

<p>Institution: University of South Wales</p>
<p>Unit of Assessment: C19</p>
<p>a. Overview</p> <p>The C19 Unit of Assessment is focused on user valued research and is committed to enhancing interactions between research, teaching and consultancy/enterprise activities. Currently the Unit is advancing the distinctiveness of its research agenda and has taken a robust approach to the 2014 Research Excellence Framework, only considering high value research submissions. A small but highly committed group of research active staff has emerged, working together coherently on the production of high impact research for the Unit. This development has created the necessary vibrancy and subject specific focus to drive the Unit's future research towards much more specific, niche research that is (and will be) critically acclaimed in the research community at both national and international levels.</p> <p>Two members of the Unit (David Pickernell and Christopher Miller) are Enterprise and Social Innovation researchers whilst Andrew Thomas is an Operations and Supply Chain researcher. The connection between these apparently discrepant fields is in their case close: Thomas's research on enhancing the productive capabilities of companies and supply chains forms an integral part of the work that Pickernell and Miller undertake in analysing and modelling the impact of industrial competitiveness on Wales and the UK. Other similarities exist around company performance and its links with innovation and entrepreneurship etc.</p> <p>Research within C19 sits within the HUMSOC Research Institute and focuses specifically on Enterprise, Social Innovation and Business/ Supply Chain enhancement. Our core research activity is focused within the Centre for Enterprise (C4E) and links its work strongly to the University's Research Strategy (2009-2014) and the newly formed HUMSOC Research Institute. The work of Pickernell, Miller and Thomas has been primarily focused on grant capture and staff development and they are working closely to continue to develop a comprehensive and high quality publication agenda to which new (and experienced) staff researchers contribute whilst working with the three research leaders to build their research capabilities so that a much stronger return will be achieved in future research excellence exercises.</p>
<p>b. Research strategy</p> <p>The Unit has focussed upon developing a small number of high impact research clusters that operate within a single research centre called the Centre for Enterprise (C4E). The research clusters are faithful to the University's Strategic Plan 2009-2014 and are committed to driving up the amount of internationally acclaimed research across a small number of strategically focused areas, and being an accessible, flexible, responsive and valuable partner for multi-disciplinary and collaborative research and development. The research clusters are as follows:</p> <ol style="list-style-type: none"> 1. Enterprise and Social Innovation (led by Pickernell and Miller) 2. Operations, Supply Chain and Procurement (led by Thomas) 3. Innovation, futures and economic development (led by Pickernell, Miller and Thomas) <p>Each research cluster draws in a number of research active staff mainly from within the Unit and the research leaders continue to work with their research active staff to build both the quality and volume of high impact research. Due to the restructuring of the Business School in 2013, a number of key research staff have now left the institution; this has made the 2014 REF submission much lighter by way of staff numbers submitted than it would otherwise have been. However, the research leaders are very confident that the work currently being undertaken within the cluster areas is bearing significant results; future REF submissions will be much more comprehensive showing a significantly increased number of staff with high quality research publications as well as high impact case studies.</p> <p>The specific strengths of each of the research cluster leaders are as follows:</p> <p>Professor David Pickernell is a Professor of Economic Policy development and has held this position since 2009. His publication record has a strong international reach in the area of economic policy development and a strong applied research/consultancy profile. His main research areas are: Foreign Direct Investment and Local-Global interactions, Economic Integration, Clusters and Networks, Regional Economic Development Policy, Construction, Universities and economic development, innovation, festivals and events in social enterprise and capital building, socio-economic effects of gambling, Enterprise and Entrepreneurship.</p> <p>Professor Andrew Thomas is a Professor of International Operations and Supply Chain Management and has held this position since 2012. He has a strong publication record, with over</p>

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150 research articles and key note speeches and a strong representation in journals of international standing, and has managed and led a number of EU FP7 and EPSRC programmes. His main research areas are: Production Management, Operations Management, Maintenance Management, Supply Chain Systems, Economic Development, Strategic Supply Chain Management, Statistics and Operational Research, Six Sigma.

Dr Christopher Miller has been a principal Lecturer in Business Development and Growth since 2006. He has published widely at national and international levels in the areas of Entrepreneurship, Small Business Development and Growth, technology transfer, Small Business Management in the Construction Industry, Enterprise Education, and SME Innovation

The research leaders have bought in fully to the University's research strategic plan for 2009-2013; the clusters they lead focus on the following strategic priorities in relation to research, innovation and knowledge transfer:

- The enhancement of the Unit's research base by driving forward innovation and business engagement, and developing a broad and vibrant range of nationally significant, near-market research in the areas of enterprise, innovation, social policy and supply chain theory and practise that is of both national and international significance and impact.
- Increased research grant capture via engagement in national/international collaborative research activities such as ESRC, ERDF and ESF programmes (listed later).
- Enrichment of the curriculum through the development of research, innovation and enterprise excellence brought about by KTPs, SIPs and other industry engagement programmes (listed later).
- Recognition as a valued knowledge transfer partner for multidisciplinary and collaborative activities that contribute to our innovation driven economy.
- Recognition as a valued partner for professional, higher level training and consultancy.

Research within the Unit has been largely informed by the University's research plan with the research leaders adjusting the focus of their research since RAE2008. At RAE2008 research was focused within the following broad areas:

- Regional Economic and Business Development: Encompassing regional economic development, enterprise and small business management, and business process improvement (including purchasing, marketing and accounting)
- Organisational Learning and Development: Including organisational learning, group decision processes, human resource development and individual learning

However, in advancing the University's distinctiveness agenda, the research leaders (**Pickernell, Miller and Thomas**) have now refined their research to focus upon enterprise, social innovation and supply chain. C4E therefore concentrates upon developing individuals, institutions, communities and governments with a dynamic, robust and wide-ranging knowledge base for shaping and participating in enterprise and economic development policy and practice. As such its work builds on the work of the Welsh Enterprise Institute (highlighted in RAE 2001 and RAE 2008) but also widens the scope of this to include overlapping areas, for example, Brands, Markets and Networks and Operations and Supply Chain Management.

The approach, therefore, has been to consolidate resources and provide a clear focus on the key strengths of the research leaders. The University has shown strategic leadership and has supported research activity by appointing four Chairs, in Economic Development Policy (**Pickernell**), Entrepreneurship (Packham to 2012) Marketing (Doherty to 2013), and International Operations and Supply Chain Management (**Thomas**).

Centre for Enterprise (C4E) (led jointly by **Pickernell, Miller** and latterly, **Thomas**) has developed a number of key initiatives. These are:

- The Women's Entrepreneurship Hub (WEH) (**led by Pickernell**) undertakes research to help improve the challenges faced by both aspiring and existing women entrepreneurs in the modern business world. WEH engages in collaborative activities across other fields and institutions and can therefore offer a multidisciplinary approach to its innovative research. Its success has won it the Erasmus-WEEU project (£340k) (<http://enterprise.research.glam.ac.uk/women/projects/erasmus/>) that involves the research, design and development of innovative approaches to learning and associated support for aspiring and existing women entrepreneurs; the Label Paris Europe project (<http://enterprise.research.glam.ac.uk/women/projects/paris/>) (£5k) that links women entrepreneurs and business support organisations in Paris, Athens and Cardiff in order to

exchange experiences and good practice; and the Together We Win project (£8,500), designed to encourage more women inventors in Wales to take the plunge and develop their ideas into a winning business.

- In terms of the related concepts of social innovation, social capital, social enterprise and bricolage, C4E has also conducted a number of projects with colleagues in Australia (led by **Miller**) focused on the implementation of progressive social innovations in relation to the effects of gambling, homelessness policy, and the use of spare resources by state owned companies.
- The Centre's concentration on developing research activity around Supply Chain Operations and Procurement has been successful in obtaining over £1.8Million of funding over the last 18 months. Its focus is on developing innovative strategies and practical solutions that address business problems encountered by organisations in the management of the end-to-end supply chain. The work undertaken here and led by **Thomas** disseminates new knowledge, solutions, and strategies resulting from research and commercially related activity in the form of scholarly and practitioner oriented publications and presentations, teaching materials, and case studies. Members of the Operations and Supply Chain group have completed KTP projects in procurement with Gwalia Social Housing (£193k) and Cardiff Council (£105k), as well as a short KTP with Pullman Engineering (£4.5k). A recently completed KTP with Cardiff Council, funded by the ESRC, involves the development of the Cardiff Story, a city museum for the people of Cardiff (£106K). Procurement, supply chain management and logistics are growing areas of focus and staff led by **Thomas** have been successful in obtaining a 3 year enhanced KTP with EADS Cassidian where research is being undertaken into trusted and sustainable supply chains. This KTP is currently in its first year of operation.

The research leaders have played a key role in the development of their respective research areas. Some key points of note are in the areas of:

Enterprise and Economic Development

- Enterprising universities: pursued by **Pickernell**, Packham, Thomas, Jones and **Miller** (*International Journal of Entrepreneurship and Innovation, Industry and Higher Education, International Journal of Entrepreneurial Behaviour and Research*)
- Issues affecting firm growth: pursued by **Pickernell**, Packham, Jones and **Miller** (*International Journal of Entrepreneurial Behaviour and Research, Environment and Planning C*),
- Economic development focusing on clustering and innovation: pursued by **Pickernell** (*European Urban and Regional Studies, International Journal of Entrepreneurship and Small Business, Growth and Change*)

Enterprise and Education Research

- Enterprise education research: a core theme pursued by Jones, Packham, **Miller**, Thomas and **Pickernell** (*Education and Training, The International Journal of Management Education, Journal of Further and Higher Education*)

Operations and Supply Chain Management

- The focus on manufacturing operations management, specifically in the area of Lean Six Sigma: researched by **Thomas**, Byard and Chuke (*Journal of Manufacturing Technology Management*),
- Production layout design: pursued by John, Davies and **Thomas** (*International Journal of Production Research*)
- Simulation of stochastic processes in maintenance environments: researched by **Thomas**, John and Davies (*International Journal of Quality and Reliability Management*).
- Issues and challenges affecting the ability to UK manufacturing industry to compete at an international level: pursued by **Thomas**, Byard and Evans (*Journal of Manufacturing Technology Management*)

UoA Research Strategy 2014-2019

As the research leaders move their centre forward over the next five years, the focus will be on the continued strengthening of their areas of research excellence mentioned previously, to further enhance international distinctiveness in procurement, supply chain management and logistics which is a priority developmental area for both the School and University. The leaders also will

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develop significantly the areas of Futures and Innovation and will aim to advance futures policy and mirror its significant grant capture success in social innovation and apply it in the areas of Innovation and Futures with a publications agenda specifically targeting high ranking journal outputs.

With particular success seen in terms of KTP grant capture, the research leaders plan to build on this success, by stepping up the number of KTP programmes as well as focussing more on being successful in attaining high value research projects such as ESRC and EPSRC. Staff will target and lobby Faculty Management to recruit two new Chairs particularly in the cross-over areas between social innovation and futures and social innovation and company sustainability and performance. Further funding streams have been identified and are being actively pursued, supported by the University Research Office.

The research leaders will continue to forge new links with other Universities and Research Institutions across the UK and internationally. As far as existing links are concerned, **Thomas** and **Miller** currently work closely with Anglia Ruskin University on the development of a number of industry research collaboration programmes and are writing a series of Interreg funding programmes. **Pickernell** continues to develop and strengthen collaborative programmes between Cardiff, Cardiff Metropolitan and Aberystwyth Universities through his Welsh Enterprise Research Unit work and is currently Visiting Professor at the Queensland University of Technology and Plymouth Business School. **Thomas** is an integral member of the Advanced Sustainable Manufacturing Technologies (ASTUTE) project, a pan-Wales ERDF funded project that includes all the Welsh Universities and is a Visiting Researcher at Cardiff University and the University of Sunderland. The aim for the next five years is to significantly increase the number of research collaborations with other institutions in order to create a critical mass of research in the key areas of social innovation and supply chain management.

c. People, including:

i. Staffing strategy and staff development

The USW seeks to engage all academic staff at the University of South Wales in either research or scholarly activity which underpins their teaching. Through the formalised cross Faculty Research Mentoring Programme and subject based 'writing groups', targeting early career researchers is in particular central to research strategy. The Research Activity Day (RAD), whereby staff members within the Faculty within which C19 sits are entitled to 20 RADs in any one academic year, provides secure research time, monitored via the appraisal process. A clear articulation of research expectations and measurements is achieved for all staff through the staff appraisal scheme with particular emphasis on guidance for new and inexperienced researchers. Staff achievements and research activity is clearly disseminated and reviewed at the School and subject level.

Due to the school restructuring and the associated depletion of the research base, it is now a major priority for the Unit to enhance and develop the staff that remain; mentoring and appraisal of its current staff will be key to future staff development and career progression. *Thomas S, Stephens P, White G, Murphy, L and Parkes, E* are all staff who obtained their PhDs in 2012-2013, and staff currently completing their PhD programmes will continue to benefit from the strong supporting and mentoring programme. The Centre continues to publish its Working Paper Series Journal (ISSN: 2050-4179) as a means of providing a non-threatening and supportive peer reviewed publication outlet. This Journal is currently in its second volume and is published quarterly and receives a very good response from staff wishing to publish and test ideas before going through formal publication routes. The Unit has developed a fair and equitable research staff development programme that actively encourages staff to attend conferences, giving ECRs priority for funding. Personal development plans aimed at ensuring that staff attain at least four research excellent research outputs (3* or above) within the next 5 years have been put in place. As a means of increasing the level of research leadership in the school, a strategic decision has been made to transfer staff (holding Professorial titles but who have previously held senior management roles) back into the Faculty to focus on research and to lead research teams.

ii. Research students

The Centre has a vibrant doctoral community of approximately 100 students, which includes part-time and full-time MPhil/PhD students (57) and a strong professional doctorate (DBA) community (50) with significant links to Public Service Management Wales through the sponsoring of senior public service professionals. The Unit has been successful in developing a steady stream of PhD and DBA completions over the last 5 years. Table 1 shows the doctoral completion rates for C19.

Table 1

2008- 2009	PhD: 6	DBA:1
2009 -2010	PhD: 10	DBA:1
2010-2011	PhD: 7	DBA:1
2011-2012	PhD: 6	DBA:4
2012-2013	PhD: 3	DBA:0

The University Research Office provides high quality University-wide support for both research staff and students on funding opportunities, developing bids, skills development and ethics and governance. During the assessment period student research administration throughout the University was centralised and a Graduate Research Centre (GRC) launched with the aims of helping to foster a sense of community amongst the postgraduate researchers by providing them with a social learning space and to encourage multi-disciplinarity by providing a space outside of the Faculty structure. A further recent development is the launch of a new 60-credit research module leading to a Postgraduate Certificate in Research, which provides PhD students with a sound framework for developing their research. The establishment of the GRC provides support for Vitae's Concordat to Support the Career Development of Researchers and responds to the Joint Skills Statement on Training Requirements for Postgraduate Researchers and Researcher Development Framework. For example, as well as providing internal development opportunities for researchers, the University works closely with a network of other HEIs in our Vitae region to provide researchers with access to further opportunities to develop their skills. The Effective Researcher, Grad Schools and Leadership In Action are good examples of collaborative provision. As well as honing skills, these events help researchers form networks outside of their own HEIs. The Unit is represented on the GRC Advisory Board by the Unit Leader.

Submitted staff are significantly involved in the supervision of PhD and DBA students achieving 39 doctoral completions in the period since 2008 to present. PhD completions peaked in 2009/10 with 10 completions but fell in 2012/13; however, the Unit is taking swift action and has initiated a new recruitment drive, targeting significant growth in the recruitment of a number of doctoral students over the next five years. In 2013 alone, the centre has increased the recruitment of doctoral students by over 25% and aims to drive forward this number up to close to its supervisory capacity by 2019.

At the heart of the research supervision process is the need to provide effective support to the student. The Unit has responded to this by providing a PhD room for students to meet and discuss their programmes of work. The establishment of the Postgraduate Centre has significantly enhanced the facilities for the students and provides access to meeting rooms, networked computer systems and a host of communication systems to enable them to conduct their research in a convivial and supportive environment. Research and postgraduate students are offered the opportunity to join undergrad and masters modules in order to enhance their subject specific knowledge and are encouraged to attend all Professorial, professional body and Visiting lecturer events. The Unit also holds an emerging themes research conference on an annual basis. This event is focussed on the research student and draws in key note speakers from around the UK to deliver lectures and research workshops to assist the students. The working paper Journal is also open for students to submit their work and this offer is taken up on a regular basis with the editor giving special priority to student paper submissions. All those due to submit their doctoral thesis for examination are given a detailed preparation plan that includes a mock viva, independent analysis of the thesis prior to submission and where necessary, an additional mock viva just before the actual viva examination.

At a wider level, the USW library is well equipped with a significant number of leading business texts in hard and e-copy versions, e.g. the Emerald Journal repository, available to all students.

d. Income, infrastructure and facilities

In this assessment period to date over £4 million in research funding has been secured. Some of the key projects involving the research leaders include:

- Erasmus-WEEU (Packham, and **Pickernell** £340k); Carmarthenshire County Council, Bwcabus projects 1 and 2 (£84k and £306k respectively, Brands, Markets and Networks); European Union INTERREG Atlantic Area Funding (£240k, **Pickernell**)
- Welsh Government: KTP with Gwalia Housing on procurement (£193k, Brands, Markets and Networks); KTP with Cardiff Council on procurement (£105k, Brands, Markets and Networks - **Thomas**); A4B, Business Angels Pilot and Project (£100k, **Pickernell**,

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Packham,); Dynamo FE/HE Entrepreneurship Education (£30k, Packham); Energy Academy project (£17k, Packham); corporate social responsibility study (£17,424); Dynamo FE/HE Entrepreneurship Education, Level 3 (£4k, Packham); rail concessionary travel pilot evaluation (£5,200, Brands, Markets and Networks)

- Federation of Small Businesses, bi-annual survey (£183k, **Miller**, Packham, **Pickernell**, Thomas)
- Value Wales, barriers to procurement project (£37k, Brands, Markets and Networks, Ringwald)
- Victorian Government, input outputs effects of gambling (£6,500, **Pickernell**, **Miller**)
- Australian Government, to create airport input output model (£6,200, **Pickernell**)
- BMAF, a critical and analytical study of KTPs in teaching business and management students (£3,500, Brands, Markets and Networks)
- Queensland Government, homelessness project (£3,500k **Pickernell**)
- OECD, analysis of Welsh economic development policy and benchmarking potentially relevant policies from around the world (£3,213k, **Pickernell**)
- TSD KTP Cassidian Cyber – Trusted Supply Chains (£220k, **Thomas**)
- ERDF Advanced Sustainable Manufacturing Technologies (Astute) (£495K, Deacon, Rowlands and **Thomas**) (Part of £36M ERDF Research programme with Swansea University).
- ESF Innovative Supply Chain Aerospace Programme (InSCAPE) £1.3 Million (**Thomas**).

In terms of research infrastructure, the Deputy Vice Chancellor (Research and Student Experience) works with the Central Research Office, which provides core support on all research-related matters, including proactive support with grant applications, the organisation of staff and student skills development and training seminars and research student administration. A recent development has been in the establishment of a number of Research Institutes. The Research Institute (RI) concept has been developed to provide a coherent framework for research development and to stimulate research activity in a collaborative and supportive environment. Membership of an institution is through application only and applications are assessed on an individual basis against a clear set of criteria. All members of the C19 UoA belong to the HUMSOC research institute. This Research Institute focuses upon the areas of the Humanities and Social Science.

Each Faculty has a Head of Research who has overarching responsibility for the strategic direction of research in their Faculty. The Heads of Research form an important conduit between researchers and those supporting research such as the Research Institute Director as well as the Deputy Vice Chancellor. The Central Research Office is also responsible for servicing four research-related committees including the Research and Scholarship Committee and Research Programmes Sub-Committee, and has led a number of new strategic initiatives dedicated to meeting the demands and expectations of both PGRs and research staff. The research strategy of the University has been further strengthened by the 'University Research Investment Scheme' (introduced in 2007) which offers approximately £400k pa through a number of schemes (modelled broadly on research council processes) relevant to the various needs of the research community. The research web portals, 'Funding Matters' blog and the publication 'Talent', all of which report on research developments, awards and achievements, have emphasised the University's research culture and facilitated global networking amongst the wider research community and key strategic stakeholders. Within C19 Quality-related Research (QR) funding provides targeted support for key staff and the RADs, secure research time.

An example of an effective use of QR funding can be seen when the Unit was funded to employ one Research Assistant for the period of 2013 – 2014 to support research publication development and bid writing. The employment of this RA (led by **Thomas**) has yielded significant outputs by way of 3 x conference papers, the preparation of 2 x Journal articles which are close to issuing to their respective editors for review, 2 x consultancy reports (from which further research work will emerge) and, the development of the foundations for a Horizon 2020 bid in sustainable procurement and supply chains.

e. Collaboration and contribution to the discipline or research base

The Centre for Enterprise can demonstrate a wide range of research collaborations with external stakeholders both generally and through its focused hubs. For example:

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- The Women's Entrepreneurship hub's WEEU project involves the research, design and development of innovative approaches to learning, new teaching methods and materials and associated support for aspiring and existing women entrepreneurs. It brings together partners from Higher Education Institutions, Chambers of Commerce and private enterprises from the United Kingdom, France and Lithuania. In addition, The Label Paris Europe project links women entrepreneurs and business support organisations working with them in Paris, Athens and Cardiff in order to exchange experiences and good practice.
- The Centre for Enterprise managed the Federation of Small Businesses 2008 survey working with colleagues from the Universities of Liverpool, Kingston and the University of Wales Institute Cardiff. The Centre has also recently completed an A4B project, working in conjunction with Venture Wales and a number of Business Angels, as well as Aberystwyth and Bangor Universities. This has been supported by the role the Centre's staff play in the Institute of Small Business and Entrepreneurship.
- Simultaneously, staff from the Centre have utilised long standing research links with colleagues from Australia (specifically Queensland University of Technology) to collaborate on work for the Victorian Government (Gambling) and Queensland Government (homelessness), as well as contributing to a large scale research project examining the development of airports (airport metropolis project, in conjunction with a colleague from Cardiff University). This has been built upon a long standing relationship with QUT and the adjunct professor status (renewed several times) of one of the co-directors of the centre (**Pickernell**).
- The Unit has also been successful in securing KTP funded projects with important stakeholders. Doherty secured ESRC funding of £105,000 for a knowledge transfer partnership with Cardiff Council to develop, brand and market the Cardiff Story, a museum for the people of Cardiff. Staff within Operations and Supply Chain also secured three procurement based KTP projects with Gwalia Housing (£193k C Lee), Cardiff Council (£78k S Parfitt) and EADS Casidian (£220K **Thomas**) and a large ESF funded Innovative Aerospace Supply Chain Programme – InSCAPE (£1.3 Million **Thomas**).

Regarding national and international academic collaborations including indicators of success, **Thomas** has ongoing research projects with colleagues at the Lord Ashcroft Business School at Anglia Ruskin University (collaborative research programme) and the University of Sunderland (Professional Doctorate Programme). He achieved two Highly Commended Awards from the Emerald Literati Network in 2008 and 2011 for papers in the *Journal of Quality in Maintenance Engineering* (2008) and the *Journal of Manufacturing Technology Management* (2011). **Pickernell** (with Clifton, UWIC and Senior, Cardiff University) won the Danish Academy of Business Research (DEA) Best Paper Award in 2009.

As contributors to journal editorship, to conferences and research based continuing professional development, **Pickernell**, **Miller** and **Thomas** can also boast significant success.. Packham and **Pickernell** co-edited (with Brooksbank, Cardiff Met University) a special edition of *International Journal of Entrepreneurship and Innovation* in 2010. **Thomas** was a member of the scientific committee of the International Conference on Lean Six Sigma in Higher Education conference, Strathclyde University in 2013 and also Track Chair for the 11th International Conference on Manufacturing Research, Cranfield University, September 2013. He has also been a member of the scientific committee for the International Conference on Lean Six Sigma since 2008. **Thomas** has also delivered 8 key note speeches at various events since 2008 including three Institution of Engineering and Technology – Manufacturing and Management Prestige Lectures and the remainder at a number of international conferences (with Pham D.T, University of Birmingham). **Pickernell** is a member of the Institute for Welsh Affairs and Thomas is a member of the Welsh Government's Welsh manufacturing Forum's Vision and Strategy Group and the Supply Chain Development group as well as Secretary of the Institution of Engineering and Technology's Management technical group. Both **Pickernell** and **Miller** were the main organisers of the highly successful Institute of Small Business and Entrepreneurship (ISBE) conference to be held in November 2013 at Cardiff. This is a highly prestigious international conference currently in its 36th year with an international attendance. An annual research seminar series also takes place under the auspices of USW Business School.