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Knowledge Transfer Partnership within the 'Creative Industry.' A case study of Clusta Ltd.

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Abstract

This paper describes the challenges, impediments and lessons learned of a leading Birmingham creative company working in conjunction with Birmingham City University, to deliver a successful combined Technology Strategy Board (TSB) and European Regional Development Fund (ERDF) Knowledge Transfer Partnership (KTP).

KTP is a UK-wide programme helping businesses improve their competitiveness, productivity and profitability through the better use of knowledge, technology and skills that reside within the UK Knowledge Base. This paper looks at how the placing of KTPs within the creative industry with its piece-meal gathering of expertise for the delivery of products and services to clients, particularly within the fast moving goods market (FMCG) is different to the vertical supply chains more likely found in engineering and manufacturing in UK industries. It will also look at this unique industry environment as a vital contributor to the gross value added (GVA).

It will describe these issues within the context of a case study of a KTP between Clusta Ltd, an interactive 'ideas' agency and Birmingham City University, to implement a systematic innovation procedure within the company.

It also explores the impact of the ERDF as a funding partner and contributor to the KTP programme within the context of the Clusta project. This also brings to the fore what innovation means for the creative industry and how organisations such as the National Endowment for Science, Technology and the Arts (NESTA) are responding to the innovation agenda for the industry.

***Keywords**: creative industry, corporate strategy, operation strategy, creative design innovation, supply chain management, university procurement, Technology Strategy Board, European Regional Development Fund*

1. Introduction

A KTP can often deliver significant increased profitability for business partners through improved quality and operations, increased sales and access to new markets. This is not assured but the Partnership Approval Group (PAG) who sign off funding for KTPs identify these possibilities in the KTP project plan, which is submitted for their consideration in the Grant Application and Proposal Form to the TSB. There are 19 organisations allied to the funding other than the TSB, of which

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only one identifies directly with the creative sector - that is the Arts and Humanities Research Council (AHRC). The process for identifying potentially successful KTPs tends to be clearer within the engineering and manufacturing industries, where programmes have a focus on developing one key product or service through the vertical supply chain and many exemplars of theses are on the TSB KTP website.

Why does discussing the supply chain matter here? It matters, because integrating creative industry offerings into the supply chain of a business presents a business two ways of innovating. It can help directly by developing new ways of selling that businesses product 'experience' and indirectly by increasing awareness of others' innovations by transmitting information along the supply chain. Empirical evidence from the NESTA working paper *UK Innovation Index: Productivity and Growth in UK Industries shows* the place of digital innovation in the research and development space: 'Regarding investment in knowledge/intangibles, we find (a) this is now 34% greater than tangible investment, in 2009, £124.2bn and £92.7bn respectively; (b) that scientific R&D is about 11% of total intangible investment, software 18%, design 12%...(d) the most intangible-intensive industry is manufacturing (intangible investment is 17% of value added)…manufacturing accounts for 47% of intangible capital deepening plus total factor productivity (TFP) (Abstract, Goodridge, P. et al 2012). The *Innovation Trade and Connectivity* for the Manchester Independent Economic Review appears to support this argument. It found that '…there may be large and immediate pay offs to Manchester City Region's (MCR) capacity to innovate if creative firms can be better integrated into supply chain networks in MCR…other things being equal, a firm that spends twice as much as the average firm does on creative inputs (as a proportion of its gross output) is 25% more likely to have introduced a new product innovation.' (p.6 Volterra and BOP Consulting 2009)

The Council of Supply Chain Management Professionals defines supply chains as: 1) starting with unprocessed raw materials and ending with the final customer using the finished goods, the supply chain links many companies together 2) the material and informational interchanges in the logistical process stretching from acquisition of raw materials to delivery of finished products to the end user. All vendors, service providers and customers are links in the supply chain. (CSCMP, 2013)

There is another way of looking at the supply chain. The Bridgefield Group suggests the extended supply chain for a given company may also include secondary vendors to their immediate vendors, and the customers of their immediate customers (Bridgefield Group, 2013). Delivering goods and services from within the creative sector takes on a different dynamic from the conventional supply chain. Innovations often spread along supply chains. Creative industries, due to the collaborative, people-centred nature of their businesses, are usually heavily networked and thus are well placed to act as transmission mechanisms for new ideas.

Supply chain management for the Clusta KTP was critical, because as a business Clusta shifted their commercial focus from a business model based on client briefs, to an innovative cyclical model (based on research, technological change, product development and market transitions, with internal feedback paths) co-created with clients. The Clusta focus through the success of the KTP is now one of solving industry challenges through projects:

- Understanding consumer behaviour in-store (e.g. Procter and Gamble)
- Understanding consumer behaviour out of store (e.g. Nokia and Oyster card)
- Understanding context behind numbers (e.g. Homebase and Tetley)
- Understanding content personalisation (e.g. Channel 4 and KatchOn)

This model of product co-creation is dependent on supply chain management (SCM). First introduced in a 1982 *Financial Times* piece about Keith Oliver, SCM is the process of '…planning, implementing, and controlling the operations of the supply chain with the purpose to satisfy customer requirements as efficiently as possible. Supply chain management spans all movement and storage of raw materials, work-in-process inventory, and finished goods from point-of-origin to point-of-consumption.' (Oliver, R.K., Webber, M.D., 1982)

This model is not created in a vacuum; it sits within the creative industry environment, which also has a considerable presence in Birmingham, where Clusta is based. This is important, as it is where much of the expertise that is available from local micro-businesses can be contracted in for client projects. This makes client offerings a bespoke experience and Clusta has embraced this approach. For this reason it is relevant to offer some contextual detail on the economic significance the creative industry has on the West Midland regional economy.

2. The Creative industry in Birmingham

The Creative Industries are defined by the Department for Culture, Media and Sport in the 2011 *Creative Industries Economic Estimates* report as *'…those industries which have their origin in individual creativity, skill and talent and which have a potential for wealth and job creation through the generation and exploitation of economic property.'* (p.6 DCMS, 2011). These domains include: the audio-visual; books and press; performance and visual arts and design:

> *'The increasing importance of design, advertising and branding for almost all products and services means that the creative industries are a key source of innovation for firms in other parts of the economy: NESTA has found a positive link between spending on creative services and product innovation, while other research has suggested that creative industries are important 'transmitters' of innovation along supply chains. Any innovation strategy needs to take these wider impacts of the creative industries into account'.* (p.5 BOP 2010)

In the city of Birmingham, the creative industries have become an important part of the city's economy in recent years:

- They account for around 20,000 jobs – 4% of the city's workforce
- The 3,450 creative businesses make up ten per cent of the city's total number of firms. Business numbers have grown by almost 20% since 2003.
- Employment growth within the size band is concentrated within two domains:

the largest, Audio-Visual, which has grown by 10% and the second-largest, Visual Arts & Design, which has seen jobs in micro firms grow by 40%

- Creative industries employ more people than either construction or the manufacture, sale and repair of cars, and similar numbers to the legal, accountancy and management consultancy professions combined

- In all, micro businesses account for 93% of all creative firms, and a third of creative jobs

The initial purpose of the Clusta KTP was to move the business into digital innovation, having already been highly successful as an advertising company for high profile brand companies. The quick win intended for the beginning of the project took the company into the fast moving consumer goods market (FMCG) and into contact with brands they had not worked with before. ClustaLabs was created as a brand within the company as a place for innovation creation for clients, from research through to product development. It came to operate as a 'lab' for live, self-initiated 1st level innovation projects.

When you take a lab environment and situate it in a creative KTP, where successful exploitation of new commercial ideas may be heavily dependent upon rapid prototyping and adaptability, flaws begin to show, presenting barriers that could prevent companies from reaching their potential and restricting future possibilities surrounding emerging technology.

For the Clusta KTP setting up a lab was contingent on equipment, particularly design hardware and software. The ERDF component of the KTP, as managed through the Department for Communities and Local Government (DCLG) is prescriptive on rules of expenditure for KTPs and may reject claims, which may limit the purchasing power for the project - even if the local management committee (LMC) which represent the project and which meets quarterly agrees the expenditure. You can understand this to a degree, as the original distribution point for ERDF expenditure is at a distance, and it has to be administered regionally and locally. This does not mean that the KTP is not suitable for the creative sector, merely that funding bodies need to be flexible to attract wider participants and make it easier for SMEs to collaborate and receive the resources they need in order to innovate.

3. Clusta and Birmingham City University

In 2010 Clusta began their Knowledge Transfer Partnership with Birmingham University. Clusta was established in 2002 with offices in Birmingham and London and it has expanded rapidly to 25 full time staff to become a leading edge, award winning company in digital media production.

However, by 2009 they were struggling to stay responsive to the latest technology in terms of the client offerings they could make and the flow of new user applications that would be of interest to their clients. Realising they could no longer rely on serendipity for their new concepts it was decided by their Managing Director, that a KTP was an appropriate solution to their resource challenges.

Early discussions with Birmingham City University were positive and useful and it seemed the possibility of working together in a KTP Partnership would be mutually beneficial. The KTP quickly had a project plan mapped and this included the input from three Faculties from across the University, to best support everything from project planning to product development.

To drive growth, Clusta looked to expand their business from working with FMCG brands into other sectors; including education, entertainment and construction. This could only be done by adopting a systematic innovation method that would help them create a sustainable environment for innovation, embedding the necessary competences in a physical lab that would launch astounding user applications and ideas into industry.

By bringing together Clusta's industry experience with Birmingham City University's research and development strength, knowledge was to be transferred in four ways:

- Learning and utilising systematic innovation methods, including TRIZ (Theory of Inventive Resolution of Problems)

- Developing a new product development process, including stage-gating

- Harnessing techniques for accelerated product development, including such principles as Smith and Reinertsen (Smith 2004)

- Implementing a knowledge management system, sharing knowledge, information and experience internally and externally with clients through mutual collaboration

At the heart of the KTP challenge is achieving outcomes and outputs for the project. In the case of the Clusta KTP this required the development of a hardware and software infrastructure and a commercial environment that ensured their content owners, creators and developers are adequately incentivised to continue to innovate. A KTP can help an SME take their business forward, increase competitive advantage, improve performance, modify business operations and drive profit.

The Associate quickly identified that in order to achieve sustained growth and develop rapid prototypes a shared understanding of innovation would have to be exchanged with the companies they were working with. This was a challenge on several levels, as typically SMEs don't have the economic resource, personnel or time to innovate as they would like and even larger companies can have very limited R&D resources. NESTA identified 7 wider conditions for innovation, including openness i.e. the conditions of a company's infrastructure (ICT) and social underpinnings (workplace hierarchies) and entrepreneurship i.e. how willing businesses are to take risks necessary to innovate (NESTA, 2009).

Working with these companies required Clusta to come to a mutual understanding of innovation in terms of invention and insight so products and services could be successfully brought to market. Even Clusta's largest clients were proving risk averse towards innovation, as unless Clusta could evidence their solutions would guarantee a return on investment, the companies were reticent to progress. Their clients weren't going to be convinced they were being offered true product innovation unless they could test physical prototypes within desired environments

for themselves. So, a logical solution for Clusta was to become an incubator for knowledge, a specialist in understanding technology, brands and consumer problems. As a result, brands would then turn to Clusta in order to orientate to the market place, discover how their problems could be resolved with technology and where they could go in order to achieve the competitor edge within their industry. This approach then formed the pitch to potential new clients.

Once this process and therefore the service available to clients was established, it became easier for Clusta to identify projects as a clear offering was now available for businesses to consider. Across the two years of the project, the Associate became actively involved in over 20 projects, including developing an in-store prototype for P&G, content solutions for Channel 4 and online data analytic services for Tetley. This has helped them gather the evidence needed to order to attract new clients and support innovation. They have moved away from 'blue-sky thinking', turning Clusta into a problem solving, service-centric company.

4. Evidence

> *'Technological improvements are often not enough on their own to secure improved market share anymore; businesses increasingly have to be concerned with the 'experience' that surrounds a good or service. Innovations in design, branding, marketing and communications and the management of creativity increasingly make the difference between successful and unsuccessful firms; the power of the brand can largely determine the value of the product. Such expertise is the province of the creative industries, and as such, they are the most likely source of innovation for a company outside its own employees.' (p.32 BOP 2010)*

The pace of development of technology presents the creative industry with unparalleled opportunities. Digitisation, increasing bandwidth and the global reach of the Internet has opened up new and much larger markets. Within a relatively short time, there has been an explosive growth of new ideas and major new companies operating with different business models. A typical creative company works in four stages to engage with clients: Objective, Brief, Create and then Deploy. To create a new cycle for innovation, Clusta modified this model so as to obtain on-going insight and learning from clients and therefore their consumers. This proved successful, developing products for such brands as Homebase, Max Factor and Nokia. One expects that more and more agencies will gradually adopt a similar model, so as to increase their new business and retention rates. As a result, the Technology Strategy Board needs to understand this model in more detail, so as to work alongside agencies successfully when implementing Knowledge Transfer Partnerships.

In order to effectively identify and prioritise challenges where the TSB could have the greatest impact, they categorised the 'Creative Industries' in 2007 based upon comparative analysis of two factors - the relative importance of technology to the innovation occurring in the sub-sector and the nature of the final output (increase in economic value). The result of this analysis has been re-categorise by output into three main groups:

- Services: Advertising, Architecture and Design (including Fashion)

- Content: Games, Film, TV, Radio, Publishing, Music and Performing Arts
- Artefacts: Fine Arts and Crafts

According to the TSB, the creative industries sector contributes an estimated 7.3% of GVA and has been growing at twice the rate of the overall economy. Clearly they appreciate creativity, but they need to realise that creativity is not the development of new technologies but applications; otherwise creativity is just engineering.

The creative industry is highly fragmented in nature, characterised by a large proportion of small and micro companies. The ability to respond quickly to emerging opportunities contributes to the success and dynamism of the sector. However, in a swiftly changing environment, it can be difficult for small or even medium sized companies to keep up to date with technology and market developments, evaluate the impact and develop their business to capitalise on opportunities. Across many of the content sectors including computer games, music, film and TV, the route to market is dominated by a small number of large players. In addition, the sector also includes significant public service bodies such as the BBC, Channel 4 and a wide variety of publicly funded arts organisations.

5. Results

The Clusta KTP ran for two years and concluded in January 2013. The company had initially come to the KTP as a means of solving their resource challenge in moving toward the fresh commercial objective of becoming a marketing agency that could flex to the needs of the FMCG market. ClustaLabs has moved the business on from delivering a typical agency process, defined as: brief, create, response, deploy - to an innovative cyclical model, co-created with clients: objective, hypothesis, create, deploy, data, insight.

The company partner is beginning to identify the financial impact of the KTP and has estimated a 20% rise in business potential. What is clear is the business has profited from the KTP by establishing an in-house company ‘ClustaLabs’ and introducing middle management to support the objectives of ClustaLabs as an interactive ideas and knowledge lab.

The aims of the partnership remained consistent during the course of the project. The only really change was in an adjustment of Clusta’s expectations around short term turnover and profit generation as a result of their better understanding of the timescales involved in the development and pitch process for transformational new products.

Within two years, the Associate has developed for Clusta:

1 Internal business plan surrounding innovation; 1 Marketing strategy (service centric offering); 1 Innovation blog; □12 active projects; 40 research/potential projects and 1 project with the potential to evolve into a three-year relationship worth close to £950k if agreed.

The Mission intention for ClustaLabs beyond the KTP:

- 1 in 3 hit rate with prospective clients becoming actual clients
- Making money
- Incremental process

The objectives of the KTP have been realised and a solid project has been completed. Innovation, including IP, is now embedded in the business and much of this is thanks to the efforts of the Associate delivering results through client management for the KTP. From the beginning the Associate was pivotal to the success of the KTP, managing his senior role within the company with confidence and enthusiasm and leading client pitches to win the company business.

The company has attracted large name clients, including: Procter & Gamble one of the world's top advertisers and this is directly due to the KTP. Main projects include: Max Factor, Nokia, Homebase, KatchOn (IPA), Tetley Analytics, Channel 4 (4You) and Die Hard (see Figure 1).

Figure 1

Clusta is planning another KTP around data driven innovation. It will support clients in product lifecycle development and branding of products and services, informing consumer reception and market performance. The creation of ClustaLabs means Clusta is now able to support businesses in needs analyses, identifying requirements through developing product propositions, prototyping, pre-launch and user testing through to post-launch evolution. Directly because of the additional resource afforded by the KTP programme, additional management to support the KTP outcomes and outputs were brought into the company half way through the project. Clusta has come a long way from its place just two years ago as a digital advertising company.

The KTP has helped the Knowledge Base (KB) Partner develop new curricula in the areas of innovation and enterprise creation, which includes an understanding of the issues that creative SMEs face as they try to innovative in a crowded and competitive market. The KTP has supported the BCU School of Media achieve its ambition in supporting the region's creative economy through knowledge transfer projects, with the Associate ably supporting the academic aspects of the KTP. He held several seminars with BCU students and post-graduates and these have been captured as online learning resources, forming part of a module which can also be accessed by distance learning students. The KB academic lead and a Centre for Media and Cultural Research Reader in creative industries have interviewed the Associate, capturing his KTP experience and the interview will be used to profile the experience of a KTP Associate in a paper intended for future publication.

6. Discussion – Recommendations for increasing effectiveness

BCU has hosted ERDF/TSB KTPs, as have other West Midland Universities. The now defunct RDA Advantage West Midlands (AWM) welcomed the increase in KTPs as sign posted in documents such as ‘Innovation Nation’ (2008) and invested in a single pot and the ERDF Operational Programme 2007-13 with the intention of seeing KTPs in the West Midlands more than double. Regional universities continue to participate in KTPs with an ERDF funded component and have committed to KTP targets over the period of the Operational Programme. Participating in an ERDF part funded KTP is a very bureaucratic process (p.3 House of Commons Sept.2012) and because of this procurement of goods and services proved challenging for the Clusta project because of the bureaucracy. For example, procurement requirements include obtaining three quotes for items above £50 being purchased for the project. The procurement paperwork to make an ERDF claim (as the budget is received through claims) requires a justification form and a business case form and if the Department for Communities and Local Government (DCLG) who have taken over administration of the ERDF from the AWM decide it is not appropriate i.e. they are not convinced by the business case, the claim will be rejected and the University will lose the claim. Also any item for prospective purchase for the project over £5k is seen as capital expenditure for the company, which is not allowed by ERDF regulations. In the case of the Clusta project, it was decided by the LMC to buy smaller ticket price items such as laptops that could hook up to an LED TV rather than the Samsung Surface which would have showcased product developments.

Justifying the spend on Associate Development is also challenging as the project is required to identify the absolute need required for the training i.e. the project will be undermined if the Associate doesn’t take up specific training. As a result Clusta had to pay the difference in any training that would not be met by the ERDF

funding in the budget. This included leadership training that included influencing and presentation skills that the LMC agreed would be useful for business pitching but which would have been too generic for an ERDF claim.

The procurement process and what can be claimed through the ERDF partner on a KTP developing FMCG products or services could create a misalignment with outputs. In stipulating how ERDF money is regulated in each country and how claims are made, ERDF funders do understand that this can be challenging to national and local administrators. The nature of distributing funding as appropriately as possible across the median or average of the 27 participating bureaucracies and cultures when it comes to constructing the regulations, which are different from country to country. They do recognise however the Uk's involvement is attempting to simplify and improve systems and conditions of delivery of funding to final beneficiaries and they will be looking to improve where they can (p.3 House of Commons Sept.2012).

The Knowledge Base (KB) office administers the project and when the project requires rapid procurement, this may simply not be possible. Universities must adhere to their own procurement rules and this is unlikely to support the rapid purchase of equipment, as they need to raise requisition forms and purchase order numbers to acquire items through approved suppliers. Obviously a University has an obligation to procure the best value products and services they can through approved vendors but this isn't always at the best price available.

At a University level it is difficult to suggest how the in-house procurement process can be any different, when purchasing has to be done in this way. Each University has to ensure the product mix of suppliers is relevant and appropriate and reviewed regularly to ensure their approved suppliers are relatively competitive within the market and even monitor supply market trends. This does not address the time delay in taking receipt of goods once the University paperwork has been processed. During the Clusta project this could take up to two weeks – which is sometimes outside the timeframe a prototype in the FMCG market needs to be readied for demonstration. This is not something we could resolve within the lifetime of the project, mainly because this KTP was breaking new ground for the company in terms of process, i.e. working toward client briefs in a way they never had before.

This project showed us that communication between all KTP partners has to be open and rapid and not reserved for the KB supervisor's weekly visit or the quarterly LMC. As soon as a client brief comes into the company they need to initiate the procurement process with the University immediately. Some projects across partners use web based project management collaboration tools such as Basecamp which tracks activities, milestones and deadlines and keeps all the partners in close contact. This does not place the University at the beck and call of the company partner but it does mean that partner expectations can be managed.

The value added of the creative industry toward the national and West Midland regional GVA has already been identified and the industry can offer potentially intriguing solutions by working together to support the supply chain management for clients in the FMCG market. The TSB is responding to creative KTP grant applications by funding them, so has an appreciation of the particular environments and ways of working of the creative sector.

Frank Boyd was appointed Director of the Creative Knowledge Transfer Network (KTN) in 2012. In March 2012 he gave a talk at BCU's School of Digital Media and Technology in the Faculty of Technology, Engineering and Environment: 'Convergence: How will multi-channel media work in the future?' He himself has an interest in linking (in his own language) the 'tribes' in the cultural/creative industries: 'luvvies' (pure art form creatives with the ideas) 'geeks' (technology experts) and 'barrow boys' (finances). In terms of markets, Frank also referred to vertical and horizontal markets. The vertical markets denote traditional supply chain activity but the horizontal market is where design is a natural and fundamental part of R&D and people like David Bott (Director of Innovation Platforms in the TSB) for example, understand games in healthcare settings.

The Creative Industry KTN has set up a design special interest group to support UK business innovation by building a community of designers and technology innovators to better encourage the use of design earlier in the R&D process. This is one way of bringing to the fore the creative industries R&D value chain and not just routes to market for products and services. Another way of underscoring the indispensable place of the creative industry in the economy is by reporting case study activity through the KTN fora and other channels. Academic partners and their cultural industry links hold these, so they must use them as exemplars and leverage to show their contribution to the UK's GVA.

The creative industry needs to be making full use of the funds being made available through TSB competitions and funding streams. For example the TSB invested £1.8m in feasibility projects in 2012 to evidence convergence in the digital landscape. Challenge 2 focused on projects that will lead to true cross-platform origination of content, the collaborative generation of ideas, and new business models for content based on cross-media formats and consumption.

7. Conclusions

In terms of deliverables and meeting the objectives of the KTP for Clusta, Birmingham City University and the Associate the project was successful. The successful completion of the project was dependent on several things: a strong project plan with clearly identifiable outputs and outcomes but also the willingness of the company to allow the KTP to embed and not require it to yield immediate revenue in the first few weeks and months.

Clusta supported the Associate in developing client leads before pitching their evolving offering, which formalised their in-house enterprise 'ClustaLabs'. They professionalised their client offering in product design innovation and they are now planning another KTP, showing the confidence and satisfaction the company has experienced with the completion of this KTP.

Quite some time has been spent here discussing the procurement process and its impact on the KTP. This was because the KTP revolved around product design, meaning the equipment purchased to support the project was important in both sharing and showcasing developments with clients. This is not unique to the creative industry, but staying responsive to the purchasing needs of the company partner is an important aspect of KTP engagement. The procurement hurdles that were identified here may not have immediate solutions but effective communication management will at least ensure the company partner knows purchasing is being managed as efficiently as possible if not as quickly as it could be achieved by themselves.

The nature of this KTP was dependent on design innovation, so through the on-going collaborations between Universities and the creative industry and the efforts of the creative industries KTN and Design Special Interest Group continuing to promote such projects, the TSB will add to its exemplar catalogue of KTP products and services that mark out the creative industries. These will also serve to exemplify value chains embedded in networks of relationships and not just traditional vertical supply chains familiar to engineering and manufacturing. The TSB is certainly acknowledging the significance of the creative sector with a growth champion in place for the creative industries KTN, so it must continue to ensure their channels and champions remain available and receptive to the creative industry and its ongoing valuable contribution to the UK economy.

Certainly Universities have a role in promoting TSB funding opportunities to regional businesses, as this creates openings to work with them. The creative industry in the Birmingham is thriving, with 93% of its creative industry made up of micro-businesses (10 employees or less), for whom funding could be a considerable boost. It can only be hoped that these businesses take advantage of the TSB competitions and calls to show the need to fund their innovation projects, and place them at the heart of development in the design of future projects.

8. References

Bridgefield Group. (2013) *Bridgefield Group ERP/Supply Chain Glossary*. [Online] Available at: http://bridgefieldgroup.com/bridgefieldgroup/glos8.htm#S [Accessed January 1, 2013]

BOP Consulting. [Online] Available at: *Why the Creative Industries Matter to Birmingham: An Analysis of the City's Creative Economy, Final Report January 2010*
http://birminghamculture.org/files/Untitled-Folder/FINALBirminghamCreativeeconomy.pdf [Accessed January 1, 2013]

Council of Supply Chain Management Professionals (CSCMP). [Online] Available at: http://cscmp.org/resources-research/glossary-terms [Accessed 2 January 2013]

Department for Culture, Media and Sport [Online] *Creative Industries Economic Estimates – Full Statistical release December 2011* Available at:
http://www.culture.gov.uk/images/research/Creative-Industries-Economic-Estimates-Report-2011-update.pdf
[Accessed 2 January 2013]

Department for Innovation Universities and Skills [Online] *Innovation Nation – release March 2008* Available at: http://www.bis.gov.uk/assets/BISCore/corporate/MigratedD/ec_group/18-08-C_b.pdf [Accessed 7March 2013]

Goodridge, P. et al (2012) *UK Innovation Index: Productivity and Growth in UK Industries* [Online] NESTA Working Paper No.12/09Available at: http://www.nesta.org.uk/library/documents/WP12.09InnovationIndex.pdf [Accessed 5 January 2013]

House of Commons Communities and Local Government Committee [Online] *European Regional Development Fund Second Report of Session 2012-13 Vol. 1: Report, Together with Formal Minutes, Oral and Written Evidence – release September 2012* Available at: http://bit.ly/WNIlrC [Accessed 5 January 2013]

Miles, N. et al (2009) *The wider conditions for innovation in the UK* [Online] NESTA Index Report Available at: http://www.nesta.org.uk/library/documents/wider-conditions.pdf [Accessed 13 March 2013]

Oliver, R.K., Webber, M.D., (1982) *Supply-chain management: logistics catches up with strategy outlook*, Booz, Allen and Hamilton Inc. Reprinted 1992, in Logistics: The Strategic Issues, ed. M Christopher, Chapman Hall, London, pp. 63-75

Smith Preston, G., originally published in PDMA handbook, second edition, Kenneth B. Kahn, Editor 2004, *Accelerated Product Development: Techniques and Traps* by John Wiley and Sons. Available at: http://www.newproductdynamics.com/Publications/PDMA%20Hdbk%20Accel%20Dev.pdf [Accessed 2 January 2013]

Volterra Consulting and BOP Consulting (2009) [Online] *Innovation, Trade and Connectivity,* Manchester Independent Economic Review, Manchester. Available at: www.**manchester-review**.org.uk/download/?id=666 [Accessed 5 January 2013]