Measuring Skills Needs in a Knowledge Economy: Key Tools and Methods

Mark Hepworth
The Presentation

• Conceptualisation – the basis for measurement: focus on the knowledge economy

• Applications of Geoeconomic methods and tools – baseline, benchmarking and scenario creation

• Employers: The Micro Approach to Skills and Employment

• Final Comments
Theoretical Tools: Intangibles & the Knowledge Economy

• Intangible capital is equal to physical capital (land, buildings, plants, equipment, trucks, etc) in GDP

• By 1920s intangible capital was the main source of technological progress and economic growth

• Intellectual capital is the main source of productivity growth

• The rise of the ‘knowledge worker’ – graduates working in professional, managerial, scientific and technical occupations
## Human Capital – Skills in a Business Context

<table>
<thead>
<tr>
<th>Human Capital:</th>
<th>Customer (relational) Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Know-how, education, vocational qualifications, work-related knowledge,</td>
<td>Brands, customers, customers loyalty, company names, backlog orders, distribution channels,</td>
</tr>
<tr>
<td>occupational assessments, psychometric assessments, work-related competences,</td>
<td>business collaborations, licensing agreements, favourable contacts, franchising agreements</td>
</tr>
<tr>
<td>entrepreneurial élan, innovativeness, proactive and reactive abilities and</td>
<td></td>
</tr>
<tr>
<td>changeability</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Organisational Capital - Intellectual Property</th>
<th>Organisational Capital – Infrastructure Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patents, copyrights, design rights, trade secrets, trademarks and service</td>
<td>Management philosophy, corporate culture, management processes, information systems,</td>
</tr>
<tr>
<td>marks</td>
<td>networking systems, financial relations</td>
</tr>
</tbody>
</table>
Classification of Knowledge-intensive Sectors – Baseline and Benchmarking Assessment Tools

<table>
<thead>
<tr>
<th>Markets</th>
<th>Manufacturing Production</th>
<th>Private Services</th>
<th>Public Services</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Oil &amp; gas extraction</td>
<td>Financial &amp; Business:</td>
<td>Education:</td>
</tr>
<tr>
<td></td>
<td>Tobacco products</td>
<td>Finance</td>
<td>Higher</td>
</tr>
<tr>
<td></td>
<td>Printing, &amp; publishing</td>
<td>Real estate</td>
<td>Secondary</td>
</tr>
<tr>
<td></td>
<td>Coke, petrol, nuclear</td>
<td>Computer-related</td>
<td>Primary</td>
</tr>
<tr>
<td></td>
<td>Chemicals/products</td>
<td>R&amp;D</td>
<td>Adult other</td>
</tr>
<tr>
<td></td>
<td>Office machinery, computer manufacture</td>
<td>Professional</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Electrical machinery</td>
<td>Cultural:</td>
<td>Health &amp; Social Work:</td>
</tr>
<tr>
<td></td>
<td>Radio, TV, &amp; communication equip.</td>
<td>Travel agencies</td>
<td>Human</td>
</tr>
<tr>
<td></td>
<td>Medical, precision &amp; optical equip.</td>
<td>Radio, TV</td>
<td>Veterinary</td>
</tr>
<tr>
<td></td>
<td>Motor vehicles</td>
<td>Other entertainment</td>
<td>Social Work</td>
</tr>
<tr>
<td></td>
<td>Other transport (incl. aerospace)</td>
<td>News agencies</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Museums, libraries, archives</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Motion picture, video</td>
<td></td>
</tr>
<tr>
<td>Infrastructure</td>
<td>Utilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Electricity, gas, etc</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Governance</td>
<td>Government</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Public Administration</td>
<td></td>
<td>Non-Governmental Organisations</td>
</tr>
<tr>
<td></td>
<td>Defence, law, fire, etc</td>
<td></td>
<td>Business, employers &amp; professional organisations</td>
</tr>
<tr>
<td></td>
<td>Compulsory social security</td>
<td></td>
<td>Trade unions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Other membership and non-profit bodies</td>
</tr>
</tbody>
</table>
Profiling tools for the knowledge-intensive business

Ask the business to rate each of the following resources as to their importance to their organisation’s future competitive position (on a scale from 1 for least important to 5 for most important):

<table>
<thead>
<tr>
<th>Physical Capital</th>
<th>Intellectual Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventory</td>
<td>People</td>
</tr>
<tr>
<td>Production Equipment</td>
<td>Processes</td>
</tr>
<tr>
<td>Buildings</td>
<td>Relationships</td>
</tr>
<tr>
<td>Land</td>
<td>Strategy</td>
</tr>
<tr>
<td>Total</td>
<td>Total</td>
</tr>
</tbody>
</table>

A comparison of the two sums offers a first-cut understanding of the relative importance of intellectual capital in the development of competitive advantage. Most companies today have a higher total in the right hand column and view their future success to be dependent upon the strength of their intellectual capital.
Practical Applications

Geoeconomics Examples
Using the Geoeconomics toolkit

- To create a **baseline** picture of local and sub-regional economic performance - re-classification of published data
- To create a **skills profile** of the local economy – can be done by sector (including sectors not in Grid) – framed in terms of knowledge economy aims
- To **place-benchmark** against more successful areas in UK and EU in scenario and forward-looking exercises
- To create a **context** for graduate retention and attraction policies
- To create stronger employment-skills partnerships with **big multi-site companies**
- To design **SME employer surveys** – the profiling elements – and also qualitative methods for examining individual and collective skills and other intellectual capital (workplace training & development)
Mapping the knowledge-intensity of economic activity in Great Britain, 2006

How competitive is a given local, sub-regional or regional economy by national standards?
Posing questions to policy-makers and partners: are you content with Bexley’s competitiveness?
Business Indices for Measuring & Benchmarking Trends in the Knowledge Economy

![Geoeconomics Index Graph](image)

- a. Somerset
- b. Devon CC
- c. Dorset CC
- d. Wiltshire CC
- e. South West
- f. Great Britain

Source: Geoeconomics, ONS data
Indices for Measuring and Benchmarking the Importance of Consumer Services in the Knowledge Economy

Source: Geoeconomics, derived from ONS data
Indices for Measuring and Benchmarking the Importance of the Public and Private Sectors of the Knowledge Economy

Source: Geoeconomics, derived from ONS data
Creation of scenarios

EC Innovative Actions Project for the Humberside Sub-Region

- Econometric models for forecasting employment and occupation - review projections and assumptions
- Expert opinion – semi-structured questionnaire survey of policy-makers, businesses, universities and colleges, training providers etc
- Business plans – interviews with bigger companies and cluster flagships about long-term skills and employment plans
- Employment and skills objectives in strategic economic and other plans – attach a probability that they will succeed (risk)

- Place benchmarking – quantitative and qualitative assessments
Identifying benchmarks – then ‘drill down’ for gap and skills-economy performance analysis
Business Employers – Access to the Internal Labour Market

• Corporate mapping tools – using GIS and detailed quantitative data on employment and occupations by location, plus qualitative information on skills and manpower plans linked to overall corporate strategy
• The Economic Contribution of UK Defence Giant BAE Systems

• Case studies of SMEs – high level of access and longitudinal panels for tracking business, intangibles and skills dynamics
• Mixed and sector studies in different UK regions
BAE Systems: A Multi-Sector, Multi-Site Global Firm

Variety of knowledge-intensive ‘sectors’ & businesses within BAES

- **Manufacturing:**
  - Machine equipment – weapons & ammunition
  - Electrical machinery
  - Radio, TV & communications equipment
  - Motor vehicles
  - Other transport – incl. aerospace

- **Services:**
  - Finance
  - Computer-related
  - Professional-business
  - Property
  - Defence
Direct and Indirect Employment in BAE Systems

Number of employees (BAe sites)
- 1 - 10
- 11 - 100
- 101 - 1000
- 1001 - 2000
- > 2000

% Employed in Private Knowledge Intensive and High Productivity Sectors
- 6.5 - 15.1
- 15.2 - 17.9
- 19.0 - 21.5
- 21.6 - 26.7
- 26.8 - 39.2

Order Value by Local Authority (£m)
- < 2.5
- 2.5 - 4.9
- 5.0 - 9.9
- 10.0 - 66.9
- 100.0 +

Source: Geoeconomics and BAE Systems, 2007
Case Study Research on SMEs Located in East London

Key
- Case Study Businesses
- Local Authority Boundaries

Understanding and Profiling the SME Employer

We’re globalising with new markets in India and China. We have to mirror globalisation and stretch our brand.

For us innovation is about thinking of what to do differently with our existing equipment with existing customers.

Understanding our customers is critical. What do they require and are they happy with what we offer?

The local economy needs critical mass or clusters. It is too fragmented and diverse.
Insights into Skills and Learning

Knowledge to us means people with great design skills working in teams with a wealth of experience or practical knowledge.

We need to be agile and flexible. This means centralised database systems for contacts and content. People from traditional backgrounds have to become more business minded.

We’re knowledge-based not in a qualifications sense, but in a learning on the job sense. Most firms have graduates among their senior management, but only a minority felt they needed graduates to achieve their business goals.

Our organisational structure and work design are major assets. There is leadership, a family environment, a flat structure and a communications culture.

We have a flat structure with senior managers/directors working closely with design staff and production staff in a problem-solving environment.
Final Comments – Tools and Methods

• A more wide-ranging approach to ‘skills’ is needed for the ‘intangible’ knowledge economy
• Baseline and benchmarking – KI sector and KI business classification based on published and primary data (employer surveys)
• Place benchmarking – mapping and gap analysis/best practice tools
• Panel studies with large and small companies – stakeholder approach within the enterprise
• Longitudinal and trend analysis at macro, intermediate (sector/area) and micro levels
• Coverage – private, public and ‘third’ sectors
Thank You for Listening
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