Developing new statistics on intangible assets in the UK

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Intangibles are important, but you knew that already
Intangibles were under-measured

In the 1984 input-output tables for the UK, few ‘commodity groups’ covered the intangible assets:

• “public administration etc” – R&D
• “business services etc” – advertising, design, software
• “other services” – entertainment originals
• “printing and publishing” – literary originals
Intangibles were under-measured

In the 1990 input-output tables, we got more breakdown:

- “advertising”
- “computing services”
- “research and development”
- But still lots in “other business services”
Measurement is improving…

Progress since then:

• R&D capitalised in national accounts
• Intangibles gaining traction around the world
• Technological revolution
• Still more to do
Measurement is improving…

In the 2016 supply and use tables for the UK, we have:

- Publishing services; Motion Picture, Video & TV Programme Production…
- Computer programming, consultancy and related services
- Services of head offices; management consulting services
- Architectural and engineering services; technical testing and analysis
- Scientific research and development services
- Advertising and market research services
Own-account software
## Own-account investment method

<table>
<thead>
<tr>
<th></th>
<th>Data</th>
<th>Method</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wages and salaries</td>
<td>£40,000</td>
<td>A</td>
<td>Industry and occupation specific</td>
</tr>
<tr>
<td>Factor for non-wage labour costs</td>
<td>1.17</td>
<td>B</td>
<td>Calculated from software industry</td>
</tr>
<tr>
<td>Factor for non-software activities</td>
<td>0.5</td>
<td>C</td>
<td>Occupation specific ‘time factor’</td>
</tr>
<tr>
<td>Factor for non-labour costs</td>
<td>1.9</td>
<td>D</td>
<td>Calculated from software industry</td>
</tr>
<tr>
<td>Factor for sales adjustment</td>
<td>1</td>
<td>E</td>
<td>Industry specific</td>
</tr>
<tr>
<td>Own-account software investment</td>
<td>£44,460</td>
<td>A x B x C x D x E</td>
<td></td>
</tr>
</tbody>
</table>
Which occupations?

- Major Group 1: MANAGERS, DIRECTORS AND SENIOR OFFICIALS
- Major Group 2: PROFESSIONAL OCCUPATIONS
  - Sub-Major Group 21: SCIENCE, RESEARCH, ENGINEERING AND TECHNOLOGY PUBLICATIONS
    - Minor Group 211: NATURAL AND SOCIAL SCIENCE PROFESSIONALS
    - Minor Group 212: ENGINEERING PROFESSIONALS
  - Minor Group 213: INFORMATION TECHNOLOGY AND TELECOMMUNICATIONS PROFESSIONALS
    - Unit Group 2133: IT SPECIALIST MANAGERS
    - Unit Group 2134: IT PROJECT AND PROGRAMME MANAGERS
    - Unit Group 2135: IT BUSINESS ANALYSTS, ARCHITECTS AND SYSTEMS DESIGNERS
    - Unit Group 2136: PROGRAMMERS AND SOFTWARE DEVELOPMENT PROFESSIONALS
    - Unit Group 2137: WEB DESIGN AND DEVELOPMENT PROFESSIONALS
    - Unit Group 2139: INFORMATION TECHNOLOGY AND TELECOMMUNICATIONS PROFESSIONALS N.E.C.
Which occupations?

<table>
<thead>
<tr>
<th>2136: PROGRAMMERS AND SOFTWARE DEVELOPMENT PROFESSIONALS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Job description:</strong></td>
</tr>
<tr>
<td>Programmers and software development professionals design, develop, test, implement and maintain software systems in order to meet the specifications and business objectives of the information system; they also design and develop specialist software e.g. for computer games.</td>
</tr>
<tr>
<td><strong>Entry requirements of this job:</strong></td>
</tr>
<tr>
<td>Entrants usually possess a degree or equivalent qualification, although entry with other academic qualifications and/or significant relevant experience is possible. There is a variety of vocational, professional and postgraduate qualifications available.</td>
</tr>
<tr>
<td><strong>Tasks required by this job include:</strong></td>
</tr>
<tr>
<td>• examines existing software and determines requirements for new/modified systems in the light of business needs;</td>
</tr>
<tr>
<td>• undertakes feasibility study to design software solutions;</td>
</tr>
<tr>
<td>• writes and codes individual programs according to specifications;</td>
</tr>
<tr>
<td>• develops user interfaces;</td>
</tr>
<tr>
<td>• tests and corrects software programs;</td>
</tr>
<tr>
<td>• writes code for specialist programming for computer games, (for example, artificial intelligence, 3D engine development);</td>
</tr>
<tr>
<td>• implements and evaluates the software;</td>
</tr>
<tr>
<td>• plans and maintains database structures;</td>
</tr>
<tr>
<td>• writes operational documentation and provides subsequent support and training for users.</td>
</tr>
</tbody>
</table>

Jobs related to this code:
- Analyst-programmer
- Database developer
- Games programmer
- Programmer
- Software engineer
Which occupations?

What about “data scientist” or “data architect”?

- 2127: Production and Process Engineers
- 2135: IT Business Analysis, Architects and Systems Designers
- 2136: Programmers and Software Development Professionals
- 2423: Management Consultants and Business Analysts
- 2425: Actuaries, Economists and Statisticians
- 3132: IT User Support Technicians
What time factors?

<table>
<thead>
<tr>
<th>Category</th>
<th>0%</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
<th>50%</th>
<th>60%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managers</td>
<td>1136</td>
<td>2131</td>
<td>2132</td>
<td>3131</td>
<td>3132</td>
<td>4136</td>
<td>5245</td>
</tr>
<tr>
<td>Programmers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supporters/technicians</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Our contribution

• Convert occupation codes and time factors from SOC 2000 to SOC 2010
• Microdata research with ‘job-titles’ in ASHE
• Interviews with senior IT managers at multi-national enterprises
• International cooperation
Branding: Advertising and Market Research
Josh’s Cola Company

If I had the same number of staff, the same sized premises, the same technology, the secret recipe and the same ingredients, I could make Coca-Cola.

But I couldn’t sell nearly the same quantity, or at the same price, as The Coca-Cola Company.
Brand as an asset

Investments in market research and advertising help to develop a Brand

A better Brand improves revenue and measured productivity (but not efficiency?)
Brands can also be destroyed...
How do firms invest in their brand?

A combination of purchased and in-house (own-account)

• Complements or substitutes?

In-house mostly at the early and later stages
Creative usually outsourced (purchased)
Own-account Branding

Around 3% of workforce in branding related occupations
Less than 0.5% work in the advertising industry
Only around 5% of such workers in the advertising industry

Lots of own-account branding going on!
Own-account Branding

We have developed new estimates based on the own-account software methodology

Identifying occupations, time factors, and capitalisation factors
Other research and next steps
Other research

- Entertainment, literary and artistic originals – updates
- Training – backcasting using LFS
- Price indices – investigating SPPIs
- Historic estimates – with difficulty!
Other research

Microdata analysis

- ONS surveys on intangible investment in 2010/2011
- Reconciling these estimates with ‘macro’ approach
- Linking with other relevant surveys
Next steps

• Updated estimates to 2017 – to be published in Winter 2019, after Blue Book 2019
• Changes in BB19, including double deflation
• Further research, and development of methods
Thank you for listening

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