A summary of research into Knowledge Exchange and Enterprise Network (KEEN) projects

A summary report on research into KEEN projects funded by the European Regional Development Fund and managed by the University of Wolverhampton

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1.1 Introduction

This summary report gives an overview of the evaluation of the KEEN programme. The detailed research information can be found in the separate reports detailed below. There is also an executive summary of key findings and recommendations which should be read in conjunction with this report and the specific details from the separate reports.

The evaluation was made up of the following reports:

- Executive summary
- Summary report (this document)
- Project characteristics report
- Literature review
- Methodology
- Typology of interventions
- Report on the survey
- Case studies and analysis

The Knowledge Exchange & Enterprise Network (KEEN) was set up with support from the European Regional Development Fund (ERDF) to encourage innovation amongst West Midlands based small to medium sized enterprises (SMEs) in order to increase profitability and growth through working with a regional university. By working with a university on a collaboration project, the business will gain:

- A graduate (known as an affiliate) working full-time on a bespoke project within the business
- Continuing support from a nominated university liaison officer
- Ongoing mentoring and support from university academics for the affiliate
- Access to the university’s extensive resources, including facilities and expertise
- Access to an equipment and travel budget (worth on average £4,000 (€5,040).
KEEN offered a way forward to companies who wanted to advance and innovate, but found it challenging to do so through their limited amount of resources and knowledge. This was made possible through the transfer of knowledge into the business by the employment of a graduate (known as an affiliate) who was recruited to work full-time for the company on a project developed and planned for the business in association with the university. The affiliate was tasked with the objective of transferring new knowledge into the SME.

The KEEN programme was led by the University of Wolverhampton in conjunction with five other universities: Aston University, Birmingham City University, Coventry University, Staffordshire University, and the University of Worcester. Companies benefitted from part funding from the ERDF, which allowed them to recruit talented graduates and to access cutting edge university knowledge throughout the duration of the project. The topics of KEEN projects ranged from furniture design through to web development to environmental sciences and engineering. Each one was bespoke, built around particular business requirements tailored directly towards the SMEs that proliferate within the West Midlands region. The programme was supported by funds from the ERDF from September 2012 to November 2015.
1.2 Evaluation Aims

The evaluation focused on the process of knowledge transfer, which was considered critical to the achievement of the objectives of the intervention. The research endeavoured to identify the new knowledge and an understanding of the methods, interactions, and operational procedures which underpin the selection, translation, and transformation of new knowledge into tangible, measurable benefits for organisations and relevant stakeholders.

Therefore, the key aim has been understanding the process of knowledge transfer (KT) and its component elements across the portfolio of 126 projects and how these processes may have impacted on the success or otherwise of the intervention with consideration of the key project variables investigated. The evaluation has also examined closely the mechanisms of KT between company representatives, affiliates, and academic partners in different contexts with a view to universities improving their service internally. Furthermore, it has looked at the motivations and influential factors that govern KT interventions expressed by individual participants.

2.1 Literature Review

A literature review examined and analysed the process of university/business knowledge transfer. It considered the relationship of the process to SMEs and the economic geography of the locality and has afforded a clear context for the programme. It has also identified a framework for the observation, analysis and measurement of knowledge transfer within companies.

2.1.1 West Midlands SMEs

The SMEs in the West Midlands have slowly begun to recover from the global financial crash of 2009, but the region remained fifth out of nine regions in the United Kingdom for business growth and for innovation in business from 2011 to 2013 (Willets, 2014). The KEEN programme with its emphasis on supporting SMEs has been designed to aid innovation and future growth. At the time of writing this report (June, 2015), there were 126 KEEN projects which had been undertaken by the six participating universities as shown in Figure 1.
The wide range of industries in the West Midlands area is reflected in the range of businesses that participated in the KEEN programme. KEEN supported the project companies with expertise and advice. It offered business support in the areas of new product or service development, business process reengineering, performance improvements, technology, technical or premises related problem solving, and marketing interventions with assistance to help increase business market share.
2.1.2 Knowledge Transfer

Knowledge transfer can be described as a change process involving the movement of knowledge or skills from a source to a recipient. In the KEEN programme, this move is from a university to an SME. Financial constraints with business, especially of the SME size, have been reported as a hindrance to partnerships with universities in the undertaking of shared research and development (R&D) and innovation activities (D’Este and Lammarino, 2010; Lee, 1996). In the KEEN programme, the public funding support provided by the ERDF has mitigated the effect of this issue. Both knowledge management and knowledge transfer are a means of creating a culture of information sharing, which promotes partnerships, collaboration, and information exchange, to enable a business to operate more efficiently, to maximise resource use and engage in innovation (Liyanage et al., 2009).

2.1.3 A Knowledge Transfer Model

After reviewing a number of models, Szulanski’s (1996, 2000) four-stage model of knowledge transfer offered the framework for the evaluation within which the success and characteristics of knowledge transfer in the KEEN programme could be evaluated. Szulanski (1996) suggests that, "...best practice transfer should be regarded primarily as a process, rather than a transaction or event. Best practice transfer thus unfolds over four stages through which organisational routines are replicated. **Initiation** is defined as comprising "all events that lead to the decision to transfer"; **Implementation** "...begins with the decision to proceed"; **Ramp-up** "...starts when the recipient starts using transferred knowledge"; and **Integration** "...begins after the recipient achieves satisfactory results with the transferred knowledge."

Other researchers confirm this, e.g. Salter et al. (2009) state, “This model is neither organisationally nor industrially specific. It is universal and thus can be applied to any industry, organisation, or situation where the transfer of knowledge takes place... The fact that it is a process will allow one to look at the transfer of tacit knowledge in detail. Each stage of the process has separate events and difficulties which affect the success of the transfer in various ways.” These difficulties were called stickiness. A schematic interpretation of the Szulanski (1996, 2000) model was used in the survey (Figure 3).

![Figure 3: Schematic Diagram of the Szulanski Model as interpreted by Research Team.](image-url)
On examining in detail the KT process in an SME, Lyons (2009) produced an alternative interpretation of the Szulanski model and helpfully added an explanation of key points of the stages in the process.

<table>
<thead>
<tr>
<th>Initiation</th>
<th>Implementation</th>
<th>Ramp-up</th>
<th>Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness of problem</td>
<td>Exchange of knowledge and information between source and recipient</td>
<td>Identification and rectification of problems in order to ensure successful application of knowledge transferred</td>
<td>Use of new knowledge as routine. Phasing out of old knowledge</td>
</tr>
<tr>
<td>Agreement on knowledge required</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 4: Stages in the Knowledge Transfer Process as modified by Lyons (2009)

2.1.4 Evaluation Objectives

Use of the model and the findings of Szulanski (1996, 2000) helped the research team to meet a number of key objectives. The evaluation:

- Identified the characteristics of effective knowledge transfer processes within the KEEN programme
- Determined how far individual projects have achieved the creation of new knowledge
- Recognised the key areas of stickiness (Szulanski, 1996,2000) in the knowledge transfer process and suggested how they might be overcome
- Explained how the absorptive capacity of the organisation may be a key limiting or facilitating factor in knowledge transfer
- Identified the key motivations and key benefits for taking part in the KEEN programme for all parties
- Determined how sustainable project outcomes have been, or are likely to be, in terms of knowledge transfer.

3.1 Evaluation procedures

This study utilised a mixed method approach which contained both quantitative and qualitative elements in order to investigate the specific issues related to the KEEN programme. Qualitative research was considered to be particularly useful to provide insights where there was no clearly developed theory (Birkinshaw et al., 2011). In addition, studies where there are multiple ‘actors’ (in this case the affiliate, academic and business) and environments, qualitative research has previously been applied as an effective methodology (Sinkovics et al., 2008). This research used project documents, a survey, interviews, and case studies in its methodology.
3.1.1 Typology of interventions

An understanding of the potential nature and type of business interventions in the West Midlands may help future KEEN projects to target specific industries. It may also help universities to consider more closely the likely range of interventions in future projects and possible range of expertise required to support them. The analysis to identify and group categories of interventions was carried out from company data.

3.1.2 Online Survey

The online survey was made up of questionnaires directed towards the affiliate, associate, company supervisor, and business development manager (BDM). Whilst there were some similarities in each of these surveys, the purpose of devising four sets of questions was to collect the key information relevant to the role of each of these individuals. The survey was issued to 299 KEEN participants in total from all of the six university partners and 213 returns were received (71% returned). This response rate is high for e-mailed questionnaires and has generated a large amount of data from a very wide range of projects for the research team to analyse. In the final question of the survey, individuals were asked if they would be willing to be interviewed and again positive responses were high.

3.1.3 Interviews

Interviewees were selected from a purposive sample of respondents to the online survey according to whether they indicated willingness to discuss their project in more detail. 108 respondents from 70 projects indicated they would be happy to discuss their project further. In order to generate richness and detail in the responses, interviews from projects where there were multiple respondents were sought. This created an initial shortlist of 32 projects which had two or more respondents willing to be interviewed. To reduce this list, the projects were ranked using several criteria like intervention type, project status, industry (SIC Code), company size (employee number), and partner university. From this list of 32 projects, an initial shortlist of 12 was selected. This represented around 10% of the total sample for the KEEN projects.

All interviews were of a semi-structured nature and followed an agreed interview protocol drawn up by the evaluation team. The interviewers followed the suggestion of Albright et al. (1998) that, 'The underlying assumption is that respondents experience the world in unique ways, and the object of the interview is not to standardize their experiences but rather to understand them.' The information from the interviewees formed the major input into the case studies.

3.1.4 Case Studies

Having gained interview material from 12 project companies, the research team elected to select six projects to become case studies. The case study projects were selected on the basis of those companies from which the interview provided the greatest depth and richness, alongside other variables (See Table 1) that had been used to complete the interview sample.
Table 1: Summary of the Five Variables Used in Selecting the Case Studies

The basis of the case studies was drawn from the dialogue of the interviews (with a minimum of two participants for each project). Four researchers were involved in conducting the case interviews. Each interview was recorded and transcribed and themes were identified. Each interview report was scrutinised by another member of the research team and themes were agreed. The findings were augmented by data from the online surveys and documents of partnership meetings. During the analysis of the case studies, it was found appropriate to devise a new model for the knowledge transfer process. In analysing the case studies, this model has been applied.

4.1 Findings of the Evaluation

4.1.1 Findings from the typology of interventions

The type and range of businesses interventions provided through the KEEN programme to SMEs in the West Midlands region has showed there were seven main areas of business interventions, as follows:

- Operations management
- Business process reengineering
- Product and service development
- Information technology
- Marketing interventions
- Professional support, expertise and advice
- Human capital management
These are represented in Figure 5.

Figure 5: The Typology of Interventions in the KEEN Project

The business interventions for each project were identified and showed that several of these were beyond the initial focus of the project. In total 617 interventions were provided to the companies through the 126 KEEN projects. The number of interventions per university is shown in Table 2.

<table>
<thead>
<tr>
<th>Business Area of Intervention</th>
<th>Cov</th>
<th>Wolv</th>
<th>Aston</th>
<th>BCU</th>
<th>Staff</th>
<th>Worcs</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operations Management</td>
<td>27</td>
<td>11</td>
<td>5</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>47</td>
<td>8%</td>
</tr>
<tr>
<td>Business Process Reengineering</td>
<td>44</td>
<td>18</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>72</td>
<td>12%</td>
</tr>
<tr>
<td>Product Development</td>
<td>112</td>
<td>73</td>
<td>0</td>
<td>9</td>
<td>0</td>
<td>2</td>
<td>196</td>
<td>32%</td>
</tr>
<tr>
<td>Human Capital Management</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>1%</td>
</tr>
<tr>
<td>Information Technology</td>
<td>28</td>
<td>10</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>41</td>
<td>7%</td>
</tr>
<tr>
<td>Marketing Interventions</td>
<td>63</td>
<td>106</td>
<td>5</td>
<td>21</td>
<td>3</td>
<td>1</td>
<td>199</td>
<td>32%</td>
</tr>
<tr>
<td>Professional Support Expertise and Advice</td>
<td>44</td>
<td>10</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>55</td>
<td>9%</td>
</tr>
<tr>
<td></td>
<td>322</td>
<td>231</td>
<td>14</td>
<td>42</td>
<td>4</td>
<td>4</td>
<td>617</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 2: Summary of Business Interventions by University

At the initial planning stage of a KEEN project, the BDM and the company often recognised that the project would require multiple types of business intervention. Our analysis showed that although every project had a main focus of intervention, typically several secondary interventions were needed on each project. An example of this is project 42A (see details in the Report 'A Typology of KEEN Interventions'). There were sixteen areas of business support provided to the company. These were analysed and classified into eight areas. While the primary focus of the project was computer aided design, the company also required assistance with research and development, computer aided design-computer
aided manufacturing (CAD/CAM), product development, business process reengineering, business process improvement, strategic marketing, and customer relationship management.

According to Webb (2014), “Business intervention methods target the area of weakness in the company in question....understanding how to implement appropriate business intervention strategies can help make the effort successful.” This is the raison d’etre of the KEEN programme. An understanding of the potential nature and type of interventions in the West Midlands may help future KEEN projects to target specific businesses or for universities to consider more closely the likely range of interventions in future projects and possible range of expertise required to support them. The intervention analysis illustrates that business intervention is more complex than it appears.

### 4.2 Findings from the Online Survey

The response to the survey was 71% and Table 3 shows an analysis of the survey respondents for each university.

<table>
<thead>
<tr>
<th>University</th>
<th>Projects</th>
<th>Total</th>
<th>Count, (%)</th>
<th>Count, (%)</th>
<th>Count, (%)</th>
<th>Count, (%)</th>
<th>Count, (%)</th>
<th>Count, (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aston</td>
<td>4, (3.2%)</td>
<td>9, (75.0%)</td>
<td>3, (75.0%)</td>
<td>1, (100%)</td>
<td>1, (33.3%)</td>
<td>4, (100%)</td>
<td>1, (100%)</td>
<td>1, (100%)</td>
</tr>
<tr>
<td>BCU</td>
<td>8, (6.3%)</td>
<td>11, (61.1%)</td>
<td>3, (60.0%)</td>
<td>2, (100%)</td>
<td>5, (83.3%)</td>
<td>1, (20.0%)</td>
<td>23, (60.5%)</td>
<td>23, (60.5%)</td>
</tr>
<tr>
<td>Coventry</td>
<td>68, (54.0%)</td>
<td>99, (69.2%)</td>
<td>35, (71.6%)</td>
<td>2, (66.7%)</td>
<td>39, (69.6%)</td>
<td>1, (100%)</td>
<td>28, (57.6%)</td>
<td>28, (57.6%)</td>
</tr>
<tr>
<td>Stafford</td>
<td>1, (0.8%)</td>
<td>4, (100%)</td>
<td>1, (100%)</td>
<td>1, (100%)</td>
<td>1, (100%)</td>
<td>1, (100%)</td>
<td>1, (100%)</td>
<td>1, (100%)</td>
</tr>
<tr>
<td>Wolverhampton</td>
<td>44, (34.9%)</td>
<td>87, (74.4%)</td>
<td>23, (57.5%)</td>
<td>8, (100%)</td>
<td>34, (75.6%)</td>
<td>22, (91.7%)</td>
<td>22, (91.7%)</td>
<td>22, (91.7%)</td>
</tr>
<tr>
<td>Worcester</td>
<td>1, (0.8%)</td>
<td>3, (60.0%)</td>
<td>1, (100%)</td>
<td>1, (100%)</td>
<td>1, (100%)</td>
<td>0, (0.0%)</td>
<td>0, (0.0%)</td>
<td>0, (0.0%)</td>
</tr>
<tr>
<td>Total</td>
<td>126, (100%)</td>
<td>213, (71.2%)</td>
<td>65, (67%)</td>
<td>15, (88.2%)</td>
<td>80, (71.4%)</td>
<td>80, (71.4%)</td>
<td>80, (71.4%)</td>
<td>80, (71.4%)</td>
</tr>
</tbody>
</table>

Table 3: Analysis of Survey Responses for Each University

#### 4.2.1 Summary of Survey Responses

The general consensus of the survey responses was that KEEN projects have brought new knowledge into the companies and this has helped close a knowledge gap. They had identified the knowledge gap as a reason for selecting a KEEN project along with the idea of employing a graduate to provide this new knowledge. The projects had also added to the companies' existing base of knowledge and their capacity to develop innovative new ideas leading to new areas of work. Survey responses showed that both affiliates and academics had acquired new skills. However, the most significant impacts were on the company and the affiliate.

#### 4.2.2 Business/University Collaboration

In seeking a KEEN project, 40% of the company respondents reported that they had previously engaged in business collaborations. Other companies were shown to have selected their university partner through a variety of different factors, with location cited as the most prominent reason. Additionally, respondents to the business development manager (BDM) and academic surveys also noted that they had played a role in establishing the KEEN programme with the company and assisted the companies in completing the KEEN application forms. 92% of the BDM respondents stated they had helped to prepare the initial work
plan for the affiliate. Academics and BDMs assisted in many cases with the recruitment of the affiliate and were key contacts at this stage of the KEEN project. A number of academics had significant roles at this point, for example that of introducing the companies to KEEN having had experience of collaboration previously.

### 4.2.3 Affiliates Responses

The affiliate's expectations were to gain new skills considered to be in line with the observation that the KEEN programme has appealed to new graduates looking to start out in first employment. Finding a graduate to match the project was problematic and time consuming in some cases. The affiliates, as well as looking for new skills, were shown to have brought a range of different skills to the project, and over the life of the projects, the skills match for the affiliate (and the academic) improved. Nearly half of the companies carried out steps to develop confidence in the partnership including training for the affiliate and sometimes other staff. In some instances, the lead academic was brought in to understand and resolve issues. An affiliate commented:

“Company is becoming more confident and supportive as they have seen the success of the scheme.”

### 4.2.4 Knowledge Transfer

Critically, the responses from the survey highlight that knowledge was often transferred through verbal means with only a limited use of documentation or other media. The respondents in three of the survey groups placed the sharing of knowledge through face-to-face communication as the most common way knowledge was shared across the respondents’ companies. In some cases presentation and seminars were also used by affiliates as a method of informing other employees in the company. Whilst this is to be expected in SMEs where there may be more informal lines of communication, this does raise questions about sustainability. There was limited use of user manuals or instructions which can help a company transfer the knowledge to other employees in the company and those who will join in the future.

### 4.2.5 Barriers to Knowledge Transfer

Some barriers to progress were highlighted such as resistance to change and insufficient time, which were two of the most frequently cited barriers by respondents. In some projects these issues were mitigated by greater employee involvement and training for those involved. Additionally, the affiliates and academics identified three main issues they faced in the projects: reliance on old methods, non-availability of equipment, and lack of appropriate training. The resilience of the affiliate and the ability that a company had to overcome these barriers directly impacted upon the capacity that it had to make best use of the knowledge acquired. There were some administrative concerns within KEEN highlighted by the BDM respondents. They had received reports of issues with late payments to companies which were critical for cash flow.

### 4.2.6 Benefits

A number of fundamental benefits including the generation of new ideas, putting these ideas into practice, and creating a future plan for these ideas were highlighted by respondents. An illustration of the new ideas from the affiliate survey may be seen in Figure 6.
Statements from the survey indicated that there have been a number of positive unforeseen outcomes that have led to innovations in business practices and new products which have arisen as a result of the KEEN project. Indeed, the general view across the respondents was that the KEEN programme provided a range of benefits and helped to enhance the skills of the affiliates and the productive capacity of the companies who might not otherwise have: a) employed a graduate, or b) innovated new products, markets and processes. Most of the responses also cited that the capacity of the firm to use knowledge had increased as a result of the KEEN programme. Among the comments from the company respondents were:

“We have been able to expand the project to look at new strategic areas.”

“Winning major contract.”

4.2.7 Company and Affiliate Views

When answering questions about benefits from the survey, the company contacts stated that 85% of the projects were meeting or exceeding the objectives which were stated at the start of the project. 94% of the affiliate responses stated that they had gained new knowledge and skills by participating in KEEN. The nature of the skills or knowledge gained as a result of KEEN was highlighted in the free text responses. These skills were mostly either specific to the job (i.e. relating to a particular piece of software) or more general skills. Among the responses from the affiliates were:

“Project management skills, new technical skills.”

“Analytical skills, critical thinking, new technologies, use of energy software.”

“How to plan projects and manage outcomes, presentation skills, social media skills, and planning skills.”
4.2.8 University Views

For the university, some of the academics noted that new skills were gained through their involvement in the KEEN programme. Likewise, some academics also said that the experiences in the KEEN programme could be used to benefit teaching and that research opportunities arose. These were perhaps limited because of the lack of knowledge transfer opportunities within the university amongst staff. However, as affiliates rated the research opportunities more highly than academics, this suggests that further research (possibly practically based) could be taken out as a result of the KEEN programme.

One of the most satisfying responses is the recommendation to others where:

- 93% of companies would recommend university/business collaboration to other firms
- 91% of academics would recommend university/business collaboration to other academics
- 97% of affiliates (graduates) would recommend this type of project to other graduates.

In answer to the final survey question regarding any other comments, the following positive comments were noted from company respondents:

“This has been an excellent project and allows SMEs to work with universities whilst having an affiliate based within the company.”

“The KEEN programme offers an excellent opportunity to nurture academic talent and build collaborative ventures with the university, which hopefully will help shape some of its future focus.”

4.3 Findings from the Case Studies

The findings from the six case studies are organised from the perspective of the participants.

4.3.1 Company Perspective

In most cases, the management teams were of the opinion that competitive advantage had increased. This was achieved in various ways according to the nature of the project, but included rebranding, new products, new manufacturing methods, new or enhanced IT/communication systems, training, reduced costs, and diversification. A number of the companies suggested that they had underestimated the time required for project completion; others referred to unexpected teething problems which extended the period before the project was truly up and running.

4.3.2 University Perspective

For the universities, of most importance is the enhancement of reputation as a leading supplier of knowledge transfer. For the academic, the project brings increased job satisfaction both via the direct interaction but also through the further opportunities offered. There were issues with the impact of other elements of the academics workload in terms of the time committed to the project. Academics played a supportive role with affiliates and reported that in doing so gained knowledge and new skills too in some cases.
4.3.3 Affiliate Perspective

Some of the affiliates experienced steep learning curves stemming from the need to assimilate the nature of the company, its product range, or processes and in some cases there were challenges from technology issues or unacquainted business type. Some were unfamiliar with the management of multiple relationships and relied on academic mentoring to assist resolving the problem. Further training was needed often in the early stages and for some this created extra pressure particularly in respect of time which required resilience of character and motivation to cope. Overall, as the project progressed the affiliates gained further skills from what was ultimately a three-way knowledge transfer process. It is clear that affiliates were not “plug and play” for the companies and that possibly attention to higher level skills and problem based learning could have prepared the affiliates more effectively for the experience. In terms of the resilience of the affiliates, this was fostered by the support of the academic. Generally speaking, those with effective support were more resilient when less isolated. The KEEN programme enabled a project based learning experience that was high stakes but authentic which should be replicated in undergraduate final year courses. Project and change management knowledge and skills, high level communication and persuading skills, resilience, and a willingness to take the initiative are all fundamental qualities in becoming an effective change agent within a Black Country SME.

4.3.4 Project Management

The case study analysis indicated that the management of a KEEN knowledge transfer process was a multi-faceted undertaking which extended beyond the apparently straightforward input of knowledge and skills. Projects which demonstrated clear lines of accountability for various aspects at various stages progressed more smoothly than those where management responsibility was unclear. Previous management skills were relatively weak as the affiliates were relatively fresh in their post-university career. The conflict of meeting project deadlines meant that training the affiliate in management was difficult to undertake.

Amongst the projects two management areas were observed: the management of the knowledge transfer process, and the management of the project. Whilst one is a function of the other, they require two different sets of skills. No single project management model emerged, but the following variations were observed around who supplied the necessary skills:

- From the affiliate
- The affiliate plus the academic
- The academic alone
- The affiliate and company supervisor
- The affiliate, company supervisor and functional heads of department

The extent to which project progress was monitored also varied – from informal chats, to structured meetings and documentary evidence of management decisions, and affiliate presentations.

Communication to others both inside and external to the firm ranged from verbal to comments on a generally available whiteboard, but again the scope of the communication was not standard across cases.

Management of the new knowledge transfer was primarily undertaken by the affiliate and the university. Some projects drew academic resources from departments in their university.
4.3.5 Sustainability

The extent to which firms are able to harness new knowledge not only within the project but for future innovation is dependent upon a number of factors including the ability to retain and apply knowledge gained in new situations. In order to ensure that knowledge was not lost, a number of companies offered permanent positions to the affiliates, in recognition of the ongoing dependency on the source. Another mechanism was to seek further university collaboration.

Most firms, to a greater or lesser degree of sophistication, had written material which could be accessed, including in one case purpose-written instruction manuals produced by the affiliate. All had transferred some knowledge verbally, either by team meetings or conversation. The extent to which the core skills and knowledge become embedded in the company, as opposed to immediate project related skills will only become evident in the future.

5.1 Conclusions

This evaluation has focused on the knowledge transfer process between the participants in KEEN projects across the West Midlands led by the University of Wolverhampton. The cooperation of the businesses, universities, and affiliates enabled the research team to examine data from a 71% return of the online survey and from the interviews forming the basis for six case studies. It was found that the companies undertook 126 projects each with a particular intervention focus, which meant, in practice, that 617 forms of business intervention in total took place illustrating the complexity of working with those companies.

The findings from the online survey and case studies provided both a broad and specific picture of the KEEN programme and the roles of the company, university, and affiliate participants. The relationship between the individuals or project teams in each project was a complex one but appeared to have fulfilled the expectations of most. The investigation showed that it was important that the managerial scope of the project and the necessity and advisability of staff who “need to know,” and are also able to contribute, is determined before the project commences. A gap analysis prior to setting out project objectives can achieve this. The university and the company cooperation in pre-planning and on-going planning of the projects should help such understanding. Regular meetings between the company representative, lead academic, and affiliate took place in almost all projects and this communication was critical in maintaining the momentum of a project.

Affiliates brought the new knowledge into the company that most participants had anticipated. Some of the companies were more ready for this knowledge than others and had not prepared for the demands of change on their colleagues. Such communication and change management are key underpinning platforms of a successful transfer and may include external as well as internal parties.

Academics in a mentoring role helped to support affiliates particularly in the early stages of the project where they were able to use their change management knowledge and skills that were largely lacking in affiliates. Data from the surveys showed the importance of affiliates gaining high level communication, persuading skills, personal resilience, and willingness to take the initiative and make decisions against a time frame. Companies too recognised that affiliates required support during their early days in the job, and offered help in the form of induction programmes, training, or linking them to a close colleague or
project team to work with or be available for questions and guidance. In some instances they also provided training for their employees to prepare them for their new colleague and the new knowledge they were expected to bring.

5.2 Key Benefits

- The companies benefitted from the new knowledge in meeting the objectives they had set in their project plans or in many cases exceeding their expectations
- Many projects have the potential for sustainable results due to businesses designing plans and strategies for the future use of the knowledge brought into the company
- 62% of companies indicated that they either wanted to or had employed the affiliate following the completion of the project
- Academics benefitted from the project by gaining new skills in mentoring and facilitating as well as technical skills and new insight into small businesses
- In some cases academics saw research opportunities
- Many academics found their experience useful for lecture material, and also shared the benefits of collaborating with small businesses with colleagues
- Affiliates benefitted in gaining new skills, an understanding of the way a small business works and the resilience required to work in such industries
- Many were also pleased that they were allowed and encouraged to take responsibility for using and sharing the new knowledge they brought to the company and in doing so meeting the expectations of their employer
- 63% of affiliate respondents either wanted to or had agreed to stay with the company after completion of the project.

5.3 Recommendations

These recommendations are set out to offer guidance not only to future KEEN projects but for any university/business collaboration where the focus is knowledge transfer.

**Recommendation 1**: All companies should establish a clear need by conducting a knowledge audit to create a project definition.

**Recommendation 2**: Future projects should consider offering a common knowledge audit toolbox for all potential project applicants to help them to determine knowledge gaps in their company and better inform their project plan.

**Recommendation 3**: Universities should develop publicity materials that showcase specific knowledge transfer possibilities for SMEs based on their research and development portfolios.

**Recommendation 4**: Documentation of the project plan should be uniform, developed jointly between the business and the university, regularly updated.
**Recommendation 5**: Recruitment support needs to be integrated into the administrative function of the programme, and steps taken to take advantage of the available pool of graduates of the university.

**Recommendation 6**: Training programmes should be set up to offer participants knowledge transfer concepts and models which may be adapted to suit dependent on company needs. Key participants should be offered training in knowledge brokering, including mentoring and facilitating knowledge and skills.

**Recommendation 7**: Introduce change management techniques as part of initial training for affiliates and academics. Ensure project management responsibility is identified in project plan: Perhaps the affiliate may be seen as the day-to-day project manager but a company representative acts as the project manager for strategic decisions.

**Recommendation 8**: Simplify paperwork where appropriate. Devise payment processes that are readily understood and have reduced impact on the cash flow of the business.

**Recommendation 9**: All KEEN projects to schedule regular keep in touch meetings with academic, company and affiliate to ensure goals are being met.

**Recommendation 10**: Training and encouragement for affiliate to understand the use of non-verbal means of sharing knowledge.

**Recommendation 11**: The universities should showcase the project experiences by producing a short video to capture the change and innovation in the project companies.

**Recommendation 12**: The universities should instigate knowledge sharing events in order to raise the profile and highlight learning from business collaborations such as the KEEN projects.

**Recommendation 13**: Follow up and exit/ follow-on strategies should be devised for each project to promote sustainability.

**Recommendation 14**: Universities should support the lead academics to enable the utilisation of the information and expertise gained from each project.

**Recommendation 15**: Introduce university/business collaborations which embody an undergraduate employment scheme. In the scheme, the undergraduate as part of their tutored course is offered one year of in-company work incorporating academic practical study (building on the recommendations of the Wilson study (2012) for the Department of Business, Innovation and Skills). Use the scheme to build on the university collaborations of the KEEN programme to develop a West Midlands approach to innovation/ entrepreneurship (cf. collaborative advantage identified in the report on the Wilson study (2012)).
6.1 References


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Karl Royle is the Head of Enterprise and Commercial Development in the Faculty of Education, Health and Wellbeing, University of Wolverhampton, where he works as a Research Project Director. Karl has considerable experience of project management (Certified Scrum Master) and materials development for both screen and print-based media, as well as having a background in teacher education, professional development, and education management. His current interests are around the development of thinking skills in game-based learning, and the digital skills and habits of learners using ubiquitous technology, alongside its transfer to educational contexts.

Dr Gillian Lyons is a Senior Lecturer in the University of Wolverhampton Business School. Her background includes business management and consultancy and her experience covers engineering, hospital management, banking and education. She has a special interest in SMEs, specifically in the marketing, enterprise and knowledge transfer areas. Gillian holds a Masters degree in Marketing Management, a professional diploma in Marketing, and a professional Doctorate in Business Administration. Her research examined the process and outcomes of knowledge transfer in SMEs, with a particular focus on strategic marketing. She has been the lead academic for a number of Knowledge Transfer Partnerships and KEEN interventions, and has provided consultancy assistance through a variety of government funded programmes. Gillian’s experience in both industry and the service sector has included senior management roles in finance and general business management. She is an experienced business counsellor and consultant specialising in advising SMEs. Her research interests include university/business collaboration, together with its implication for curriculum development and CPD.

Dr David Boucher is a Research Associate at the University of Wolverhampton. For most of his career, David has worked within the West Midlands automotive component supply industry in the field of research and development, although recently he spent a brief spell employed in supply chain data analysis for an aerospace company. His original academic discipline was chemistry, and David obtained a PhD from the University of Birmingham for research into the catalytic polymerisation of olefins. From polymer synthesis, David moved on into material science in the field of engineering within the Lucas Group. He worked in a variety of roles for the group with responsibilities for research, manufacturing systems, quality, and design. Meanwhile the business became part of Automotive Lighting, a global supplier of vehicle lighting products. Now established in engineering, in 2005 David obtained an MSc with distinction in Advanced Technology Management in Engineering from the University of Wolverhampton. He has brought data management and a long experience in research to this project.

Paula Simeon is a Research Associate at the University of Wolverhampton. Paula’s professional background and experience includes business management innovation and growth, operations management, marketing management, project management, financial management, audits and performance reviews, coaching and consultancy. She has considerable experience of working in private and public sector firms, as accountant, auditor, and business development executive for SMEs. Paula’s interests are in the areas of business innovation, university/business collaborations, mergers and acquisitions, and foreign direct investments. She has an MBA (Master of Business Administration) with a research focus on mergers and acquisitions, as well as an MSc in Finance and Accounting, with a research focus on the efficient market hypothesis, both obtained from the University of Wolverhampton. She is a Fellow of the Chartered Management Institute.

Dr Andrew Jones is a Research Associate at the University of Wolverhampton. Andrew obtained his PhD from the University of Wolverhampton in 2014. The thesis investigated the motivations and consequences behind foreign direct investment entering the English Premier League. He has also worked as a Visiting Lecturer at the university and has taught in areas such as the dynamics of multinational companies and managerial economics. His research interests include football finance, football club regulation, sports ownership models, and trends in foreign direct investment flows. He also holds an MA in International Business.

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