management to keep a close eye on the mundane activities such as costs including software licences (particularly yearly subscription services), office rental etc. to ensure that they are managed properly and the maximum return on investment is achieved for the money spent running the practice.

Furthermore, the high influx of new entrants into the market has intensified competition; a factor exacerbated by economic trends and the ease of access with regard to practices outside of the UK tendering for work. The previous recession had increased the bargaining power of clients who were aware of the amount of competition for limited work, thereby setting a low-cost expectation that may now be no longer tenable as the quantity of work is increasing and Practices can be slightly more selective regarding the jobs that they tender for. These factors have contributed to the requirement to achieve fee competitiveness being considered a means of obtaining potential, through perhaps short lived, competitive advantage over market competition.

Benefits of parent company experience and resources
Practice 3 outlines their parent company experience and available resources as a means of obtaining a competitive advantage over its competitors. This would appear to give the practice a clear advantage over its competitors, as the parent company has an established reputation and many resources at their disposal. These resources include different types of expertise in a variety of sectors in conjunction with a large quantity of staff. This is of value to Practice 3 in their establishment in other offices, both in Northern Ireland, but also in the Middle East.

Modern forms of communication and coordination allow members of any divisional office to work on a project from their own base; thus, further facilitating the development and subsidiary branches. As knowledge is key to any successful profession, it is also key to individual architectural practices. Practice 3 facilitates and encourages employees to undertake research into a particular building types or design developed within their parent company, using the array of resources available, to develop their knowledge further. It is a strong belief of Practice 3 that all areas are thoroughly researched, and the shared knowledge enables the designer to be informed through access to additional knowledge and experience that is held within the main office Also, Practice 3 benefits from other aspects of having access to the "mothership" or head practice, such as marketing, publications, quality accreditations and financial stability. With respect to the development of skills within a Practice the presence of a larger "mother-ship" practice could provide staff in the satellite practice with the opportunity to access mentors to help develop their skills. Furthermore, access to business intelligence, knowledge sharing and organizational innovation is enhanced when working as part of a network of practice offices under the same umbrella group of practices (Eidizadeh *et al.*, 2017). Financial stability is of particular importance when tendering for larger projects, particularly government work. Many architectural practices must pass pre-qualification requirements, such as financial stability, minimum turnover, quality assurances, sufficient staff resources, relevant experience, among others, before being considered. These resources enable the practice to gain access to this large-scale work, where there will be limited competitors in a position to challenge them for it; thus, increasing their chance of obtaining commissions.

Conclusion
The built environment is in a state of constant evolution and transition: the profession of architecture is no different. To counteract the potential for risk and damage that such transition may bring, and maximise the opportunity brought by such transition, it is necessary for architectural practices to achieve a competitive advantage over their peers through managerial representations that facilitate better decision-making in such a dynamic market. It is therefore useful to identify and document the plethora of potential factors that can give a practice an advantageous position over one's peers. The aim of this study is to determine the representation of architects as managers of architectural practice in relation to obtaining a competitive advantage in the UK. To meet this aim, information is obtained from the literature in conjunction with nine interviews across five different architectural practices. Semi-structured interviews are carried out, resulting in 108 managerial representation factors emerging in relation to achieving a competitive advantage. Through qualitative analysis and cognitive mind-mapping in the form of Hieset analysis, these managerial representations are consolidated into 20 themes; Calibre of Staff; Reputation; Undertake Large Projects; (Inter) National Awards; Good Win Rate; Diverse Workload; Client Satisfaction; Attract Graduates; Qualified Staff; Competitive Fees; Repeat Clients; Low Overheads; Ability to Expand; Parent Company; Emphasis on Design; Office Efficiency; Market Understanding; Specialisation; New Offices.

The 20 themes identified are clustered into four main groups focused on People (including Calibre of Staff, Attract Graduates; Qualified Staff); Product (including Emphasis on design, Specialisation, Competitive Fees): Process (including Low Overheads, Office Efficiency) and Potential (Reputation, Ability to Undertake Large Projects, Repeat clients, Ability to expand, Parent Company, Market Understanding and New Offices). Each cluster should be a specific part of the practices' strategic planning and could be used to assess the ability to grow the practice in a strategic sense.

To remain competitive in the long term, architects as managers of architectural practices operating in a very competitive sector, run the risk of sharing the same representation of competitive advantage as their market counterparts, in that similar sized practices or practices at similar stages of their development, may share the same representation on how to move forward and develop their respective organisations. Both Practices 2 and 4 are at a relatively early stage of development and share similar representations on how they would develop their practice as part of an overall strategy. Practices 1 and 3 are established, with strong reputations and a similar approach, covering a wide range of sectors as part of their strategy, forming joint ventures where necessary, to undertake greater work. This would suggest that architectural practices, regardless of their stage of development, acknowledge and apply a logical strategy on how to progress and grow.

However, a note of caution. The research indicates that successful architectural practices must be dynamic organisations, capable of rapidly responding to an ever-changing competitive industry, to maintain a competitive advantage over their rivals. As part of this, the Practice must have a clear vision in terms of what it sees as "being successful" as this will have a major impact on how the practice will develop, what it values, the type of work that it will want to tender for, clients and partner organisations it wishes to work with and projects that it wishes to be involved in. The decision making within the Practice will be impacted by the vision of what success looks like. The majority of those interviewed demonstrate that architects possess some level of business acumen, despite the majority not formally receiving a business or management education, often entering the profession due to the creative opportunities that it presents. Subsequently, it is suggested that architectural professionals, working within a management context, should consider these findings, particularly in the recognition of skills or attitudinal gaps that would inform the development of their respective practices, in pursuit of achieving sustainable competitive advantage over their peers.

Finally, in this age of Big Data, the ability to source, coupled with the capability to interpret, filter and apply the relevant information to facilitate better decisions – especially in a practice that is consistently faced with multi-attribute, multi-alternative, value-based decisions, is a critical strategic resource for any practice that wishes to remain competitive in today's market.

In a wider context, generalizability may not be possible, due to the small sample size and the focus of the target audience being the UK. As a result, this paper provides an introduction and pilot to the development of a broader study on the subject. This provides an apt opportunity to therefore identify further research in the area. By broadening the scope of the study, using a mixed methods approach, while also including other geographical regions, such as North America, Asia, etc., there is an opportunity to identify and thus, provide a generalisability to the overall findings. Subsequent to this, a broader study would aid in the replicability of the findings across the built environment, but potentially, within other sectors. Although the paper is focused on managerial representation within architectural practices, further research may also include other practices within the built environment, such as civil engineering, structural engineering and MEP organisations, among others.

In the context of the implications for practice, given that the study is focused on UK-based architectural firms, the findings should be considered, particularly those who are both managers and architects of their respective firms within the UK. Furthermore, where such

individuals and/or architectural practices strive to identify and exploit a sustainable competitive advantage in this sector, studies such as this, provide an excellent insight into the various points to consider. This process can therefore have far-reaching implications for an organisation, impacting for example on issues such as, strategy formulation, competitiveness, profit margins, survival and expansion, among others. Going forward, there are several recommendations. Although this paper provides a starting point, further in-depth research is suggested in strategy formation, competitive advantage and decision making in relation to the architectural profession, as opposed to those sectors focusing on industrial and commercial contexts. It is also suggested that additional research be conducted, investigating the experience and benefits of architectural professionals operating within upper management, obtaining supplementary qualifications, from a business and finance perspective.

References

Anthony, K.H. (2002), "Designing for diversity: implications for architectural education in the twenty-first century", *Journal of Architectural Education*, Vol. 55 No. 4, pp. 257-267.

Architects' Council of Europe (2019), *The Architectural Profession in Europe 2018: A Sector Study*, Mirza & Nacey Research Ltd, West Sussex.

Auchterlounie, T. (2009), "Recurring quality issues in the UK private house building industry", *Structural Survey*, Vol. 27 No. 3, pp. 241-251.

Aycan, J. (2002), *Contextual Effects of Goals, Stimuli, Performance, and Complexity on Cognitive Decision Biases*, University of Waterloo, Ontario, Canada.

Banxia (2002), *Decision Explorer User Guide – Version 3.2*, Banxia Software Ltd, Kendal.

Barney, J. (1991), "Practice resources and sustained competitive advantage", *Journal of Management*, Vol. 17 No. 1, pp. 99-120.

Barney, J.B. and Hesterly, W.S. (2008), *Strategic Management and Competitive Advantage: Concepts and Cases*, Pearson Education International, Upper Saddle River, New Jersey.

Bates, K.A. and Flynn, E.J. (1995), "Innovation history and competitive advantage: a resource view analysis of manufacturing technology innovations", *Academy of Management Journal Best Paper Proceedings*, Vol. 1995 No. 1, pp. 235-239.

Black, T.R. (1999), *Doing Quantitative Research in the Social Sciences: an Integrated Approach to Research Design, Measurement and Statistics*, SAGE Publications, London.

Brown, A.D., Kornberger, M., Clegg, S.R. and Carter, C. (2010), "'Invisible walls' and 'silent hierarchies': a case study of power relations in an architecture practice", *Human Relations*, Vol. 63 No. 4, pp. 525-549.

Bruen, J., von Meding, J.K. and Hadjri, J. (2013), "An analysis of an international NGOs design decision-making in post disaster developing country context: a Sri Lanka case study", *International Journal of Architectural Research*, Vol. 7 No. 3, pp. 130-145.

Bruscaglioni, L., Cellini, E. and Saracino, B. (2015), "Life on social housing estates: studying housing quality with an ethnographic approach", in Maggino, F. (Ed.), *A New Research Agenda for Improvements in Quality of Life*, pp. 37-59.

Busemeyer, J.R. and Myung, I.J. (1992), "An adaptive approach to human decision making: learning theory, decision theory, and human performance", *Journal of Experimental Psychology: General*, Vol. 121 No. 2, pp. 177-194.

Busemeyer, J.R., Gluth, S., Rieskamp, J. and Turner, B.M. (2019), "Cognitive and Neural bases of multi-attribute, multi-alternative, value-based decisions", *Trends in Cognitive Sciences*, Vol. 23 No. 3, pp. 251-263.

Chang, W.-L., Lo, Y.-P. and Hong, Y.-T. (2009), "A heuristic model of network-based group decision making for e-services", *Sixth International Conference on Information Technology: New Generations*, Las Vegas, Nevada, USA, pp. 326-331.

Chau, K.W., Cao, Y., Anson, M. and Zhang, J. (2003), "Application of data warehouse and decision support system in construction management", *Automation in Construction*, Vol. 12 No. 2, pp. 213-224.

Cheung, F.K.T., Kuen, J.L.F. and Skitmore, M. (2002), "Multi-criteria evaluation model for the selection of architectural consultants", *Construction Management and Economics*, Vol. 20 No. 7, pp. 569-580.

Chew, C. and Osborne, S.P. (2009), "Identifying the factors that influence positioning strategy in U.K. Charitable organizations that provide public services: toward an integrating model", *Nonprofit and Voluntary Sector Quarterly*, Vol. 38 No. 1, pp. 29-50.

Cuff, D. (1991), *Architecture: the Story of Practice*, MIT Press, Cambridge, Massachusetts.

Dare-Abel, O.A., Alagbe, O.A., Aderonmu, P.A., Ekhaese, O.N. and Adewale, B.A. (2015), "Pathways to architectural education and practice success in Nigeria", *Journal of Education and Practice*, Vol. 6 No. 4, pp. 169-175.

Davis, P.J. (2017), "How HR can create competitive advantage for the firm", *Human Resource Management International Digest*, Vol. 25 No. 2, pp. 4-6.

Davis, J.H., Schoorman, F.D., Mayer, R.C. and Tan, H.H. (2000), "The trusted general manager and business unit performance: empirical evidence of a competitive advantage", *Strategic Management Journal*, Vol. 21 No. 5, pp. 563-576.

Day, G.S. and Nedungadi, P. (1994), "Managerial representations of competitive advantage", *Journal of Marketing*, Vol. 58 No. 2, pp. 31-44.

Dorta, T., Pérez, E. and Lesage, A. (2008), "The ideation gap: hybrid tools, design flow and practice", *Design Studies*, Vol. 29 No. 2, pp. 121-141.

Doucet, I. and Janssens, N. (2010), "Transdisciplinarity, the hybridisation of knowledge production and space-related research", *Transdisciplinary Knowledge Production in Architecture and Urbanism*, Vol. 11 No. 1, pp. 1-14.

Eberl, M. and Schwaiger, M. (2005), "Corporate reputation: disentangling the effects on financial performance", *European Journal of Marketing*, Vol. 39 Nos 7/8, pp. 838-854.

Eidizadeh, E., Salehzadeh, R. and Esfahani, A. (2017), "Analysing the role of business intelligence, knowledge sharing and organisational innovation on gaining competitive advantage", *Journal of Workplace Learning*, Vol. 29 No. 4, pp. 250-267.

Einhorn, H.J. (1970), "The use of nonlinear, non-compensatory models in decision making", *Psychological Bulletin*, Vol. 73 No. 3, pp. 221-230.

Epead, A.A.H. and Othman, A.A.E. (2014), "Marketing strategies for promoting the architectural engineering profession in a rapidly changing business environment: a literature review", *International Conference on Industry Academia Collaboration*, Cairo, Egypt, 3-5 March 2014.

Fahy, J. (2002), "A resource-based analysis of sustainable competitive advantage in a global environment", *International Business Review*, Vol. 11 No. 1, pp. 57-77.

Fernandez-Perez, V., Garcia-Morales, V.J. and PullesDianelis, C.P. (2016), "Entrepreneurial decision-making, external social networks and strategic flexibility: the role of CEO's cognition", *European Management Journal*, Vol. 34, pp. 296-309.

Flick, U.W.E. (2009), *An Introduction to Qualitative Research*, 4th ed., SAGE Publications, London.

Goulding, J.S. and Rahimian, F.P. (2015), "Design creativity: future directions for integrated visualisation", *ArchNet-IJAR*, Vol. 9 No. 3, pp. 1-5.

Harrison, E.F. (1999), *The Managerial Decision-Making Process*, 5th ed., Houghton Miffin, Boston, Massachusetts.

Hastie, R. and Dawes, R.M. (2001), *Rational Choice in an Uncertain World: the Psychology of Judgement and Decision Making*, SAGE Publications, Thousand Oaks.

Hastie, R. and Dawes, R.M. (2009), *Rational Choice in an Uncertain World: the Psychology of Judgement and Decision Making*, 2nd ed., SAGE Publications, Thousand Oaks.

Hoffman, N.P. (2000), "An examination of the 'sustainable competitive advantage' concept: past, present, and future", *Academy of Marketing Science Review*, No. 4, pp. 1-16.

Hunt, S.D. (2000), *A General Theory on Competition*, Sage, Thousand Oak.

Ibrahim, R., Fruchter, R. and Sharif, R. (2007), "Framework for a cross-border transdisciplinary design studio education", *Archnet-IJAR*, Vol. 1 No. 3, pp. 88-100.

Kahneman, D. and Tversky, A. (Eds) (2000), *Choices, Values, and Frames*, Cambridge University Press and the Russell Sage Foundation, New York.

Keršulienė, V. and Turskis, Z. (2011), "Integrated fuzzy multiple criteria decision-making model for architect selection", *Technological and Economic Development of Economy*, Vol. 17 No. 4, pp. 645-666.

Khalil, M., Elsaay, H. and Othman, A. (2017), "Talent management: a novel approach for developing innovative solutions towards heritage communities development", *Archnet-IJAR*, Vol. 11 No. 3, pp. 132-145.

Kolkman, M.J., Kok, M. and Van der Veen, A. (2005), "Mental model mapping as a new tool to analyse the use of information in decision-making in integrated water management", *Physics and Chemistry of the Earth, Parts A/B/C*, Vol. 30 Nos 4/5, pp. 317-322.

Koppenjan, J. and Klijn, E.-H. (2004), *Managing Uncertainties in Networks: A Network Approach to Problem Solving and Decision Making*, Routledge, London.

Lavis, J.N., Robertson, D., Woodside, J.M., McLeod, C.B. and Abelson, J. (2003), "How can research organizations more effectively transfer research knowledge to decision makers?", *Milbank Quarterly*, Vol. 81 No. 2, pp. 221-248.

Lebiere, C., Morrison, D., Abdelzaher, T., Hu, S., Gonzalez, C., Buchler, N. and Veksler, V.D. (2016), "Cognitive models of prediction as decision aids", *Proceedings of the 14th International Conference on Cognitive Modelling*, pp. 33-38.

Lloréns-Montes, F.J., García-Morales, V.J. and Verdú-Jover, A.J. (2004), "Flexibility and quality management in manufacturing: an alternative approach", *Production Planning and Control: The Management of Operations*, Vol. 15 No. 5, pp. 525-533.

Lyon, D.W., Lumpkin, G.T. and Dess, G.G. (2000), "Enhancing entrepreneurial orientation research: operationalizing and measuring a key strategic decision making process", *Journal of Management*, Vol. 26 No. 5, pp. 1055-1085.

Mayo, J.M. (1996), "The manifestation of politics in architectural practice", *Journal of Architectural Education*, Vol. 50 No. 2, pp. 76-88.

McNeill, D. (2006), "Globalization and the ethics of architectural design", *City: Analysis of Urban Trends, Culture, Theory, Policy, Action*, Vol. 10 No. 1, pp. 49-58.

Miner, M. and Petocz, A. (2003), "Moral theory in ethical decision making: problems, clarifications and recommendations from a psychological perspective", *Journal of Business Ethics*, Vol. 42 No. 1, pp. 11-25.

Murphy, S.E., Spillane, J.P., Hendron, C. and Bruen, J. (2014), "NEC Contracting: evaluation of the inclusion of dispute review boards in lieu of adjudication in the construction industry in United Kingdom", *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*, Vol. 6 No. 5, pp. 1-11.

Myerson, K.R. (1998), "Can we assess professional behaviour in anaesthetists?", *Anaesthesia*, Vol. 53 No. 11, pp. 1039-1040.

O' Regan, N., Sims, M. and Ghobadian, A. (2005), "High performance: ownership and decision-making in SMEs", *Management Decision*, Vol. 43 No. 3, pp. 382-396.

Olszak, C.M. and Ziemba, E. (2006), "Business intelligence systems in the holistic infrastructure development supporting decision-making in organisations", *Interdisciplinary Journal of Information, Knowledge, and Management*, Vol. 1 No. 1, pp. 47-56.

Onwuegbuzie, A.J. and Leech, N.L. (2006), "Linking research questions to mixed methods data analysis procedures 1", *The Quality Report*, Vol. 11 No. 3, pp. 474-498.

Othman, A.A.E. (2010), "Incorporating innovation and sustainability for achieving competitive advantage in construction", in Wallis, I., Bilan, L., Smith, M. and Kazi, A.S. (Eds), *Industrialised, Integrated, Intelligent Sustainable Construction I3CON Handbook 2*, pp. 13-42.

Othman, A.A.E. and Hafez, M.G. (2019), "A framework integrating corporate social responsibility for marketing architectural design firms in developing countries", *Journal of Engineering, Design and Technology*, Vol. 17 No. 6, pp. 1174-1191.

Othman, A.A.E. and Sorial, M.H.H. (2017), "Achieving competitive advantage through the integration of disabled architects in architectural design firms in Egypt", *Organization, Technology and Management in Construction: An International Journal*, Vol. 9 No. 1, pp. 1547-1558.

Perkins, S.W. and Rao, R.C. (1990), "The role of experience in information use and decision making by marketing managers", *Journal of Marketing Research*, Vol. 27 No. 1, pp. 1-10.

Porter, M.E. (1980), *Competitive Advantage*, Free Press, New York.

Porter, M.E. (1985), *Competitive Advantage*, 2nd ed., Free Press, New York.

Rao, R.V. (2008), "Evaluation of environmentally conscious manufacturing programs using multiple attribute decision-making methods", *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*, Vol. 222 No. 3, pp. 441-451.

Ray, G., Barney, J.B. and Muhanna, W.A. (2003), "Capabilities, business processes, and competitive advantage: choosing the dependent variable in empirical tests of the resource-based view", *Strategic Management Journal*, Vol. 25 No. 1, pp. 23-37.

Riganti, P. (2017), "Smart cities and heritage conservation: developing a smart heritage agenda for sustainable inclusive communities", *Archnet-IJAR*, Vol. 11 No. 3, pp. 16-27.

Sarbeng, I.B. (2014), "Assessment of staff training and development policies of University of Cape Coast", *European Journal of Business and Marketing*, Vol. 6 No. 35, pp. 68-78.

Schuler, R.S. and MacMillan, I.C. (1984), "Gaining competitive advantage through human resource management practices", *Human Resource Management*, Vol. 23 No. 3, pp. 241-255.

Schwarz, N. (2000), "Emotion, cognition, and decision making", *Cognition and Emotion*, Vol. 14 No. 4, pp. 433-440.

Schwenk, C.R. (1988), "The cognitive perspective on strategic decision making", *Journal of Management Studies*, Vol. 25 No. 1, pp. 41-55.

Shanteau, J. (1988), "Psychological characteristics and strategies of expert decision makers", *Acta Psychologica*, Vol. 68 Nos 1-3, pp. 203-215.

Shouman, B.A. and Othman, A.A.E. (2014), "Total quality management as a strategic option for achieving competitive advantage in architectural design firms: a literature review", *International Conference on Industry Academia Collaboration*, Cairo, Egypt, 3-5 March 2014.

Simon, H.A. (1977), *The New Science of Management Decision*, Prentice-Hall, Englewood Cliffs, New Jersey.

Smyth, H. and Kioussi, S. (2011), "Architecture firms and the role of brand management", *Architectural Engineering and Design Management*, Vol. 7 No. 3, pp. 205-217.

Spillane, J.P. and Oyedele, L.O. (2013), "Strategies for effective management of health and safety in confined site construction", *Australasian Journal of Construction Economics and Building*, Vol. 13 No. 4, pp. 50-64.

Stals, A., Jancart, S. and Elsen, C. (2018), "Influence of parametric tools on the complexity of architectural design in everyday work of SME's", *Archnet-IJAR*, Vol. 12 No. 3, pp. 206-227.

Straub, D.W. and Welke, R.J. (1998), "Coping with systems risk: security planning models for management decision making", *Management Information Systems Quarterly*, Vol. 22 No. 4, pp. 441-469.

Sussangkarn, C. and Vichyanond, P. (2005), "Regional architecture for financial cooperation in East Asia", *Thailand Development Research Institute Quarterly Review*, Vol. 20 No. 1, pp. 3-13.

Till, J. (2008), "Architecture and contingency", *Field*, Vol. 1 No. 1, pp. 120-135.

Trim, P.R.J. and Lee, Y.-I. (2008), "A strategic marketing intelligence and multi-organisational resilience framework", *European Journal of Marketing*, Vol. 42 Nos 7/8, pp. 731-745.

Tzokas, N. and Saren, M. (2004), "Competitive advantage, knowledge and relationship marketing: where, what and how?", *Journal of Business and Industrial Marketing*, Vol. 19 No. 2, pp. 124-135.

Verma, D. (2009), *Decision-making Style: Social and Creative Dimensions*, Global India Productions, New Delhi.

Volker, L. (2010), "Architect selection: rational or intuitive decision making?", *ARCOM Research Workshop on Decision-making Across Levels, Time and Space: Exploring Theories, Methods and Practices*, School of Mechanical, Aerospace and Civil Engineering, University of Manchester, 10th February 11-20.

Wickens, C.D. (1992), *Engineering Psychology and Human Performance*, 2nd ed., Harper Collins Publishers, New York.

Winch, G. and Schneider, E. (1993), "Managing the knowledge-based organization: the case of architectural practice", *Journal of Management Studies*, Vol. 30 No. 6, pp. 923-937.

Appendix

List of 108 concepts identified from the interviews

(1) Competitive on fees.

(2) Good local staff resources.

(3) Growing staff base.

(4) Overall quality of staff.

(5) Efficient management of office(s).

(6) Keep offices costs as low as possible.

(7) Pass savings on to client.

(8) Personal service for clients.

(9) High client satisfaction rate.

(10) Client referrals.

(11) Repeat clients.

(12) Strong project delivery record.

(13) Participation in local community.

(14) Excellent local reputation.

(15) Contacts in local industry.

(16) Knowledge of local market.

(17) Positioning in the local market.

(18) Many local projects completed.

(19) Very successful in one-off contemporary house market.

(20) Ambition of practice to expand.

(21) Various offices throughout UK.

(22) Ability to supplement different office within firm.

(23)   Small office.

(24)   Use of modern I.T. to achieve efficiency.

(25)   Lot of client involvement during design stage.

(26)   Emphasis on client satisfaction.

(27)   Office efficiency.

(28)   Ability to be competitive on fees.

(29)   Clear design process.

(30)   Control of office overheads.

(31)   Very low office overheads.

(32)   Client savings through design.

(33)   Strong growing client base.

(34)   Exceeding client expectations.

(35)   Specialisation on domestic design.

(36)   Identification of niche market.

(37)   Understanding of local market.

(38)   Clearly establish development strategy.

(39)   Publication in local journals and magazines.

(40)   Strong links with professional organisations; i.e. RIBA, RIAI, RSUA.

(41)   Efficient management of projects on site.

(42)   Experienced gained in previous practice.

(43)   Innovative design.

(44)   Environmentally friendly design.

(45)   Additional staff only as required.

(46)   Design awards.

(47)   High design quality of staff.

(48)   Staff commitment.

(49)   Continuous training of staff.

(50)   Investment in staff development.

(51)   National and international awards.

(52)   Large staff resources.

(53)   Ample in-house knowledge in overall company.

(54)   Ability to attract top staff.

(55)   Large geographical catchment area.

(56)   Numerous office in different countries.

(57)   Resources of large company.

(58)   Growth strategy of overall (parent) company.

(59)   Ambition of overall (parent) company.

(60)   One of largest companies in local market.

(61)   Excellent overall (parent) company marketing strategy.

(62)   Ability to attract top firms for partnerships/JVs when required.

(63)   Company emphasis on design.

(64)   Ability to undertake any scale of project.

(65)   Excellent established national and international reputation.

(66)   Quality and diversity of client service.

(67)   Diverse client base.

(68)   Financially stable.

(69)   Capability to work at risk to obtain projects.

(70)   Ability to absorb large tender costs.

(71)   Control of fees.

(72)   In-house printing facilities.

(73)   Proven track record in modern procurement routes i.e. PFI/PPP/NEC.

(74)   Strong PM expertise.

(75)   Professionalism of staff.

(76)   Specialised knowledge of staff in a number of areas i.e. conservation, energy efficiency, CDM.

(77)   Knowledge sharing between staff.

(78)   Pursue larger projects than many competitors.

(79)   Creative staff.

(80)   Benefit of parent company expertise and resources.

(81)   Ability to delegate work to other offices within overall company.

(82)   Expertise and experience in a number of sectors.

(83)   Projects delivered on budget and time.

(84)   Excellent contract administration.

(85)   Ample work obtained through competitions.

(86)   Attract top graduates.

(87)   Specialised knowledge in number of sectors.

(88)   Not dependent on one sector.

(89)   Ability to get on government framework agreements.

(90)   Quality accreditation i.e. ISO9001, ISO14001.

(91)   Record of successful JVs with other firms on large-scale projects.

(92)   Ability to work abroad.

(93)   Partner involvement in all projects.

(94)   Practice ethos.

(95)   Good relationship with local contractors for design and build.

(96)   Technically strong staff.

(97)   High competition win record.

(98)   Good administration and office management staff (backup staff).

(99)   Willingness to undertake small projects.

(100)   Invites to shortlist competitions and competitive interviews.

(101)   Ability to supplement income with teaching.

(102)   Willingness to turndown work that compromises practices principles/ethos.

(103)   Practice based business.

(104)   Newly established and ambitious.

(105)   Risk acceptance.

(106)   Geographical location.

(107)   Personal service.

(108)   Positioning of practice in market.

About the authors
Dr John Bruen is a principal architect at Bruen Architects; a multiple award-winning architectural practice, operating out of Belfast, Northern Ireland. John is an innovative design led RIBA and RIAI architect, covering all regions including Belfast, Sligo, Donegal. Roscommon, Leitrim, Down, Tyrone and Dublin. He obtained an MSc in Construction and Project Management in 2008, followed by a PhD in 2019, both of which, were obtained from Queen's University Belfast. John's research covers various areas such as sustainability, architectural competencies and research design.

Dr John P. Spillane is founder and director of the Irish Construction Management Research Centre, at the University of Limerick. He has extensive experience in industry engaged research, focusing on digital technologies, sustainability, fire safety, certification and systems development/integration into the built environment. He has more than 20 years' experience working in both higher education and the construction industry. As a Chartered Construction Manager and Chartered Building Engineer, John is currently working on several research projects, while supervising numerous postgraduate researchers on various topics such as conflict management, strategic planning, modern methods of construction, apprenticeships in the built environment, communication, among other topics. John P. Spillane is the corresponding author and can be contacted at: john.spillane@ul.ie

Dr Jim Bradley is a lecturer at the University of Limerick with 25 years industry experience. He lectures on the Construction Management + Engineering honours degree programme in the School of Engineering, delivering modules in the areas of project management, compliance and innovation. Jim gained his PhD in 1988 and his M.B.A. in 1992. He is involved with the Irish Construction Management Research Centre (ICMRC) in UL and his areas of research interest include mental health in construction, strategy in SMEs and knowledge management.

Dr Tara Brooks is a senior lecturer at Queen's University with 20 years' construction industry experience. She is currently the programme director for the MSc in BIM Project Management at Queen's. Returning to university as a mature student, she studied part time for an MSc in Construction Project Management at Queen's, completing in 2014. She gained her PhD in 2020. Her areas of research interest include construction quality management, procurement and BIM and emerging digital technology. Tara has completed several successful KTP Projects which bridge academic research, teaching and practice including those looking at BIM implementation, automation and digital tool exploitation.