

UK SME Landscape and Standardization Research

– Stage 2 Report

BSI

**UK SME Landscape and
Standardization Research**

Consolidated Stage Two Report

October 2014

Marketwise Strategies Limited

63 Westgate Road

Newcastle upon Tyne

NE1 1SG

Tel: 0191 261 4426

info@marketwisestrategies.com

www.marketwisestrategies.com

Foreword

Micro, small and medium sized enterprises (SME) represent a large and important section of British industry; however these organizations face many challenges that can impact their performance and growth potential. Government policies including the Department for Business, Innovation and Skills and HM Treasury policy, 'Making it easier to set up and grow a business' recognise the importance of helping SMEs grow in order to benefit the wider UK economy. To achieve this, small businesses often need assistance to increase sales (and particularly exports), to improve the skills of their staff and to innovate more effectively. Standards and standardization can and should play a major role to help SMEs rise to these challenges.

BSI, in its role as the UK National Standards Body (NSB), is committed to increasing its support for the SME community to take advantage of the benefits of voluntary business standards. We are seeking to increase the opportunities for SMEs to participate in the development of standards that set out agreed good practice and to access the outputs in ways that are beneficial and convenient for them.

As part of this commitment, BSI has commissioned research into the SME landscape in the UK to deepen our understanding of the needs of SMEs in relation to standardization and the benefits that can flow from an increased level of engagement between the NSB and SMEs in different sectors of the economy. This research was enabled by the Department for Business, Innovation and Skills as part of its on-going commitment to supporting innovation in the UK.

The output of this research programme, which focuses on the important industry sectors of aerospace, automotive, construction, food, healthcare and ICT will provide a snapshot of the UK SME landscape and attitudes towards the role of business standards. This second stage report, combined with the outcomes of the first stage carried out earlier in 2014, will be used to inform BSI's strategy to involve SMEs in standardization and to develop standards based solutions that can further improve small business performance and potential.

Scott Steedman CBE
Director of Standards
October 2014

CONTENTS

List of Tables	7
 Part One: Executive Summary	
1 Background	10
2 Research Objectives	11
3 Methodology	13
3.1 Structure of the Stage Two research.....	13
3.2 The qualitative study	13
3.3 The quantitative survey	14
4 Key Findings – Aerospace	15
4.1 Challenges facing Aerospace SMEs	15
4.2 Regulations	15
4.3 Best practice.....	16
4.4 Standards	16
4.5 Development of new standards.....	17
4.6 Conclusions and recommendations	17
5 Key Findings – Automotive	19
5.1 Challenges facing Automotive SMEs	19
5.2 Innovation.....	20
5.3 Key relationships	20
5.4 Regulation	21
5.5 Best practice.....	22
5.6 Standards	23
5.7 New standards development.....	23
5.8 Participating in standards development	24
5.9 Conclusions and recommendations	24
6 Key Findings - Construction	26
6.1 Challenges facing Construction SMEs	26
6.2 Innovation.....	27
6.3 Key relationships	27
6.4 Regulations	28
6.5 Best practice.....	29
6.6 Standards	30
6.7 New standards development.....	32

6.8	Standards development	32
6.9	Conclusions and recommendations	33
7	Key Findings – Food	35
7.1	Challenges facing Food SMEs	35
7.2	Innovation	36
7.3	Key relationships	36
7.4	Regulations	36
7.5	Best practice	37
7.6	Standards	37
7.7	Developing and accessing standards.....	38
7.8	Conclusions and recommendations	39
8	Key Findings – Healthcare	40
8.1	Challenges facing Health SMEs	40
8.2	Innovation	42
8.3	Key relationships	42
8.4	Regulation	43
8.5	Best practice	44
8.6	Standards	44
8.7	New standards development.....	45
8.8	Participating in standards development	46
8.9	Conclusions and recommendations	47
9	Key Findings - ICT	49
9.1	Challenges	49
9.2	Innovation and key technologies	51
9.3	Key relationships	51
9.4	Regulatory environment	52
9.5	Best practice	52
9.6	Standards	53
9.7	Participating in standards development	54
9.8	Conclusions and recommendations	54
10	Key Findings from Quantitative Research	56
10.1	Extent of using standards.....	56
10.2	Reasons for using/not using standards	57
10.3	Sources of standards	57
10.4	Standards development	58
11	Conclusions and Implications	60
11.1	Challenges facing SMEs	60

11.2	Using and developing standards	60
11.3	Taking part in standards development	62
11.4	Requirements that SMEs have of BSI	63
11.5	Implications	63

Part Two: Qualitative Research

12	Introduction	66
12.1	Research overview	66
12.2	Research objectives	67
13	Methodology	69
13.1	Overview	69
13.2	Qualitative depth interviews	69
13.3	Quantitative Survey	70
14	Aerospace	71
14.1	Overview	71
14.2	Aerospace industry: findings from Stage 1 report	71
14.3	Interviews	73
14.4	SME activities	75
14.5	Challenges	77
14.6	Innovation	84
14.7	Key relationships	85
14.8	Regulatory environment	87
14.9	Best practice	89
14.10	Standards	92
14.11	New standards development	97
14.12	Participating in standards development	98
15	Automotive	103
15.1	Overview	103
15.2	Automotive industry: findings from Stage 1 report	103
15.3	Interviews	105
15.4	SME activities	106
15.5	Challenges	108
15.6	Innovation	115
15.7	Key relationships	118
15.8	Regulations	120
15.9	Best practice	125
15.10	Standards	127

15.11	New standards development	131
15.12	Participating in standards development.....	132
15.13	Key findings	136
15.14	Conclusions and recommendations.....	141
16	Construction	142
16.1	Overview	142
16.2	Construction sector: findings from Stage 1 report.....	142
16.3	Interviews	144
16.4	SME activities.....	146
16.5	Challenges	149
16.6	Innovation.....	154
16.7	Key relationships	156
16.8	Regulations	157
16.9	Best practice.....	161
16.10	Standards	163
16.11	New Standards Required.....	173
16.12	Standards Development	174
16.13	Key Findings	178
16.14	Conclusions and Recommendations	185
17	Food.....	187
17.1	Overview	187
17.2	Food sector: findings from Stage 1 report.....	187
17.3	Interviews	189
17.4	SME activities.....	190
17.5	Challenges	192
17.6	Innovation and Intellectual Property	200
17.7	Key relationships	201
17.8	Regulation	205
17.9	Best practice.....	211
17.10	Standards	214
17.11	New standards development	219
17.12	Developing and accessing standards	221
17.13	Key findings	225
17.14	Conclusions and recommendations.....	229
18	Healthcare.....	231
18.1	Overview	231
18.2	Healthcare industry: findings from Stage 1 report.....	231

18.3	Interviews	233
18.4	SME activities	235
18.5	Challenges	237
18.6	Innovation	246
18.7	Key relationships	247
18.8	Regulations	250
18.9	Best practice	257
18.10	Standards	261
18.11	New standards development	264
18.12	Participating in standards development	267
18.13	Key findings	269
18.14	Conclusions and recommendations	276
19	ICT.....	279
19.1	Overview	279
19.2	ICT Industry: findings from Stage 1 report	279
19.3	Interviews	280
19.4	SME activities	283
19.5	Challenges	285
19.6	Innovation and new technologies	292
19.7	Key relationships	295
19.8	Regulatory environment	297
19.9	Best practice	301
19.10	Standards	304
19.11	New standards development	310
19.12	Participating in standards development	312
19.13	Key Findings	315
19.14	Conclusions and recommendations	321
<u>Part Three: Quantitative Research</u>		
20	Introduction	324
20.1	Background	324
20.2	Objectives	324
20.3	Methodology	326
21	Sample Profile	328
21.1	Respondents' job roles	328
21.2	Organisation size	329
21.3	Business activities	334

21.4	Locations	334
22	Findings	336
22.1	Use of standards	336
22.2	Sources of standards	350
22.3	Sources of information about standards.....	354
22.4	Perceived usefulness of standards	357
22.5	Developing standards.....	360
23	Key Findings.....	373
23.1	Extent of using standards.....	373
23.2	Reasons for using/not using standards	374
23.3	Sources of standards	374
23.4	Standards development	375

Part Four: Conclusions and Implications

24	Conclusions.....	378
24.1	Challenges facing SMEs	378
24.2	Using and developing standards	379
24.3	Taking part in standards development	380
24.4	Requirements that SMEs have of BSI.....	381
25	Implications	382

Appendices

Appendix 1: Discussion Guide	384
Appendix 2: Research Ethics Protocol.....	392
Appendix 3: SIC Codes Within the Sample	394
Appendix 4: Questionnaire	398
Appendix 5: Job Titles, by Sector	406
Appendix 6: Location of SMEs, by Sector.....	413
Appendix 7: Standards Used.....	417

List of Tables

Table 1	Aerospace sub-sectors for interview focus	73
Table 2	Aerospace SMEs interviewed	74
Table 3	Automotive sub-sectors for interview focus	105
Table 4	Automotive SMEs interviewed	106
Table 5	Construction activities to be targeted for interviews: Infrastructure	144
Table 6	Construction activities to be targeted for interviews: Building	145
Table 7	Construction SMEs interviewed	146
Table 8	Food sub-sectors for interview focus	189
Table 9	Food SMEs interviewed	190
Table 10	Healthcare sub-sectors for interview focus	233
Table 11	Healthcare SMEs interviewed	234
Table 12	ICT sub-sectors for interview focus	281
Table 13	ICT SMEs interviewed	282
Table 14	Job Title	328
Table 15	Number of Staff Employed, by Sector	331
Table 16	Approximate Annual Turnover, by Sector	333
Table 17	Location of SMEs, by UK Regions	335
Table 18	Sources of Best Practice, by Sector	339
Table 19	Sources of Best Practice, by Company Size	340
Table 20	'Other' Sources of Best Practice	341
Table 21	Why Standards are Used (Benefits Derived)	342
Table 22	'Other' Reasons for not Using Standards	345
Table 23	Explaining 'Why Standards Would Help' and 'Likelihood of Future Use'	349
Table 24	Standards Used by SME Respondents, Sector	353
Table 25	'Other' Sources of Information about Standards	355
Table 26	Perceived Usefulness of Standards, by Number of Employees	358
Table 27	Perceived Usefulness of Standards, by Approximate Annual Turnover	359
Table 28	Type of Involvement in Developing Standards	361
Table 29	What New Standards Should 'Do'	366

Table 30	Reasons Why New Standards Would Not Be of Benefit	367
Table 31	Barriers to Being Involved in Standards Development for BSI	371

Part One
Executive Summary

1 Background

BSI wishes to engage more actively with small and medium sized enterprises (SMEs), as part of its longer term business strategy and in order to respond to the 2012 European Standardisation Regulation (EU) No 1025/2012.¹ It is particularly interested in exploring ways for SMEs to become more involved in the writing of new standards.

The current research is intended to inform strategy by helping BSI to develop a better understanding of the UK SME landscape and of SMEs in six specific sectors: Aerospace; Automotives; Construction; Food; Healthcare; and ICT.

The research has been carried out in two stages:

- Stage One developed an overview of the SME landscape in the UK, identifying the characteristics of the SME population and highlighting in particular the developments taking place in BSI's six sectors of interest. That work took the form of a desk-based study, and was reported upon in February 2014.
- Stage Two research involved discrete qualitative and quantitative components (depth interviews and a telephone survey) and is the focus of the current report.

¹ See http://ec.europa.eu/enterprise/policies/european-standards/standardisation-policy/general-framework/index_en.htm.

2 Research Objectives

The objectives at Stage Two were:

1. To understand the **main challenges** that SMEs in Aerospace, Healthcare, Construction, Automotive, Food and ICT face in their industries
 - a. To identify what the core challenges are perceived to be, as businesses develop, including with reference to impacts upon profitability, innovation and competitiveness in both domestic and overseas markets.
 - b. To understand the issues that pose the **greatest challenges** for SMEs.
2. To identify the types of and specific **standards that are currently used by or are perceived as relevant by SMEs** in each sector (including technical standards, codes of practice etc.).
3. To understand in each sector **the challenges that SMEs face in using standards**
 - a. To explore SMEs' **current and past experience** of using or attempting to use standards
 - i. The standards concerned
 - ii. Positive and negative aspects of the experience (costs, benefits, impacts upon the business)
 - iii. Perceptions that resulted – of standards and of standards bodies such as BSI
 - b. To identify any **barriers to adoption** of standards or particular types of standards in each of the sectors researched
 - c. To identify any **sectors** where SMEs face particularly significant challenges in the use of standards, and to understand the reasons for this.
4. To identify any **challenges that SMEs face in participating** in standards development
 - a. To understand the **issues that arise** for SMEs when considering whether to take part and when taking part in the development of standards

- b. To clarify **perceptions of what involvement would mean** – and the impact that this has upon willingness to engage with BSI
 - c. To explore **past experiences** of involvement, including positive and negative aspects and the perceptions that have resulted.
- 5. To understand what SMEs in these sectors **require from BSI in the future** and how this may differ according to the characteristics of the SMEs (e.g. by sector). This might include, for example,:
 - a. Helping SMEs to understand the role of standards, how to work with standards or how to become involved in developing standards
 - b. Making standards more accessible by SMEs
 - c. Adapting processes for standards development and for communications in order to maximise SME involvement and buy-in.
- 6. To highlight the **implications that arise for standards development and use** by SMEs in each sector, including to differentiate between issues that are sector-specific and those that have cross-sector implications.
- 7. To provide **baseline quantitative data and an appropriate methodology that enables the research to be replicated** in the future and meaningful comparisons to be obtained; in particular to enable change and progress to be measured at sector level. (This objective related specifically to the quantitative study.)

3 Methodology

3.1 Structure of the Stage Two research

Stage Two research comprised two separate studies - qualitative and quantitative -each of which was conducted across the six sectors of interest: Aerospace; Automotive; Construction; Food; Healthcare; and ICT.

The qualitative study comprised depth interviews with 48 SMEs (eight per sector). Quantitative research took the form of a telephone survey among 600 SMEs.

3.2 The qualitative study

In each sector except for Automotive, five of the eight depth interviews were conducted face to face and three by telephone; in Automotive, four interviews were face to face and four by telephone.

Interviews were semi-structured and were based upon a qualitative questionnaire that was developed in close consultation with BSI. Areas of questioning focused upon:

- The challenges that SMEs faced;
- Issues concerning innovation;
- Key relationships that the SMEs had;
- Discussion about standards, regulation and best practice.

The same qualitative questionnaire was used for telephone and face-to-face interviews.

Most face-to-face interviews lasted 60-75 minutes, with a few lasting up to 90 minutes. Telephone interviews tended to last 30-45 minutes, although some were longer than an hour.

At the start of Phase Two, BSI specified certain SIC codes (within each sector) that interviews were to target. This targeting was guided by the findings from Stage One research and focused upon sub-sectors in which there was evidence of current or potential growth in the SME population.

Approximately four SIC codes were specified per sector, with the intention that at least one company be interviewed from each of these. In Construction, however, there were more codes specified and in Food fewer.

When recruiting SMEs to the research, we sought a spread of micro, small and medium enterprises but excluded single person enterprises that were not VAT registered.

Geography was not an important sampling consideration, since Stage One research had already provided insights into the geographical spread of SMEs in each of the six sectors. Whilst telephone interviews were UK-wide, therefore, face to face research was organised in a way that maximised the number of interviews within the project budget. This meant that face to face research took place in the North of England, where Marketwise Strategies is predominantly based.

3.3 The quantitative survey

Alongside the qualitative research, a quantitative telephone survey was carried out among 600 UK SMEs (approximately 100 per sector). The findings from that research are reported upon in Part Three - which incorporates details of the quantitative research methodology.

4 Key Findings – Aerospace

4.1 Challenges facing Aerospace SMEs

The main challenges that the Aerospace SMEs identified were:

- The lengthy process of OEM supply chain approval, both for manufacturers and for suppliers of parts, and the subsequent burden of audits (which was considerably higher than in any other industry researched).
- The rising cost of raw materials, which was a challenge for some SMEs, as were staff wages (Aerospace is a high-skill industry and therefore has a high wage burden). However, the recession had not impacted Aerospace SMEs to a great extent, compared to sectors such as Construction).
- The sporadic and unpredictable nature of defence Aerospace markets, which required defence-focused SMEs to expand their contracts in the civil sector.
- Diversifying into supplying new markets, particularly the emerging fracking and renewables industries, where manufacturer requirements and audit practices are likely to be different from those in Aerospace.
- The limited scope that exists for supply chain innovation, particularly in the manufacturing or supply of parts that fly with aircraft; meaning that business growth is associated with increasing sales volumes rather than innovating.

4.2 Regulations

Aerospace is a very heavily regulated industry, especially with regard to parts that fly with aircraft.

- All parts are required to pass regulatory air-worthiness requirements, typically set by the CAA, EASA, FAA and equivalents.

EU and North American regulations in this regard are harmonised, and compliance is audited regularly.

- The regulatory requirement for non-flying machinery relates more closely to “non-Aerospace” regulations. In the case of electronic equipment sold in the EU, for example, the RoHS Directive applied, but selling into the US market required different regulations to be met. This lack of harmonisation was seen as problematic by the company that sold in those markets.

4.3 Best practice

- The SC21 (21st Century Supply Chains) Change programme is becoming an important route to best practice for Aerospace SMEs, and is supported by organisations such as ADS (the UK trade body for Aerospace, Defence, Security & Space Industries) and the North West Aerospace Alliance. It was said, however, to be less widely recognised in defence than in the civil sector.
- There is some use of lean techniques and continuous improvement plans, and learning of best practice from OEMs.

4.4 Standards

- AS 9100 standards are used ubiquitously in the manufacture of all flying machinery, including parts and components; AS 9100 accreditation has become a prerequisite to enter OEM supply chains.
- ISO standards pre-date AS 9100, and some Aerospace SMEs maintain ISO accreditation, although OEMs do not require it (preferring instead the AS 9100 standard).

- For non-flying machinery, the standards used (as with the regulatory requirements) are different and in most instances are not compulsory. For some new technologies, standards come from outside of the Aerospace industry (e.g. in the case of NDT laser testing, medical test equipment). For intermittent fault testing in aircraft, however, there currently exist no standard.

4.5 Development of new standards

- Regulatory requirements are primary and take precedence over standards – especially for flying machinery/equipment.
- An SME that manufactured and supplied flying machinery was keen to persuade OEMs of the rigour of the AS 9100 standard, since this could potentially reduce the audit and Quality Management burden that OEMs placed on SMEs. For this company, that recognition was seen as more important than developing any new standards.
 - This would require a dialogue within the industry about how best to move forward. Aerospace OEMs would necessarily be central to this process, whilst SMEs may need either to be financially compensated for taking part or be able to participate remotely without their voice being diluted.
 - Industry associations, such as ADS and the North West Aerospace Alliance, would also be important stakeholders in this process.
- Where new technologies are being developed – particularly those that do not fly with aircraft – then there may be scope to work toward some new standards (e.g. intermittent fault testing).

4.6 Conclusions and recommendations

The Aerospace industry has established modes of working, well-established audit procedures on the part of OEMs, and a number of established standards whose use is widespread throughout the industry (notably AS 9110 and 9120).

It is heavily regulated, particularly for those components, equipment and assemblies that are intended to fly.

Adoption of any further standards by Aerospace SMEs, therefore, would need to be initiated or driven by the major OEMs and any such process would need to take into account current perceptions of “audit overload” within the industry.

There may, however, be scope for some streamlining of standards in order to reduce perceived duplication between the AS 9120 standard and the requirements that are applied by OEMs.

For those companies diversifying into non-Aerospace markets, there may be opportunities to explore standards that support the manufacturing of components for wind turbines or for fracking operations.

5 Key Findings – Automotive

5.1 Challenges facing Automotive SMEs

The main challenges identified by Automotive SMEs related to:

- **Costs and financial management:** In the case of manufacturers, this related particularly to raw materials, but also to securing access to finance, which had become much more difficult for SMEs since the recession. Costs of staffing were not as high as in some other, more hi-tech sectors, but were nevertheless closely managed. The recession had not affected SMEs in Automotive as strongly as in Construction, and many of the SMEs that were consulted had niche markets that were relatively insulated from the recession. There was, however, some evidence of downsizing, and of firms having to focus on different markets, especially for the seat manufacturer.
- **Developing and managing customer relationships and business reputations:** The costs associated with securing vehicle dealerships were also highlighted.
- **Supply chains:** Small vehicle manufacturers, for example, were often required to purchase parts from OEMs in bulk. Some payment terms could also be problematic.
- **Legislation** was a challenge for some SMEs – particularly for companies manufacturing parts and accessories – as European regulations for exhaust emissions and noise, and for passenger seat safety, had increased costs and, in two cases, reduced markets for products. For the car manufacturer, legislation limiting carbon emissions had significantly limited the export markets for its vehicles in mainland Europe.
- **Exporting** posed some challenges, particularly for vehicle manufacturers that were required to secure Type Approval for any vehicle. This presented some issues for

custom-made vehicles, each of which had to be separately licensed. Growing sales in US markets without having a production base in that country was also a challenge.

- **Diversification** presented challenges, particularly for the electronics manufacturers, both of which were diversifying into other markets (i.e. Medical and Aerospace) that were thought likely to deliver more growth than was Automotives.

5.2 Innovation

- Vehicle manufacturers needed to be innovative, and both of the informants in this sub-sector were using new processes, particularly for vehicle assembly (e.g. gluing parts together rather than welding them).
- The passenger seating SME was also using innovative bonding processes for seats, and finding ways of reducing seats' weight.
- There may be some potential in 3D printing of bodywork and other parts, although this appears to be several years away from adoption by SMEs in the sector.
- Service providers (i.e. retailers of spare parts and second-hand cars) reported the growing use of software-based diagnostic systems for repair or for identifying parts needs.
- Vehicle manufacturers owned Intellectual Property in their vehicles, although SMEs did not mention registering patents.

5.3 Key relationships

- Important relationships were primarily with customers and suppliers.
- Some SMEs also belonged to trade associations, although these were not mentioned as extensively as in Food or Aerospace. Membership of niche associations, such as the Niche Vehicle Network and Motorcycle Industry Association, appeared to be more relevant to SMEs than membership of industry-wide bodies such as SMMT. None of

the informants mentioned the Automotive Council as a key relationship. The retail trade informants did not mention belonging to any associations of this nature, although there were some national buyers groups in which consortia of small retailers collaborated in order to secure supply deals for spare parts.

5.4 Regulation

- Vehicle manufacturers were required to secure Type Approval, to confirm that production samples of a design (for whole vehicles, vehicle systems, or separate components) met specified performance standards. In Europe, Type Approval is derived from EC Directives and from United Nations Regulations.
 - Obtaining Approvals could be very costly for the car manufacturer, as a separate Type Approval was required if modifications were made to vehicles; for custom car manufacturers, who may source different engines, this was a significant issue. Type Approval concerns were not reported by the motorcycle manufacturer, though systems are in place for Type Approval for motorcycles – including the mandatory European Community Whole Vehicle Type Approval (ECWVTA) and, for low-volume manufacture, the UK's Motorcycle Single Vehicle Approval (MSVA) scheme.
- Carbon emissions regulations had also reduced significantly some export markets for custom-made sports vehicles.
- There were extensive regulatory requirements for testing the safety of passenger seating, and a lack of harmonisation with the EU about these; notably, multiple certifications were sometimes required to sell in multiple EU states. The recent introduction of Regulation 80 in European law posed major difficulties, as this:
 - Required seats to bend flexibly in a forward direction, which was very difficult to reconcile with the need to protect the seat user from injury. Very few manufacturers had reportedly resolved this to date
 - Fundamentally changed the way in which tests were conducted, moving from the testing of individual seats to tests within vehicles, which were very difficult to arrange.

- Manufacturers of accessories and parts were especially critical of EU legislation, reporting that whilst it was usually introduced with good intentions, it had a significant cost implication on their businesses and would not impact as heavily on large OEMs.
- RoHS regulations applied to some electronic parts, which therefore had to be sourced from within the EU.
- The key external requirements for the **retail** informants (SMEs 7 and 8) came from laws relating to **trading standards** and to **employment**. These were relatively straightforward to meet.

5.5 Best practice

- Best practice was often developed in-house rather than sourced externally. This was particularly the case among the retail trade informants, who commented that best practice in customer interaction was well understood.
- Where written codes or operating practices had been developed (as within the vehicle manufacturers, passenger seating manufacturer and electronics companies), these tended to follow regulatory frameworks or requirements or, in a couple of cases, the ISO 9001 standard. Only one company had used an external consultant to help drive process improvements.
- Four SMEs outlined areas where they would like to make some improvements to their businesses; these were very specific to the businesses concerned (e.g. securing more regular supplies of second-hand cars; diversifying into the oil distribution market; better energy efficiency in warehouse environments).
- One SME in electronics manufacturing was investigating the possibility of using Value Stream Mapping as a specific technique to help streamline production, although this was at an early stage.

5.6 Standards

- There was little use of BSI/ISO standards among the Automotive SMEs, other than ISO 9001, which was used by a number of informants because clients required it; this driver for ISO 9001 adoption was also noted in other sectors.
 - Those not using standards did not report any commercial imperative to begin doing so, but noted that adherence was costly for what was perceived as a “tick-box” exercise
 - Two of the smallest manufacturers thought that if their companies grew significantly and worked with OEMs more often – and on a longer-term basis – then standards (particularly for traceable manufacture) could be required
 - The retail trade informants did not perceive any requirement to use British Standards within their own businesses.
- The most extensive use of standards was among the electronics manufacturers, which included IPC and UL standards, as well as ISO 9001 and TS 16949).
- Adoption of additional standards may be more appropriate when SMEs are manufacturing for sectors outside Automotives (e.g. Aerospace).

5.7 New standards development

There was very little reported need for new standards. Several SMEs were more concerned about meeting regulatory requirements than developing or adopting new standards.

- Some SMEs suggested a need to streamline or alter regulations, for example changing Type Approval rules in the EU so that vehicles did not require new approval with every slight change. SME 2 reported that UN/ECE Regulation 80, for passenger safety, also required further thought.
- Retail trade informants suggested a need for standardised training for those undertaking vehicle repair, particularly as there was no legal requirement for mechanics and engineers to update their knowledge in this area.
- More widely, there was a preference for standards to be priced more appropriately for SMEs, and for the administrative burden associated with audits to be reduced.

- SMEs preferred a PDF format when accessing standards documents. However, a facility to receive/print paper versions was important to some.

5.8 Participating in standards development

- The development of standards is likely to require a range of participant companies, including SMEs, OEMs and the main trade associations.
- The majority of SMEs thought that the standards development process for the Automotive sector should be funded by government.
- As among the other industries researched, time was seen as a major barrier to SME participation. Some SMEs also reported having had negative experiences when participating in previous committees within Automotives (albeit not specifically concerned with standards development), and had often found these to be dominated by OEMs or other large companies.
- To encourage participation, there may need to be flexibility in the ways that SMEs can participate. Those involved are likely to include not only senior staff but also, for example, design specialists.

5.9 Conclusions and recommendations

The Automotive industry is likely to be a very challenging environment in which to develop new externally-derived standards for SMEs. Other than ISO 9001, and some additional standards used by electronics manufacturers, there was little use of externally-derived standards among the SMEs researched. For the most part, SMEs are developing internal operating procedures, rather than using external standards. SMEs were more concerned about the regulatory environment, particularly European regulation, and the difficulties this created for their businesses (e.g. significant changes to passenger seating regulation).

If any standards were to be developed for this sector, interviewees have suggested that to encourage participation, there may need to be flexibility in the ways that BSI enables SMEs

to participate, including the use of online forums, but also to allow SMEs to participate in committees on an occasional basis, rather than attend every meeting. BSI will also need to ensure that it targets the most appropriate staff within SMEs as participants; in some cases this may not be Managing Directors or Quality Managers, but could include design specialists. It would also be important to reassure participants that meetings would not be dominated by OEMs.

6 Key Findings - Construction

6.1 Challenges facing Construction SMEs

- **Recession:** the recession had affected the Construction SMEs more heavily than those in other sectors, with several companies reducing working hours, freezing recruitment or freezing salaries (or a combination of these). One SME, the concrete structure manufacturer, had had to diversify (develop an entirely new product for a different market) in order to survive. Although the worst of the downturn was believed to have passed, work streams were still intermittent (particularly in the public sector), though both of the environmental consultancies were growing.
- **Cost:** For those directly involved in construction work, rather than consulting, the fluctuating cost of raw materials (particularly steel and concrete) was a major challenge, as was the cost of labour. For the Architects and environmental consultants, the salaries of highly-skilled staff were the major cost.
- **Public sector procurement** rules in Construction increasingly required SMEs to be accredited to ISO standards, and to be Constructionline-registered. These demands, it was suggested, were placed on SMEs irrespective of their relevance (e.g, insisting on ConstructionLine registration for environmental consultants).
- The growing use of **Business Information Modelling (BIM)** software within Architecture posed some challenges for the Architectural Services interviewees, who argued:
 - That smaller companies could struggle to afford the relevant software and the training associated with it.
 - That it was not appropriate for every type of Architectural design project (e.g. restoration projects), but was becoming so embedded within the sector that it was difficult to decide not to use it.
 - That the use of **Revit** as an industry standard for BIM required small practices to use much larger IT servers than previously.

- Difficulties in accessing **bank finance** and the inappropriateness of existing **government funding initiatives** for SMEs in Construction.
- **Other** reported challenges were issues of succession planning (one environmental consultant) and managing overseas Architectural work whilst simultaneously continuing to deliver and generate work in the UK.

6.2 Innovation

- Construction SMEs were not, on the whole, product innovators, and much work was completed to a 'spec' in which there was no requirement nor incentive to innovate.
- The environmental consultancies and architects reported a need to be 'up to date', but indicated that being technically innovative could be a barrier to winning business, as this would carry with it a perceived risk.
- There were some emerging technologies of interest to Architects (3D printing and the modular construction of buildings using pre-fabricated rooms), and also in environmental consultancy (more effective DNA testing for great-crested newts), although little that was of interest to those working on Construction sites (e.g. civil engineers).
- The development and management of Intellectual Property were not deemed important among Construction SMEs and this was not expected to change in future.

6.3 Key relationships

- The Construction SMEs worked for a diverse range of clients (from multi-national power companies to, in some cases, individual householders). The nature of their relationships with those clients therefore differed. Among environmental consultancies and architects client relationships were close and collaborative, whereas elsewhere they tended to be less close and more 'contractual'.

- The sourcing of external advice was more extensive in Construction than in a number of the other sectors researched. Interviewees drew upon help from:
 - The Institute for Ecology and Environmental Management and the Institute of Directors (environmental consultancy).
 - RIBA, which provided support on an ad hoc basis (Architects).
 - Private sector consultants, including:
 - a specialist HR company and two local training providers (civil engineering)
 - a training and development company (Instep UK) for Leadership and Management Development, Interpersonal Skills and Trainer Development (SME 4: environmental consultancy). The same company had used Investors in People (IIP) consultancy support.
- The remaining SMEs did not seek external business advice, but reported that the Construction industry was fairly 'tight-knit', and that other SMEs and businesses in the industry were often prepared to offer advice informally.

6.4 Regulations

- There were very few national or international regulations specific to Construction that SMEs were required to meet; rather, several codes of practice and standards were used throughout the industry in lieu of strict regulation. Local planning authorities (or organisations such as Network Rail) functioned as de facto regulators.
- Both architectural practices had to abide by **Building Regulations**, and had mixed views about these. One thought they were relatively easy to meet, whereas the second, working more often in the public sector and in social housing, reported a tendency for clients to request adherence to the Code for Sustainable Homes and BREEAM certification. These codes were reportedly difficult to reconcile (i.e. compliance with one could result in non-compliance with another).

- Whilst regulations concerning **ecology** were reported as being virtually non-existent, local authorities increasingly requested developers to have ecological surveys carried out according to best practice guidelines; this had effectively become a form of regulation.
- **Health and safety** was the major source of regulation for those working on construction sites (i.e. the SMEs in utilities construction and civil engineering). This could include audits from Lloyd's Register and adherence to RISQS accreditation (the latter to work on Network Rail projects). Failure to gain these accreditations could mean an inability to bid for work on Construction sites. Health and Safety regulations could be difficult for very small companies to manage.
- **PAYE** rules and **pension auto-enrolments** could also pose issues for the smallest SMEs.

6.5 Best practice

- There was extensive use of codes of practice among Construction SMEs:
 - The environmental consultants were adhering to established codes of practice to a much greater extent than others in Construction. Guidelines typically included information about how to conduct surveys, how to write assessments, how to present findings, and codes of conduct and ethics.
 - Elsewhere, SMEs tended either to develop their own codes of practice, in addition to the adoption of ISO 9001, which was widespread among the SMEs in Construction.
 - Those working on Construction sites were mostly using established working practices that did not require or reward innovation (e.g. SME 2 had a very extensive series of written procedures that covered all aspects of the company's work from the digging of initial trenches to procedures for the final installation of gas and electricity mains). This developing of detailed operating practices was usually client-driven.

- In contrast, SMEs that did not work for major contractors tended to develop written operating codes in a more ad hoc fashion.
- Given that operating procedures were usually very well-established, few of the Construction SMEs identified opportunities for significant improvements to their businesses.

6.6 Standards

- There was extensive use of ISO 9001 among Construction SMEs, and several also subscribed to ISO 14001 (especially the environmental consultancies and the Architectural practices). This was usually in order to demonstrate Quality Management credentials when bidding for work (especially in the public sector). Use of ISO 9001 in particular was very well-established and posed few difficulties for the SMEs concerned. Clients within Construction usually required ISO 9001 accreditation:
 - Five SMEs also subscribed to **ISO 14001** (and one was in the process of obtaining accreditation); this had usually been attained more recently than ISO 9001. Architects' use of ISO 14001 had been driven by a shift, within the wider Construction industry, to low carbon approaches to building design.
- Views about ISO standards were mixed:
 - For the civil engineering company (SME 5) and the utilities construction company (SME 2), ISO standards (especially ISO 9001) were viewed positively as a means to ensure that the business made fewer costly mistakes.
 - Both Architectural Services interviewees thought that ISO 9001 accreditation was a more effective form of best practice than was developing a series of procedures in-house.
 - However, the smaller environmental consultancy reported that implementing and then managing adherence to ISO standards could be very time-

consuming for the smallest firms. This informant was also concerned that ISO 9001 was more a 'tick-box' exercise than a process that delivered meaningful benefit to the company.

- British Standards were used less frequently than ISO standards by the SMEs, though there was evidence of some awareness or any prior contact with BSI. Current British Standards used by the Construction SMEs were as follows:
 - The civil engineering company (SME 5) and one environmental consultant (SME 4) used BS OHSAS 18001 Occupational Health and Safety Management.
 - One of the environmental consultancies (SME 4) subscribed to BS PAS 2060 (Carbon Neutrality); this was regarded as important for a company that worked in the environmental sector, although the second consultancy (SME 3) did not subscribe to this.
 - The environmental consultants thought that BS 42020 (the recently-introduced Biodiversity Standard) was potentially useful, although both were waiting to see whether clients would insist on this certification before subscribing. One felt that the introduction of BS 42020 had been poorly publicised and that it did not relate to other standards and best practices within the environmental/ecological planning field.
 - Architectural practices used a multitude of British Standards when specifying building designs, as most features in a building (e.g. doors, sinks) were required to be certified according to a quality standard.
 - The concrete structure manufacturer had strength-tested its new headstone stabilisation product and was very confident that it met the BS EN 206 criteria, though this had not been formally assessed and the company could not afford to seek this Standard.
- Some Construction SMEs had adopted or were considering other externally-derived standards, sometimes because customers required these (e.g. National Grid audits; RISQS for the rail construction sector; ICO Data Protection guidance). ConstructionLine certification was increasingly required by public sector clients.

- One Architectural informant thought that certifications/accreditations for BIM were likely to emerge in the future, although were extremely embryonic at this stage.
- The concrete structures manufacturer (SME 8) reported that standards for the headstone stabilisation product were currently being developed under the auspices of the National Association of Monumental Masons (NAMM), rather than ISO or BSI.
- On the whole, the Construction SMEs suggested that standards were a worthwhile quality 'benchmark' that all companies in the construction sector should abide by.
 - However, some SMEs highlighted potential problems in conforming to industry standards. Some believed that standards could sometimes be a burden on the smaller companies, and that it could be difficult for companies to choose which standards to follow if these were not specified by clients.
- As with most other sectors, informants would prefer to access standards documents online as PDFs.

6.7 New standards development

Construction is a mature sector, where change – apart from that required to meet environmental regulation – tends to be incremental. As such, there were few areas in which a need for greater standardisation was identified.

- Any standard for the headstone stabilisation to be much more simple and easy to meet than a typical British Standard.

6.8 Standards development

- As in other industries researched, those who had an interest in standards development thought it was crucial to have industry associations and larger companies involved alongside SMEs, in order to give the process legitimacy.

- Four of the eight SMEs researched had some interest in being involved in standards development. These were the environmental consultants and architects rather than those working on Construction sites; the latter tended to deliver jobs to a clear specification and saw little to be gained from involvement in developing new standards.
- All of the SMEs commented that standards development should receive government funding of some sort. Some of these SMEs believed that, in addition, larger companies should pay a higher proportion of the costs of new standards development than did SMEs.
- Similar barriers to SME involvement as elsewhere were reported, particularly time and location, and also some scepticism regarding the value of committee structures.
- Potential ways to encourage SME involvement would be to further facilitate their online participation, and some financial recompense for their involvement.

6.9 Conclusions and recommendations

Construction is a sector in which the use of standards is more embedded than any of the others researched, with extensive use of ISO 9001 and ISO 14001 in particular. This is being driven by the requirements of commissioning clients, particularly in the public sector. Adoption of these standards is well established and poses few challenges for Construction SMEs. This is likely to pose some challenges for BSI when developing standards that target SMEs.

The greatest need for potential standards development lies in environmental consultancy (e.g. a standard for the conduct of bat surveys; the new technology to survey for great-crested newts). There may also be some potential requirements within Architecture, which may benefit as much from the standardisation of the various environmental codes relating to building (e.g. the Code for Sustainable Homes; BREEAM) and from better European harmonisation of the use of standards. There is, however, little need for standards relating to business processes within Architectural practices, or among those who work on construction sites (e.g. civil engineers; utilities construction companies).

Small SMEs that operate in niche markets, such as the concrete manufacturer, do have some needs for standardisation as this would help to legitimise new products. However, any standards that target this type of business need to be very simple and relate to strength testing and manufacturing processes for the product. There is also a need for individual mentoring from BSI – it would be unrealistic to expect companies of this size to buy standards ‘up-front’ or be able to participate directly in their development.

Professional institutes (RIBA: Institute of Ecology), and some larger companies will need to be brought into the process of standards development. Furthermore, as SMEs are unwilling to bear the cost of development, there may be a requirement to source government or industry funding for their development.

7 Key Findings – Food

7.1 Challenges facing Food SMEs

The main challenges identified by Food SMEs were:

- **The economic downturn**, which had affected Food SMEs and had constrained their growth. The restaurant and pub-restaurant chains had been particularly affected, especially those in regions of the country that had suffered most from the downturn. Some businesses were now taking steps to grow again.
- **Market-related challenges** included:
 - Remaining up to date with and reacting to rapidly-changing customer requirements, in chain restaurants and in brewing, as new products and types of product were requested, developed, introduced and subsequently replaced. This could mean changing products every few months or annually, in the case of those supplying to branded fast-food outlets.
 - Developing new markets, either geographical or among different types of retail outlet.
- **Supply chain management** could be challenging, particularly for breweries that had only a small number of suppliers for key ingredients, and whose production could quickly be halted if they were unable to pay suppliers (a potential knock-on effect when customers failed to pay breweries on time).
- **Competitive differentiation** was particularly challenging for breweries and was largely based upon the brand rather than the product.
- **Labour, skills and recruitment**: The restaurant informants reported difficulties in achieving a motivated workforce that could work on a casual basis; larger manufacturers noted challenges in staffing for short-term increases in demand.

- **Exporting:** Those companies that exported or wished to export food were required to have various accreditations in place – notably BRC, although individual customer company accreditations also applied.

7.2 Innovation

- There was relatively little technological innovation identified, although several SMEs were actively trying to create new products, and one of the breweries reported some innovative new brewing processes. Current Intellectual Property related mainly to trademarking of brands and of company and product names.

7.3 Key relationships

- Individual customer and supplier relationships were the most important relationships for Food SMEs.
- Most Food SMEs were members of trade associations, which offered a range of opportunities to network and to learn best practice within their particular sub-sectors.

7.4 Regulations

- Food safety and labelling were the main types of regulation that Food SMEs were required to meet; though rigorously enforced, there were no reported difficulties with meeting these regulations, although changes to labelling regulations appeared not to have been communicated very thoroughly to some of the smallest SMEs in the sample.
- There were, however, some differences of opinion about whether regulations were too onerous or not, but these differences did not 'map' onto the size of SMEs, or within particular sub-sectors.
- There were some concerns that major supermarkets could circumvent certain regulations, particularly around labelling.

7.5 Best practice

- In many cases, best practice stemmed directly from regulations, and the Food Standards Agency produced guidance packs – such as ‘Safer Food, Better Business’ for service environments – to help them meet food hygiene regulations. Trade associations such as SIBA also offered best practice guidance for SMEs.
- There was some development of company-level codes of practice among service providers, particularly the pub-restaurant and restaurant chains.
- There was little reported use of external consultants (apart from trade associations) to help drive business improvements, though one business had used Growth Accelerator.
- Where business improvements were sought, these tended to be ‘tweaks’, rather than significant overhauls.

7.6 Standards

Most of the SMEs reported that the external regulatory framework for their industry was the source of most of the audited practices and standards to which they adhered, and that BSI standards were not part of this.

Other than BRC and SALSA, which were required in order to operate in particular markets, externally-derived standards were not seen as necessary, and few of the SMEs saw value in adopting them.

- Those manufacturers operating in global food supply chains were required to use BRC standards; however, these were not relevant to the smaller producers selling predominantly in local or national markets.
- Often, the standards set by individual multi-national food manufacturers or chains (such as Pizza Hut) were individual to those companies and differed from BRC.
- The smallest SME manufacturers/producers were not using named standards other than SALSA, and generally saw little need to do so.

- There was very little reported use of British Standards, or of ISO.
- There was very little reported need for new standards, as SMEs were concerned with meeting day-to-day tasks and did not view standards as a route to business growth or as a way of addressing the challenges that they faced.
- The pub-restaurant and restaurant chain saw little need for standards of an ISO type, although there was some sense that customer service could, in certain respects, be more standardised.
- However, informants identified some potential areas where standards, or more effective regulation, could be useful:
 - Better policing of the BRC standards
 - Simplification and consistent application of labelling regulations
 - Simplified standards for Fair Trade accreditations, of which there were approximately 400 separate schemes
 - A “wrapper” that could combine regulation and best practice in brewing into a single standard.

7.7 Developing and accessing standards

- SMEs widely reported that trade associations within their particular sub-sectors of the Food and Drink industry would be the most appropriate participants in new standards development.
- SMEs faced significant time barriers to individual participation. This was, however, a lesser barrier than was the perceived lack of benefit outlined above.
- PDF-based standards documents were acceptable for many SMEs in this sector, although some would still wish to print out copies.

7.8 Conclusions and recommendations

Food is likely to prove a challenging sector in which to develop new standards that target SMEs. Food safety standards are very well-established and embedded within the Food and Drink industry in the UK, and it is evident that many best practices have developed out of these.

There may also be challenges in persuading Food and Drink SMEs that BSI is the most appropriate vehicle through which to develop new standards.

To treat the Food and Drink sector as a single entity is, however, problematic, since the activities in which businesses are engaged are very different. In discussing standards, SMEs naturally focused upon the specific sub-sector to which they belonged – such as brewing or producing meat products – rather than on the sector as a whole, and tended to conclude that current regulatory frameworks, plus customer-derived requirements, were sufficient.

There were, however, some areas where additional standardisation was identified as potentially useful, though these were often expressed broadly – customer service in restaurant environments, for example – and much further discussion would be required in order to clarify precisely what a standard should achieve.

Given the small size and local focus of many SMEs in the sector, trade bodies are likely to be central to any effort to engage with businesses for standards development. Perceptions about the representativeness of any consultation exercise will be important.

Major multi-national food companies will also need to be brought ‘on-board’, particularly as many are currently operating – and are imposing upon SMEs – their own standards outside of the remit of BRC.

8 Key Findings – Healthcare

8.1 Challenges facing Health SMEs

The challenges that were identified differed markedly according to the business activities in which the various SMEs were engaged.

Key issues among GP surgeries:

- The dissolution of PCTs and shift to GP commissioning had led to the creation of Clinical Commissioning Groups (CCGs) at regional level, rather than to commissioning directly by GP surgeries. CCGs did not have regulated structures or responsibilities in the same manner as the previous PCTs, and different priorities were being adopted by CCGs in different geographical areas.
- Surgeries were having to take on more tasks than before (such as publicising the flu vaccine).
- There was a growing demand for GP services, and a growing sense of patient entitlement to see GPs on demand; however, surgeries lacked the resources to fully meet these demands (e.g. by opening surgeries later or by providing 'on-call' GPs for the elderly).
- The complex pricing structures for services meant that it was difficult to predict income, whilst the proliferation of service providers in the wake of NHS restructuring meant that it could be difficult to manage invoicing.
- There was a need for much more collaboration between individual GP surgeries to meet these challenges systematically, and to be able to share information about best practices in light of ongoing NHS changes (although efforts were underway to share best practice in this regard).

For residential care providers, the challenges were often similar to those facing GP surgeries, but there were some important differences:

- **Funding** was a major challenge, particularly as central government (health) or local authority (social care) funding for residents did not always cover the full cost of care; consequently, fees for self-funded residents had risen to cover the shortfall.
- Different local authorities paid for different aspects of the care provision, and this varied depending on geographical area. This had financial implications for care homes that provided publicly-funded services in different local authority areas.
- **Staffing** was also a major challenge, with many care home staff being paid the minimum wage; the low profit margins associated with residential care meant that it was very difficult to recruit permanent staff, particularly as the NHS offered better pay and benefits.
- The inspection regime associated with the CQC had become less procedure-driven in recent years, but there were moves to restore inspection processes that would require much more paperwork on the part of care homes.

In pharmaceuticals, the challenges were those associated with a highly regulated, high-value, manufacturing environment:

- Costs – e.g. raw materials, and also salaries in what was a highly-skilled sector.
- Competition – especially when manufacturing directly for patient use (e.g. ophthalmic products); SMEs generally had low marketing budgets and this was an issue for this that needed to sell their products directly to hospitals and GPs, rather than manufacturing for a multi-national pharmaceutical company.
- Regulation and client expectations – GMP standards and regulations were tightly defined, and required meticulous recordkeeping and extensive auditing, especially when manufacturing for larger companies, which usually required adherence to recognised GMP standards.

8.2 Innovation

- Pharmaceuticals manufacturers needed to innovate constantly; the costs associated with innovation were high, with extensive clinical trialling required for new products, and regulatory approval required to sell in different territories.
- Whilst innovation was not necessarily seen as required within GP surgeries and residential care settings, there was scope to deliver services in an innovative manner.

For example:

- Delivery of telehealth services, or the use of SMS and online facilities in GP environment – however, this was not standardised and not all surgeries embraced it.
- Aspects of dementia care were the focus for some innovation (e.g. using bright colours to stimulate residents).

8.3 Key relationships

For GP surgeries, networks of practice managers were increasingly important as a way of sharing best practice and information about developments within the sector. Other key relationships were with Clinical Commissioning Groups, the CQC and, of course, patients (such as via Patient Forums, which offered feedback about the standard of service within individual surgeries).

For residential care providers, important relationships were with the families of residents, with local trade associations and knowledge networks (e.g. the National Care Association), and with the various contracting agencies: local authorities and the NHS, and – increasingly important – the Clinical Commissioning Groups.

For pharmaceuticals SMEs, relationships with major pharmaceuticals companies tended to be of most importance, though not all SMEs were involved in these types of supply chains, and some (notably the ophthalmic manufacturer) sold directly into clinical settings. In some cases, universities were also key partners, for R&D.

8.4 Regulation

Healthcare is a strongly regulated sector, and this was reflected across the sample.

- **GP surgeries** were inspected regularly by the Care Quality Commission (CQC), were subject to Healthwatch 'mystery shopping' practices, and ran Patient Reference Groups. Individual GPs were subject to internal peer review practices.
- **Residential care** settings were subject to CQC inspections, although the nature of the evidence sought had changed over time. There was some concern that inspections were likely to revert to a form that required providers to document more procedures, and thus would increase the administrative burden. In addition, inspections by local authorities and the NHS, as funders of care, varied in intensity and procedure, creating heavy administrative burdens that could be challenging to meet (e.g. local authorities requiring the use of different forms to the NHS in order to record residents' details).
- Pharmaceuticals manufacturers were regulated by a number of different organisations in different territories (e.g. MHRA; EMA; FDA). These industry regulations included a requirement to adhere to recognised Good Manufacturing Practices, Good Distribution Practices and Good Pharmacovigilance Practices.
 - The International Conference on Harmonisation of Technical Requirements for Registration of Pharmaceuticals for Human Use (ICH) is attempting to bring together the regulatory agencies of Europe, Japan and the US in order to better harmonise pharmaceutical regulation. However, this process is far from complete.
- Regulations posed a number of challenges for pharmaceutical SMEs:
 - Client audits were more stringent than audits from the MHRA
 - FDA (US) regulations were stricter than those in the UK and EU
 - The terminologies used by different regulatory agencies tended to differ, especially at the international level (e.g. regarding Corrective and Preventative Action).

8.5 Best practice

- The main sources of best practice for **GP surgeries** were local practice management networks that met to share their knowledge and experience. Those networks had, for example, discussed benchmarking between participating GP surgeries. However, it was difficult to adapt this benchmarking to other CCG areas – even neighbouring ones – as specific service provision varied.
 - Other sources of best practice for GP surgeries included the BMA (British Medical Association), RCGP (Royal College of General Practitioners), NICE guidelines, CQC and **First Practice Management**. Some of these sources reportedly clashed with one another, and BMA advice could be much stricter than that supplied by NICE.
- The **residential care** sector was very well-connected, with regular conferences and publications relating to best practice. Organisations such as CQC and NICE had also begun to publish best practice guidance, although providers were under no obligation to use these, and it could be difficult for managers to find time to access them.
 - Nursing publications (e.g. from the Nursing and Midwifery Council) and informal associations such as Care Focus South West also functioned as a source of support and information for care home providers. The National Care Association also provided HR advice and updates on legislative changes.
- Best practice in **pharmaceutical manufacturing** was derived largely from Quality Management guidelines within regulatory frameworks, and from Good Manufacturing Practice. None of the SMEs consulted had developed any independent best practice guidelines because clients expected manufacturers to possess relevant regulatory and Quality Management certificates.

8.6 Standards

As a heavily regulated sector, healthcare SMEs did not use many standards; the main user was the pharmaceutical industry, driven by clients' requirements.

- **GP surgeries** reported that implementation of government policy within the NHS was largely left to individual surgeries and that there was very little national standardisation of services. Hence, GP surgeries typically developed many protocols and procedures in house.
- **Residential care providers** commented that as their sector was already heavily regulated, there appeared to be little purpose to standards that went beyond regulatory or contractual requirements. Both companies reported significant resource limitations, which would be further stretched by managing adherence to additional standards.
- There was no use of BSI/ISO standards among **GP surgeries** or **residential care providers**; informants were aware of these, but regarded them as more appropriate for manufacturing environments.
- Standards such as **ISO 9001** were not seen as relevant to **pharmaceutical manufacturers** as GMP guidelines already addressed Quality Management. Two of the pharmaceutical products/preparations manufacturers had used ISO or BSI standards; however, one of those standards (ISO13485) was for the medical devices elements of the business.

8.7 New standards development

- Potential areas where GP surgeries could benefit from new standards were:
 - Standards for the maintenance of an internal GP Intranet
 - Standards for managing the updating of internal protocols and procedures within individual surgeries (e.g. to prevent staff from using outdated procedures)
 - Staff training standards to address 'grey areas' left by current frameworks (e.g. CPR training for non-clinical staff)
 - Standardising items of equipment within GP practices (e.g. types of scales used).

- Residential care providers cited a need to better harmonise local authority and NHS contracts, and for much clearer guidance about how best to meet those contractual requirements. However, standards for interacting with residents were regarded as likely to be unhelpful.
- Among pharmaceutical manufacturers, suggested areas where new standards would be helpful were:
 - In better linking standards for companies involved in the pharmaceuticals, biotechnology and medical devices industries
 - Better and more consistent definitions of Corrective and Preventative Actions.
- As in the other sectors researched, there was a preference to access PDF versions of standards, with an option to print hard copies if desired.

8.8 Participating in standards development

Healthcare SMEs felt it important that large companies and other major stakeholders (such as NICE) take part in developing any new or revised standards for the sector. There was, however, some concern that larger companies and organisations might dominate the standards development process.

- In **GP surgeries**, it is likely to be impractical for individual practice managers to participate; it is more appropriate for BMA, RCGP, NICE, CCGs and the Nursing and Midwifery Council to be involved. Whilst there is a need for better coordination of best practice and standards within GP surgery environments, any organisation seeking to do so will need to convince these organisations that it is an appropriate body, and has sufficient knowledge of the sector.
- For **residential care providers**, time is a major barrier to participation, although both informants were keen to ensure that the 'voice' of small care home providers was present. However, care home managers are often required to be on call, and it is very difficult to arrange to attend conferences or events such as standards committees. It may therefore be more appropriate for BSI to work with sector representative bodies (e.g. Care Focus South West) and funders (e.g. local authorities).

- For **pharmaceutical manufacturers**, possible ways to overcome time and resource barriers to participation identified by SMEs were to:
 - Visit SMEs directly to collect and understand their views, rather than expecting SMEs to be able to commit to London-based committees
 - Better advertise the BSI SME Forum, and to further online participation among the SME community (e.g. by creating sector-specific online forums)
 - Consider giving participating SMEs access to more detailed descriptions of standards (in order to make more informed purchase decisions) as an incentive for taking part.

8.9 Conclusions and recommendations

The areas of healthcare researched were very disparate, and there are clearly considerable differences in the use of, and potential need for, standards in pharmaceutical contexts compared to GP surgeries and residential care settings.

Healthcare is also a heavily-regulated sector and this influenced SMEs perspectives on the need for standards and how any new standards might be developed.

There is some scope to develop standards to support internal procedures and protocols in GP surgeries (e.g. maintaining internal intranets and addressing some training 'grey areas'). There was no suggestion that standards would be helpful in supporting the interactions between GPs and patients, though the movement of some clinician:patient interaction to online formats could perhaps give rise to new requirements.

There is also a perceived need for greater harmonisation of the residential care contracts that are used by different Local Authorities and the NHS, and for clearer guidance about how to meet specific requirements of these. Beyond the requirements put in place by the Care Quality Commission, standards for interacting with care home residents are unlikely to be seen as unhelpful because of the wide-ranging and often complex needs that residents may have, and the perceived need therefore to maintain flexibility.

Pharmaceutical manufacturers have identified a need to better link the standards that apply to companies involved in the pharmaceutical, biotechnology and medical devices industries,

and for greater harmonising of international regulation. A more effective and clear definition of Corrective and Preventative Actions that applied internationally would also be helpful.

It appears unlikely that significant numbers of GP surgeries and residential care home businesses would wish to take part in standards committees, since their resources are already stretched. In the case of GP surgeries, Clinical Commissioning Groups have become key decision-makers and would be more appropriate participants, particularly if there is an intention to develop standards for the commissioning and provision of healthcare rather than administrative procedures alone. Key stakeholders at national level would include the BMA, RCGP and NICE.

Among the pharmaceutical manufacturing SMEs, time and resource pressures are also likely to present some barriers to participation. The businesses interviewed were already well established and appeared to be operating to Good Manufacturing Practice without any significant difficulty. There did not therefore seem to be a role for standards in helping those businesses to work to GMP requirements. In addition, in pharmaceuticals, as in other sectors that featured a high proportion of contracted work for multi-national companies, securing the involvement of these larger companies is likely to be important if any new standards are to gain legitimacy.

9 Key Findings - ICT

9.1 Challenges

The challenges that the ICT SMEs faced were often a function of their size and the sub-sector in which they worked, and there was little consistency across the sample.

Key challenges reported were:

- **Meeting client demands:** Telecoms companies were under pressure to reduce costs, especially when working for public sector clients and client relationships were largely cost-driven. For data storage and software development, client relationships were much more integrated; in the case of software development, these were less cost-driven than elsewhere in ICT.

For these latter types of SME, working closely to meet the needs of companies such as Rentokil, managing client relationships – and particularly expectations– was a key challenge. For software developers, frameworks such as Agile appear to provide a means to manage this.

Small-scale suppliers working with residential customers faced challenges in to costing work appropriately (e.g. virus removal).

- **Achieving further growth:** Among ICT service providers, there was relatively little scope to produce innovative new technology that could fuel rapid growth, and future strategies (particularly in telecoms) appeared to depend on increasing sales of existing services. Within software development, there was more scope to innovate (such as the case of the developer that produced business software for mobiles and tablets). For the smallest SMEs, growth strategies focused on efforts to work with larger clients, although there were significant barriers to doing so.

- **Technical challenges:** The diversity of telecoms solutions and the blurring of IT and telecoms with new technology meant that telecoms providers needed to manage the introduction of new technology and offer a growing range of services, notably in Wi-Fi and IT, although close relationships with manufacturers (e.g. NEC) helped with this.

Software developers were required to keep on top of the proliferation of hardware platforms that were continually emerging.

In data storage, the emergence of the Cloud may reduce the need for storage services in the future, although it is likely that major commercial clients will still require some access to secure, on-site servers.

- For those data storage companies working with larger multi-national clients, the main challenge was to ensure that they were responsive to clients' needs. It was unclear, however, how these needs would evolve, for example the proportion of the data that may shift into the Cloud.
- **Skills and recruitment:** For the software developers, which were very small companies, the challenge was to find people who could fit into company cultures; finding people with technical skills was less of a challenge.

Telecoms companies had extensive training requirements, especially for anyone working at height; these were costly to meet and could demotivate staff as engineers had to complete the same training every year.

- **Costs and other financial challenges:** In many cases, salaries were a high cost, especially for the smallest companies, as the work was highly skilled and specialist.

Cost of hardware was a challenge for telecoms companies, who reported more and more costs associated with each new hardware iteration.

Other costs were travel (particularly for the mobile telecoms informant) and marketing. Large organisations' payment schedules could also present challenges.

- **Imports and exports:** There was little international work among the SMEs consulted, although the remote Cisco engineer faced challenges in marketing this innovative

service internationally, and was unsure why some markets appeared receptive (e.g. Egypt) when others (e.g. Chile) did not. One telecoms SME reported a need to gain extensive safety accreditations in order to work in the Middle East telecoms sector; they found that they had won repeat work as a consequence of already having these in place.

9.2 Innovation and key technologies

- Key technologies for software developers were the proliferating mobile devices that were used not only for games but also increasingly in business environments. For example, SME 2 was developing bespoke database and customer service software for major companies that would synch across a range of different devices.
- There was comparatively little innovation among the telecoms SMEs, which were installing and maintaining technology that was sourced from manufacturers rather than created internally. However, the smallest provider (which offered remote Cisco services) had developed a Cloud-based telephony system that was innovative, would eliminate the need for telecoms cabling and was expected to be used more widely in telecoms in two to three years' time.
- Other than the software developer working with businesses to develop software for mobiles and tablets, there was very little Intellectual Property activity in the ICT sector, beyond some limited trademarking of company names.

9.3 Key relationships

- Client relationships were especially important in ICT, particularly for those (in data storage and in software development) that needed to work closely with clients to understand needs and manage the evolution of projects.
- In telecoms, it was widely reported that clients could switch service providers relatively easily and that it was therefore important to maintain especially high standards of customer service. Standards for customer service, however, were usually developed in-house.

- Few of the SMEs were members of trade associations; there was, however, a moderate level of external consultancy used to help plan business improvements, particularly among the smaller companies. The larger telecoms providers did not source any external support.

9.4 Regulatory environment

ICT was subject to less regulation than were some other sectors, such as Aerospace or Healthcare.

- Beyond the normal regulatory environment to which SMEs are subject (e.g. in areas such as employment and Health and Safety) references were made to Data Protection and Disability Discrimination, which was particularly relevant to software development and to users with visual impairments.
- There were some guidelines for the development of mobile games and products, although these were relatively straightforward (relating to offensive content); otherwise, there were no regulatory restrictions.
- Also relevant were the Working at Height Regulations, for telecoms workers who had to access rooftops or tall structures.

There was a strong sense among interviewees that the ICT sector benefitted from being under-regulated, as this enabled more rapid technical development; excessive regulation could slow the pace of software development within the sector.

9.5 Best practice

ICT SMEs worked to a number of different codes of best practice, but no one code was used by more than one SME in the sample, and the smaller SMEs tended not to use codes of practice at all.

- The Agile Framework was used, in one case, for software development; this was relevant for the SME working on long-term contracts with large national or multinational companies.
- Telecoms informants used codes of practice that were developed in-house – through experience of working with successive types of client or derived from Quality Management principles that clients expected SMEs to have in place.
- Among the data storage SMEs, large multinational clients required particular ISO standards (notably ISO 27001) to be met; otherwise they were unlikely to work with those SMEs. However, ISO compliance was not necessary for the SME that worked with residential customers.

One SME referred also to the importance of business resilience planning/disaster management as a means to win the confidence of potential customers. That company had attended a local, SFEDI-accredited 'Get Resilient' training course to help develop its business resilience plan.

9.6 Standards

There was limited use of externally-derived standards among ICT SMEs; and a perception among the smaller SMEs that standards delivered few tangible benefits but required significant financial and management investment.

- The larger telecoms and data storage providers were using ISO 9001 standards, with one data storage SME also adhering to ISO 27001; adoption and use of these standards was client-driven.
- Microsoft and CISCO certifications were used by those SMEs providing relevant services; these were graded forms of accreditation that could be challenging for the smallest SMEs to achieve.
- Telecoms SMEs were required to meet generic Health and Safety requirements. However, in order to work at height on mobile telecommunications masts, engineers

were required to have had training that was certified by Arqiva (the UK's largest independent Wi-Fi provider).

There was very little reported use of British Standards, nor any anticipated future use of standards beyond those already used. Best practice (e.g. the Agile Framework) appeared to address many SMEs' needs in this sector.

9.7 Participating in standards development

- SMEs in all sub-sectors thought that it would be important to include large IT and telecoms providers (e.g. Apple; Google; Vodafone; Microsoft) in the development of new standards, alongside SMEs, and that standards developed by small companies alone were unlikely to be accepted within the wider industry. Government funding was also identified as a need by two SMEs.
- Barriers to SMEs participating in standards development were:
 - The likely time commitment involved
 - Having to travel to London, which was difficult for many SMEs to justify
 - A sense among telecoms informants that existing best practice had been developed in a very 'top-down' way, and that committee structures were prone to domination by large companies.
- These barriers could, however, potentially be overcome by offering webinar-based participation rather than requiring SMEs to travel to London. One informant in software development also specified that it may be helpful to give new standards more ICT-relevant names, rather than a numbered system such as ISO 9001, in order to convince SMEs of their relevance.

9.8 Conclusions and recommendations

ICT is diverse sector and businesses' requirements for standardisation differ markedly across the various sub-sectors researched (i.e. are very different in telecoms than in software development).

As in many other sectors, the smaller SMEs saw little value in adopting externally developed standards, whether new or already available. Awareness of standards and their potential relevance was very limited within this sector, particularly among software developers. There appears, therefore, relatively limited value in the development of new British Standards for ICT, with particular concerns about:

- The applicability of standards to SMEs that were undertaking very specific work – for whom standardisation might stymie their creativity, particularly in software development.
- The costs versus benefits of standardisation, particularly the time and financial costs involved in adopting and then managing adherence to standards.
- The limited benefit that standards beyond ISO 9001 bring in the telecoms sector, in which purchases are largely based on cost and reputation, rather than adherence to any standards.

ICT therefore appears to offer only limited opportunities for the development of new standards, and for SME participation in this process.

Nevertheless, many informants were conscious of a need for certain types of sector-specific standards – such as Microsoft certification – in order to grow their businesses. Amends to this type of certification – enabling SMEs to better access Silver and Gold Partner status – would be welcomed. There are also areas in which some informants feel there is a need for better regulation, particularly with regard to the safety regulations associated with installing IT cables.

If BSI does intend to develop standards that target ICT SMEs, then online, webinar-based participation routes will be important. Giving proposed new standards names that relate directly to ICT may also help to drive participation and adoption.

It would also be important also to include large IT and telecoms corporations, such as Apple and Vodafone, in the development of new standards, in order to promote wider acceptance of their value.

10 Key Findings from Quantitative Research

10.1 Extent of using standards

- Across the sample (of 600 SMEs) as a whole:
 - **548 respondents (91%) had used standards (defined as ‘an agreed, repeatable way of doing something’).**
 - 538 (90% of the sample) had used standards in the past 12 months
 - a further 10 (2%) had done so in the previous 12 months
 - **50% had used British, European or international standards** (*NB: “British, European and international standards” refers to standards perceived by participants as being British, European or international in scope. This does not refer exclusively to BS, EN or ISO standards alone, as these standards were not automatically inferred by all SMEs participating in the telephone survey; e.g. in the case of Food, BRC standards, which lie outside the scope of BS, EN or ISO standards, were reported as an international standard*);
 - 54% had used professional or industry standards; 45% had used standards that were derived from contracts with their customers or suppliers; 40% had used trade association guidelines or specifications; and 77% had in place SOPs.
- Across the sectors, use of standards stood at:
 - Construction 99%; Healthcare 96%, Aerospace 95%, Food 90%; ICT 79%; Automotive 77%.
- The **types of standards** used, however, differed markedly between the sectors.
- Use of standards (of each type) also differed by size bands (**increasing with company size**).
- Only 48 respondents (8%) had used **no standards** or were unsure about this, and 37 respondents (less than 7% of the sample) said that they used no codified information/requirements/codes of best practice.
- Among the 48 SMEs that did not use any standards or were unsure, the vast majority (83%) said it was because they were **not relevant** to their company.

- Among current users of standards, those from **Construction, Healthcare and Food** were the most likely to use additional standards in the future.
- Among those who did not use standards, respondents in Healthcare indicated the greatest likelihood that they would do so in the future and those in **Automotive** indicated the least likelihood.

10.2 Reasons for using/not using standards

- Among those who had used them, standards were perceived to have been useful; in particular by those working in Healthcare – returning a mean score of 4.6 out of 5 (ICT less so – a mean score of 4).
- The reasons cited for using standards were largely framed positively and in terms of benefits to the business. Only a small minority said that the standards used did not benefit their business, though 16% said that they were **obliged** to work to certain standards.
- Non-users and those who were unsure whether they used standards tended to cite **lack of relevance or lack of need** as reasons why standards would: (i) not help their businesses; and (ii) be unlikely to be used in the future. Other reasons were identified by far fewer respondents. Company size was noted by some as a reason why standards were not relevant (i.e. the business was too small).

10.3 Sources of standards

- 148 interviewees (27%) had used **BSI-published standards** in their business and 126 (23%) had used ISO-published standards.
- Most common, however, were **internal standards** – used by 42% of the SMEs and used more than any other source of standards within Automotive and ICT.
- The sectors with the **highest usage levels of British, European or International standards** were:
 - Construction (72%)
 - Food (65%)
 - Aerospace (51%)

(NB: “British, European and international standards” refers to standards perceived by participants as being British, European or international in scope. This does not refer

exclusively to BS, EN or ISO standards alone, as these standards were not automatically inferred by all SMEs participating in the telephone survey; e.g. in the case of Food, BRC standards, which lie outside the scope of BS, EN or ISO standards, were reported as an international standard)

- Use of BSI-published standards was highest by far in **Construction**, where 55% of SMEs that had used standards reported using these. In Aerospace and Automotive, less than a third of respondents had used BSI standards and in each of the other sectors usage was below 20%.
- A wide variety of specific standards was identified as having been used. Internal standards, BS and ISO were again prominent, but it was notable that in Healthcare, Aerospace and Food, **sector-specific standards** were the most common.
- Across the sample, the larger the business (by number of employees), the higher the likelihood that externally-sourced standards were being used. This applied to each of the external sources about which interviewees were asked (e.g. British/European/International; Professional/Industry; Trade Association; and Contractual (from supplier or customer).
- **Trade associations and contacts/mentors** were the most common sources of information about standards, followed by the Internet.
 - Construction and Healthcare respondents were most likely to cite trade associations as an information source
 - Respondents working in Aerospace and ICT were most likely to refer to contacts and mentors.

10.4 Standards development

10.4.1 Benefit of new standards

- **Opinion varied** with regard to the likely impact that new standards would have on **respondents' companies** (mean score of 2.9 out of 5), with those working in Construction, Healthcare and Food more likely to perceive a benefit.
- Respondents were more positive about the likely benefit of new standards on **their industry** (mean score of 3.5); in particular Construction, Food and Aerospace respondents.
- **Automotive** respondents were **least likely** to perceive a benefit to their company or industry of new standards.

- Reasons for being interested in new standards included: to **improve standardisation and efficiency**, as well as to optimise customer service.
- By far the most common reason for believing that new standards would not be of benefit, was that **existing standards provided what was needed**.

10.4.2 Involvement in standards development

- Almost 20% of respondents had **been involved** in developing standards previously, mostly for use in their own organisations. Those working in Aerospace and ICT were most likely to have been involved in developing standards.
- There were relatively **low levels of interest** in becoming involved in standards development for BSI, especially among **Automotive** respondents. Those working in Construction and Food were the most willing to be involved, but interest was still quite low.
- **Contributing online** was the preferred means of involvement – across sectors. The overwhelming barrier to being involved in standards development with BSI was said to be a **lack of time**.
- Among the small number of final comments, Automotive SMEs continued to explain why standards were not helpful, whereas Construction respondents tended to be more positive and welcoming of standards.

11 Conclusions and Implications

11.1 Challenges facing SMEs

Across the sectors, but particularly in Construction and Food and to a lesser extent Automotive and Healthcare, some businesses were continuing to experience impacts from the economic downturn (companies in Aerospace and ICT had suffered fewer impacts from this). This included difficulties in accessing finance, internal resource constraints that had resulted from public sector spending cuts and a greater emphasis upon having in place alternative markets. Where SMEs worked with large OEMs or other major corporations, for example in Aerospace, Automotive and in brewing, payment terms posed some challenges.

Where SMEs were required to work to different standards or to obtain different approvals in different geographical territories (for example the EU and the US), this led to higher costs and operated as a barrier to growing export trade.

The extent to which SMEs innovated or actively sought to innovate differed significantly between sectors and, to some extent, between different business activities within sectors. Among the Construction SMEs, for example, there was little scope to innovate except in niche areas, whereas in Automotive innovation was essential and was driven partly by the requirement to reduce the weight of vehicles (which in turn was related to the need to cut carbon emissions). Innovation was similarly a core aspect of pharmaceutical manufacturing. Within ICT there was evidence of innovation among software developers, but comparatively little among telecoms informants. This reflects important differences between sub-sectors within the industries researched.

11.2 Using and developing standards

Across the research as a whole, qualitative and quantitative, there was a relatively high reported use of internal standards or operating procedures by SMEs and some use of externally derived standards (e.g. BSI, ISO and customer-sourced standards). Where

externally-derived standards were used, this was often in order to meet customer demands, to enable entry to supplier frameworks or to meet regulatory requirements that were specific to the industry concerned. Within Aerospace it was essential to adopt AS 9100 standards to enter OEM supply chains.

Externally-sourced standards were more commonly used by the larger SMEs, whilst some of the smaller businesses cited cost and staffing resource as significant barriers to adopting and implementing standards.

Interest in the development of new standards tended to exist in 'pockets' rather than being concentrated in particular sectors. This often reflected the specific areas of activity in which SMEs were engaged. In the quantitative research, respondents in Automotive were least convinced of the benefits that any new standards would bring to their companies and this was also reflected in their level of interest in being involved in standards development. Among Construction, Healthcare and Food SMEs, there was a more positive view of the potential impact that new standards could have, but the benefits to the industry tended to be seen as greater than the benefits to the company.

Interest in the creation of new standards sometimes stemmed from a perception that existing standards needed to be harmonised, that poor quality traders were competing unfairly – since they did not need to adhere to quality or operating standards – or that large customer organisations needed to be persuaded that a single standard was sufficient (rather than imposing their own internal standards upon suppliers in addition). There was also some interest expressed (for example within Aerospace and Construction) by SMEs that were diversifying or considering diversifying into new products and markets.

Some of the smallest businesses, for example in Construction, suggested that they had had difficulty in understanding which codes or standards applied to their areas of activity and asked that more be done to offer accurate and impartial advice about standards. This was interesting in light of comments made in previous research completed for BSI by Marketwise Strategies, in which some SME interviewees felt that their businesses had received poor advice when working with standards consultants but had had better experiences when engaging directly with BSI.

Those whose businesses were providing a service (e.g. residential care; pub and restaurant chains), rather than manufacturing, expressed the greatest difficulties in understanding the

relevance of standards to their businesses, since they were concerned to maintain flexibility within customer service interactions.

11.3 Taking part in standards development

Time constraints and the costs associated with releasing staff and with travel were important barriers to SMEs' involvement in developing standards. Within the quantitative survey, lack of time was by far the most common barrier highlighted. Those barriers should perhaps be viewed, however, in the context of the limited benefits that most SMEs associated with the development of new standards. Where SMEs perceive that new standards may help to reduce duplication (by streamlining the standards that are currently in operation), or could improve business efficiency in other ways, it is possible that the perceived barriers might be lessened.

Within the quantitative research, contributing online was favoured, across the sectors, rather than taking part in meetings in person. In depth interviews, however, where a wider range of options could be explored, the role of trade bodies in representing SMEs was prominent; given that the firms themselves were resource-constrained, their trade organisations were suggested as the most appropriate participants in developing standards. Those organisations could bring a breadth of understanding and, importantly, could make time available to do justice to the task.

Where SMEs perceived previous standards processes, or similar initiatives, to have been dominated by larger customer organisations there were suggestions that a more balanced approach was needed. It was widely recognised, however, that the involvement of those large corporates – or public sector bodies – was crucial if new standards were to gain sector-wide acceptance.

SMEs, not surprisingly, suggested that government should be the main funder of standards development, particularly when standards were intended to benefit an industry or sector as a whole or to have wider benefits to the economy.

11.4 Requirements that SMEs have of BSI

In working with and in seeking to engage SMEs in standards development, BSI may wish to take into account the following preferences that have been expressed:

- For standards to be available in PDF format, with an option to print copies.
- For the time requirements associated with participation in standards development to be minimised and for the following methods to be part of a 'menu' of engagement options:
 - Online feedback routes, including online meetings
 - Participation via representative bodies, such as trade associations and industry groupings.
- For easy to understand information to be available, explaining which standards are relevant to particular business operations and sets of circumstances.
- Within a number of sectors (particularly Aerospace, Automotive, Construction and pharmaceuticals) to ensure that major OEMs are "on-board" with standards development.

11.5 Implications

This research has involved SMEs from six sectors and, within each of those, from multiple areas of business activity. Inevitably, therefore, only broad implications can be developed across the research as a whole.

- There is interest in standards among SMEs only in 'pockets' – where pockets have been identified (e.g. some types of Aerospace manufacturer) then an appropriate way forward may be for BSI to explore these further with the relevant trade/industry bodies.
- One possible issue raised is that of the lack of harmonisation of standards internationally (e.g. in the pharmaceutical sector); BSI might be able influence this.

- SMEs as a whole often have a relatively limited understanding of standards, and have tended to adopt only those standards required specifically by clients. There is, then, a need to work with trade bodies to communicate the potential value of new standards.
- Ultimately there may be a need to conduct research with industry bodies in order to clarify needs in particular areas.

Part Two
Qualitative Research

12 Introduction

12.1 Research overview

BSI Group, a global business that helps organisations to enhance their performance by creating standards of excellence and by delivering a range of services that improve organisational effectiveness, wishes to engage more actively with small and medium sized enterprises (SMEs). This is part of its longer term business strategy and in order to respond to the 2012 European Standardisation Regulation (EU) No 1025/2012.² It is particularly interested in exploring ways for SMEs to become more involved in the writing of new standards. Recently, BSI has established an SME Forum, as a means of encouraging interaction and gathering feedback on national, European and international policies and strategies that impact on SMEs.

In 2013, BSI commissioned research among SMEs that work with emerging technologies; focusing upon Advanced Composites, Industrial Biotechnology and Medical Biotechnology.

The current research is intended to inform strategy by helping BSI to develop a better understanding of the UK SME landscape and of SMEs in six specific sectors: Aerospace; Automotives; Construction; Food; Healthcare; and ICT.

The research has been carried out in two stages:

- Stage One developed an overview of the SME landscape in the UK, identifying the characteristics of the SME population and highlighting in particular the developments taking place in BSI's six sectors of interest. That work took the form of a desk-based study, and was reported upon in February 2014.
- Stage Two research involved discrete qualitative and quantitative components (depth interviews and a telephone survey) and is the focus of the current report.

² See http://ec.europa.eu/enterprise/policies/european-standards/standardisation-policy/general-framework/index_en.htm.

12.2 Research objectives

Building upon Stage One findings, Stage Two primary research was intended to:

- (i) Assess
 - The main challenges faced by SMEs in the Aerospace, Automotive, Construction, Food, Healthcare and ICT sectors.
 - Any challenges that SMEs in those sectors face in using standards.
 - Any challenges that they face in participating in standards development
- (ii) Provide feedback on the requirements that SMEs in those sectors require BSI to meet.

Specific objectives for Stage Two research were:

8. To understand the **main challenges** that SMEs in Aerospace, Healthcare, Construction, Automotive, Food and ICT face in their industries
 - a. To identify what the core challenges are perceived to be, as businesses develop, including with reference to impacts upon profitability, innovation and competitiveness in both domestic and overseas markets.
 - b. To understand the issues that pose the **greatest challenges** for SMEs.
9. To identify the types of and specific **standards that are currently used by or are perceived as relevant by SMEs** in each sector (including technical standards, codes of practice etc.).
10. To understand in each sector **the challenges that SMEs face in using standards**
 - a. To explore SMEs' **current and past experience** of using or attempting to use standards
 - i. The standards concerned
 - ii. Positive and negative aspects of the experience (costs, benefits, impacts upon the business)
 - iii. Perceptions that resulted – of standards and of standards bodies such as BSI
 - b. To identify any **barriers to adoption** of standards or particular types of standards in each of the sectors researched
 - c. To identify any **sectors** where SMEs face particularly significant challenges in the use of standards, and to understand the reasons for this.

11. To identify any **challenges that SMEs face in participating** in standards development
 - a. To understand the **issues that arise** for SMEs when considering whether to take part and when taking part in the development of standards
 - b. To clarify **perceptions of what involvement would mean** – and the impact that this has upon willingness to engage with BSI
 - c. To explore **past experiences** of involvement, including positive and negative aspects and the perceptions that have resulted.

12. To understand what SMEs in these sectors **require from BSI in the future** and how this may differ according to the characteristics of the SMEs (e.g. by sector). This might include, for example,:
 - a. Helping SMEs to understand the role of standards, how to work with standards or how to become involved in developing standards
 - b. Making standards more accessible by SMEs
 - c. Adapting processes for standards development and for communications in order to maximise SME involvement and buy-in.

13. To highlight the **implications that arise for standards development and use** by SMEs in each sector, including to differentiate between issues that are sector-specific and those that have cross-sector implications.

14. To provide **baseline quantitative data and an appropriate methodology that enables the research to be replicated** in the future and meaningful comparisons to be obtained; in particular to enable change and progress to be measured at sector level. (This objective related specifically to the quantitative study.)

13 Methodology

13.1 Overview

Stage Two comprised two primary research projects:

- Qualitative - depth interviews with 48 SMEs
- Quantitative - a telephone survey among 600 SMEs.

13.2 Qualitative depth interviews

13.2.1 Approach

Depth interviews were completed with 48 SMEs; six in each of the sectors of interest (Aerospace, Automotive, Construction, Food, Healthcare and ICT). In each sector, five interviews were intended to be face-to-face and three by telephone. This split was achieved in every sector except for Automotive, which (with the permission of BSI) had a 4:4 split of face-to-face and telephone interviewing.

The discussion guide was developed in close consultation with BSI and focused on the challenges that SMEs faced, issues concerning innovation, key relationships they had and discussion about standards, regulation and best practice.

The same discussion guide was used both for telephone and face-to-face interviews and is included at Appendix 1.

Face-to-face interviews usually lasted 60-75 minutes, with a few lasting up to 90 minutes. Telephone interviews tended to last 30-45 minutes, although some were longer than an hour.

13.2.2 Sampling and recruitment

At the start of Phase Two, BSI specified certain SIC codes - within each sector - that interviews were to target. This targeting was guided by the findings from Stage One and focused upon sub-sectors in which there was evidence of current or potential growth in the SME population.

Approximately four SIC codes were specified per sector, with the intention that at least one company be interviewed from each of these. In Construction, there were more codes specified (seven) and in Food fewer. Those codes are highlighted at the start of each sector-focused chapter.

When recruiting SMEs to the research, we sought a spread of micro, small and medium enterprises but excluded single person enterprises that were not VAT registered.

Geography was not an important sampling consideration, since Stage One research had already provided insights into the geographical spread of SMEs in each of the six sectors. Whilst telephone interviews were UK-wide, therefore, face to face research was organised in a way that maximised the number of interviews within the project budget. This meant that face to face research took place in the North of England, where Marketwise Strategies is predominantly based.

Though many SMEs were keen to participate in the research, busy schedules meant that these were sometimes booked as far ahead as four weeks. This meant that the timescale for the project was longer than had been planned.

13.3 Quantitative Survey

Alongside the qualitative research, a telephone-based quantitative survey was carried out among 600 UK SMEs (approximately 100 per sector). The findings from that research are reported upon in Volume 3 - which includes the quantitative research methodology - and within the Executive Summary.

14 Aerospace

14.1 Overview

This chapter details the findings from eight interviews with SMEs in the UK Aerospace industry, addressing the following topics:

- The major challenges that those SMEs faced as businesses
- Issues concerning innovation and Intellectual Property
- Key business relationships
- The regulatory environment in Aerospace and its impact on SMEs
- Best practice and business improvements that SMEs wished to implement
- Standards used in the industry and areas where new standards may be useful
- Ways in which SMEs may wish to become involved in standards development.

14.2 Aerospace industry: findings from Stage 1 report

Aerospace is one of the most successful manufacturing industries in the UK economy, and has a 17% market share of all global Aerospace industry revenues.

The 2,375 companies in the UK Aerospace industry (as of 2013) comprise 0.1% of the UK's registered SMEs. The total number of SMEs in the industry has grown by 0.6% between 2011 and 2013. The South West, North West and East Midlands have the highest numbers of Aerospace employees in the country.

The UK Aerospace industry is divided into two similarly-sized sectors:

- Civil aerospace, whose growth is expected to accelerate in the next two to three years as a result of growing international orders; the UK's civil aerospace sector is the largest in Europe and second largest in the world.

- Defence aerospace, which has fared less well in recent years as a result of austerity approaches to public spending in the UK and elsewhere.

The industry consists of around six OEMs, with companies at Tier 1 Tier 2 and below supplying these with parts and components.

The industry has a strong and 'joined up' strategy, which renders the UK an attractive location for new international investment in civil aerospace. The UK has a strong comparative advantage in the development and production of: wings; engines; aero structures; and advanced systems.

According to KPMG, rising global demand could generate over £474 billion in orders for UK companies by 2030, particularly from Asia, the Middle East and South America. UK aerospace SMEs already have a proven track record as suppliers to the global aviation industry.

Core **challenges** faced by the industry are:

- Ensuring that UK SMEs are able to adapt to substantially different product and manufacturing technologies (e.g. Additive Manufacturing; Plastic Electronics) that are likely to be used to produce the next generation of aircraft.
- New orders in the defence aerospace sector falling due to a reduction in defence orders as governments continue to make budget cuts.
- High R&D costs, challenges in accessing funding, and elements of complacency among Tier-2 and lower companies, meaning a lack of innovation at these levels of the supply chain.

Key **government initiatives** in aerospace include:

- The Strategic Vision for UK Aerospace, launched July 2012.
- The Aerospace Growth Partnership (AGP), a unique partnership between industry and government that has created a shared vision for the UK Civil Aerospace sector for the next 15 years and beyond.
- The **Aerospace Technology Institute** (ATI), created with £2 billion of funding to help develop new technologies for the aerospace industry.

- The **UK Aerodynamics Centre**, a £60 million state-of-the-art aerodynamics research centre to “achieve a step change in the UK’s capability in complex aerodynamics.”
- The **National Aerospace Technology Exploitation Programme (NATEP)**, which supports smaller companies to innovate in products and manufacturing techniques.
- The creation of **500 new Master’s-level graduate places** through joint industry and government bursary funding.

14.3 Interviews

14.3.1 Organisations

BSI wished interviews to focus on the following types of Aerospace SME:

Table 1 Aerospace sub-sectors for interview focus

SIC Code	Title	Rationale	Type of standard
30300	Manufacture of air and spacecraft and related machinery.	Substantial % growth between 2011-13. High standards relevance. UK industrial success story.	Product Process
26511 & 26513	Manufacture of electronic and non-electronic measuring, testing etc. equipment, not for industrial process control.	Likely standards relevance.	Product Process
28990	Manufacture of other special purpose machinery.	Significant % growth between 2011-13. Likely standards relevance.	Product Process
52230	Service activities incidental to air transportation	Potential area for standards development	Behavioural/organisational potential

As aerospace is a tiered industry, BSI proposed that focus should be upon Tiers 2, 3 and 4 as these were likely to have the highest concentration of SMEs, rather than Tier 1. In reality, however, some of those interviewed straddled tiers and it was not possible to eliminate Tier-1 activity entirely (typically, the closer nature of relationships in the defence sector vis-à-vis civil aerospace meant that a Tier 1 supplier in defence was classified as a Tier 2 supplier in the civil sector).

Two SMEs were interviewed per sub-sector. The organisations interviewed were as follows:

Table 2 Aerospace SMEs interviewed

Aerospace SME	SIC Code Title	Employees	Job Roles
1	Manufacture of air and spacecraft and related machinery	c.200	Engineering and Quality Manager
2	Manufacture of air and spacecraft and related machinery	c.50	Head of Quality
3	Manufacture of electronic and non-electronic measuring, testing etc. equipment, not for industrial process control.	7	Quality Manager
4	Manufacture of electronic and non-electronic measuring, testing etc. equipment, not for industrial process control.	8	Operations Director
5	Manufacture of other special purpose machinery	58	QA Manager
6	Manufacture of other special purpose machinery	10	QA/Health and Safety Manager
7	Service activities incidental to air transportation	26	Quality Manager
8	Service activities incidental to air transportation	c.70	Engineering and Sales Manager

The job roles performed by informants were often wider-ranging than the specific title may have suggested; for example, the Engineering and Sales Manager at SME 8 was responsible for the training of all staff in regulatory and Health and Safety requirements.

14.4 SME activities

14.4.1 Manufacture of air and spacecraft and related machinery

- **Aerospace SME 1** manufactured a range of over 45,000 individual small components all less than a square foot in size (e.g. washers, springs, laminate sheet parts), and supplied these both for defence and civil aerospace (historically, the company had focused on defence, but had grown its work with civil aerospace in the last 10-15 years).
- **Aerospace SME 2** produced small precision machine components made of aluminium, titanium, and other soft materials for the aircraft industry. This SME focused on high-value, low-volume components and worked overwhelmingly with the defence industry, rather than civil aerospace.

In both cases, Aerospace was the core market, although both had some minor interest in other sectors (e.g. SME 2 supplied some components to Formula One teams).

14.4.2 Manufacture of electronic and non-electronic measuring, testing etc. equipment, not for industrial process control

- **Aerospace SME 3** was a laser optics engineering company that began as a university spin-out around 20 years earlier and offered services in Non-Destructive Testing (i.e. using lasers to induce stress into composites in order to test the movements and vibrations of material sub-surfaces, notably carbon fibre), using its own laser optical equipment. Though having a presence in Aerospace (and being registered in the ADS Directory), this SME also worked with the maritime and automotive industries.
- **Aerospace SME 4** was a small and recently-established company that was producing an innovative on-the-ground electronic testing kit to detect intermittent electrical faults in aircraft. This was a relatively early-stage technology; the company was marketing the product to defence, rather than the civil sector.

14.4.3 Manufacture of other special purpose machinery

- **Aerospace SME 5** manufactured galley systems for aircraft (i.e. food preparation and service areas). These galleys were subject to rigorous air-worthiness tests and were therefore manufactured specifically for aircraft, rather than “general purpose” galley systems that happened to be purchased by the Aerospace industry.
- **Aerospace SME 6** was a manufacturer of safety training equipment for civil and defence clients (e.g. simulated fuselages to conduct safety drills). These were usually bespoke items of equipment, manufactured to order, with variable customer requirements (e.g. some airlines required a full “mock-up” of a fuselage, whereas other customers could require a simple door set). In the defence industry, it produced a number of other training systems (flight simulator equipment; ejection seat training systems). The company regarded itself as a Tier-2 supplier.

14.4.4 Service activities

The SMEs that were engaged in service activities were suppliers or distributors of new, spare or refurbished parts for specific types of aircraft. Neither company designed or manufactured new parts in-house.

- **Aerospace SME 7** was a distributor of fixings and fasteners (bolts; springs; sheet metal fastenings). This company did not manufacture products, instead sourcing these from other suppliers and providing them to both the civil and defence sectors of Aerospace. This SME was used by OEMs and Tier-1 Aerospace companies for third-party sourcing – e.g. if an OEM or Tier-1 supplier required fastenings, and had ten approved manufacturers, it could ask this SME to manage all of the sourcing and logistical aspects. The SME expected this type of business arrangement to grow in future (i.e. OEMs and Tier-1 suppliers reducing the number of vendors with which they deal directly).
- **Aerospace SME 8** was engaged in component overhaul/refurbishment for the defence sector. 60% of this company’s work was overhauling or refurbishing components specifically for the Lockheed C130 Hercules military transport aircraft (as refurbishment work, this was distinct from the spec manufacturing of components undertaken by Companies 1 and 2).

14.5 Challenges

14.5.1 Overview

Different SMEs faced some similar challenges, notably with regard to the management of suppliers. However, many also faced company-specific challenges that were a function of their sector, size and specific services offered. This was particularly so with those SMEs involved in developing early-stage technology, which faced many more company-specific challenges.

14.5.2 Standards and Aerospace supply chain approval

Aerospace was a very heavily-audited sector, much more so than any of the other industries researched. Gaining the accreditations necessary to enter into – and sustain a presence within – supply chains was a key challenge facing most SMEs, especially those manufacturing or supplying parts that would fly with aircraft. Key standards and accreditations were:

- Industry-wide regulation from organisations such as the CAA
- Named industry standards (the AS 9100 series in particular; see section 3.10)
- OEMs' own regulatory standards and requirements, involving extensive auditing and oversight in order for SMEs to both enter and then sustain their roles as approved suppliers. These requirements were often individual to particular OEMs and imposed in addition to AS 9100 accreditation. Those supplying multiple OEMs were audited by each of these separately, imposing considerable Quality Management burdens on the respective SMEs.

Key challenges in this regard were:

- Fulfilling the needs of **extensive and regular auditing processes** associated with OEMs once approval had been secured. These were ongoing, regular audits carried out at least once a year, and which were resource-heavy and very time-consuming:

All the big audits, which we've got to do, [are] very challenging because there isn't a month goes by where I haven't got an audit, which comes with corrective actions and preventative actions and whatever. (Aerospace SME 1)

Even the smaller SMEs were audited around once a month on average (with the exception of those manufacturing non-flying machinery, which were audited less regularly). These processes required Aerospace SMEs to have written Quality Management Systems in place.

- Fulfilling the requirements of sometimes only partially-relevant audits could be challenging. One informant commented that civil OEM approval and audit systems were not tailored for high-value, low-volume environments, and that “*we have to tick boxes that really aren’t necessarily applicable to our type of work.*” (Aerospace SME 6)
- There were also **cost challenges** associated with meeting these requirements:

[The costs of] getting approval from the airlines themselves can be quite significant. You’re probably talking about something like £20,000 per product, per variant. That is a significant cost. (Aerospace SME 5)

- The importance of entering supply chains early in the life of a new aircraft was emphasised by the component manufacturers, as it was unusual for OEMs to source new suppliers later in the development cycle:

With it being aerospace, the biggest challenge is... getting on these programmes in the early stages. With the aerospace industry you won’t take work from anywhere else [i.e. from competitors] because there’s so much engineering being done in the background that you’ve got to be getting on these projects right from the beginning. (Aerospace SME 1)

Gaining initial approval to supply components and machinery was a slow and often exhaustive process, particularly in the civil sector:

There’s some real challenges in starting, from engaging with an OEM, a big customer, to getting their full seal of approval. That can be a long and expensive journey, and I’m talking years rather than months in some cases. (Aerospace SME 2)

This meant that such manufacturers were required to develop an established reputation for excellence, and that passing OEM audits was of critical importance as a number of failed audits could threaten Approved Supplier status.

There was a widespread perception that these auditing demands were growing and becoming more intensive over time. Only one SME (a parts supplier for Lockheed aircraft) reported that the audit/inspection burden had fallen in recent years; this business had secured regulatory approval as a supplier of refurbished parts.

Such challenges were not as prevalent among those companies manufacturing non-flying parts (i.e. SMEs 3 and 4). Both of these companies had produced testing technology that was unfamiliar to Aerospace; the core challenge for these SMEs was securing market acceptance of those technologies (i.e. their customer bases were not sufficiently extensive or embedded to generate the audit burdens reported by more established Aerospace SMEs).

14.5.3 Economic challenges (costs and growth)

The recession had not presented as many challenges for Aerospace SMEs as for some of those in other industries (particularly Construction), reflecting the strength of the Aerospace industry in the UK throughout the downturn.³ Several companies, especially those working in the civil sector, talked openly about having full order books, and an expectation of strong growth in the years ahead.

- **Costs**, however, were a challenge for some – particularly component manufacturers – as the price of raw materials had risen significantly in recent years:

If it's a fixed price for a customer for three years and you've got to buy that material, how do you manage the escalation of material costs? How do you contract for it? How do you provision for it? Do you bulk buy? What do you do? (Aerospace SME 2)

Such manufacturers were keeping costs low by re-tooling machinery rather than buying in new manufacturing equipment. They were also tightly controlling and monitoring all other expenses and costs.

³ ADS Group (2013), 'UK Aerospace Survey 2012,' pp.6-7.

- For **parts suppliers**, the cost of sourcing parts was largely out of their control, and they faced challenges with regard to minimising costs elsewhere:

We can control the controllable, so we have a very competitive labour rate, but we can't control the price of a spare, and that's where fluctuation comes in, and that sometimes makes us very uncompetitive. (Aerospace SME 8)

As with the component manufacturers, the maintenance of very close relationships with suppliers was regarded by one parts supplier as key to managing the cost of buying parts.

- The galley equipment manufacturer reported that major OEMs such as Boeing and Airbus were increasingly using larger Tier-1 manufacturers to install complete galley systems on new aircraft, and that future market growth for the SME concerned was more likely to come from the small and private jet market. However, as its order book remained strong, this did not appear to be an immediate concern.
- For the laser engineering company, the initial cost of buying laser testing equipment was very high, but was not a cost that was expected to be repeated often.
- **Staff wages** were also a high cost for many Aerospace SME manufacturers, as the skills required in Aerospace manufacturing were often higher than in some other industries (though these high staffing costs did not apply to the same extent to parts suppliers).

None of the SMEs reported **market competition** as being a particularly major challenge, although those manufacturing components for the civil sector reported that business could quickly disappear if they failed to meet expected quality standards imposed by OEMs. Most, however, felt that they had established sufficient niches to be attractive suppliers, and the lengthy pre-approval processes, though challenging, meant that competitive threats took some time to materialise, if at all.

14.5.4 Slow markets in defence

Defence markets were, according to those companies working in them, much more sporadic and slower-growing than those in the civil sector, particularly as the extent of active British (or European) military operations had decreased since 2010. Consequently, growth in defence markets was difficult to predict or plan, and several SMEs were actively trying to secure more business in the civil sector. This itself, however, posed significant challenges:

- Relationships between civil OEMs and suppliers were much more commercial (and therefore distant) than those in defence, with suppliers at greater risk of losing business if they failed to meet quality targets.
- The process of securing raw materials was also more challenging in the civil sector than in defence:

That's an issue, particularly as you go into civil markets [from defence]. Sometimes the material used to be free issue from the [defence] customer. Now, predominantly, [in civil] you buy your own material – to their criteria – from an approved source. (Aerospace SME 2)

- In addition, whereas defence customers usually required relatively small batches of parts, volumes required in the civil sector were typically much higher; this posed some challenges in scale-up of production.

14.5.5 Diversification

Four SMEs' growth strategies involved some diversification out of Aerospace, although none intended to leave the industry altogether. This was particularly, though not exclusively, important for those that were technical innovators (SMEs 3 and 4), both of which saw non-Aerospace markets as key areas:

- The company specialising in laser optical engineering technology was targeting universities, which were more receptive to the concept than were Aerospace OEMs; maritime and automotive markets were also key target markets for this SME.

- The manufacturer of fault-testing equipment wished to develop markets in space exploration (particularly with the likely advent of commercial space tourism in coming years), and in oil and gas.
- One component manufacturer was in the process of diversifying into the manufacture of components for the renewables and fracking industries; it was noted that the North West Aerospace Alliance (of which the SME was part) considered fracking as an important growth market.
- The galley equipment manufacturer was seeking to grow into the rail galley market as the technology produced was translatable (the core difference was the air-worthiness requirements (i.e. strength) of aircraft galleys), as it was considered unlikely that Aerospace demands for galley equipment could sustain significant growth.

Diversification outside of Aerospace posed some major challenges, however, as it was not often easy simply to “segue” to different industries:

Everybody has got different ways of doing things with different drivers. We found when we've done oil and gas work that the biggest driver is learning to deal with the type of materials that they use, which are very hard metals and sophisticated welding treatments, and there's quite a steep learning curve. (Aerospace SME 2)

14.5.6 Achieving market acceptance for new technologies

The core challenge faced by those developing new technologies (SMEs 3 and 4) was to achieve market acceptance for innovative, but potentially disruptive, technologies.

- In the case of fault detection, intermittent faults were generally accepted and normalised within defence (i.e. left either to resolve themselves or else to become more serious faults, at which point action would be taken to rectify them). This informant reported that it was easier to enter defence markets in the US with new technology, where numerous major companies were more receptive, than in the UK (in which British Aerospace was by far the most important customer).

- The laser optic Non-Destructive Testing approach was also a new concept for Aerospace OEMs, and therefore difficult to sell to a very conservative and highly-regulated industry:

It's getting your foot in the door with the new technology that's the real problem. They are great with their really well-known forms of NDT (Non Destructive Testing), but when you try and get in there with new technology, because the standards set with that aren't really recognised by the aviation industry, it literally can be, 'no thank you, we don't know what you are talking about'. (Aerospace SME 3)

American OEMs, it was reported, were beginning to see the value of this SME's approach to NDT. Getting to this stage, however, had required a very long process of demonstrating the capabilities of the technology in order to win confidence, and there remained a considerable degree of work to convince others of the value of the approach.

14.5.7 Exporting

Entry into export markets was not a major challenge, as most of the SMEs were actively embedded in the global Aerospace supply chain.

- One of the **parts suppliers**, however, reported some challenges in relation to customers in low-cost economies, often to do with the more extensive paperwork associated with Indian customers compared to those in Europe or North America.

14.5.8 Growth of OEM support packages and the challenges faced by parts suppliers

One parts supplier reported that OEMs now increasingly sold support/maintenance packages with their aircraft; a shift from selling only "off-the-shelf" aircraft to airlines and defence organisations, as had previously been the case. This meant that the market for SMEs to refurbish parts was increasingly for older aircraft that did not have such support packages, or where these had lapsed.

Hence, the company did not expect to be able to refurbish (for example) Boeing 787 parts for another 30 or 40 years, as Boeing supplied an extensive support package (including refurbishment) for this aircraft. This limited the markets in which the company could operate.

14.6 Innovation

14.6.1 Manufacturing

Evidence of innovation in manufacturing and product design was most evident among those manufacturing **non-flying** products, which were not as subject to rigid specifications as flying machinery:

- The intermittent fault testing equipment manufacturer was developing a second iteration of the technology, which would be much more portable and would use a touch-screen interface.

Those SMEs manufacturing flying components, or supplying spares/refurbished parts had very little scope to innovate with regard to product design, as part specification was very tightly-controlled by OEMs:

- One manufacturer identified 3D printing as a potentially important innovation. However, this was considered unlikely to supersede established production processes (e.g. milling) in the very near future, as this would require new approval processes on the part of OEMs. It was thought that 3D printing would only be adopted in Aerospace once already established in other manufacturing industries.

14.6.2 Areas of innovation in process

Innovation in non-manufacturing aspects of business was most evident among the two parts suppliers (SMEs 7 and 8):

- SME 7 had, within the previous three years, introduced a system to inspect the quality of parts sourced on behalf of OEMs and Tier-1 suppliers (i.e. delegated source quality representation, meaning that OEMs no longer had to inspect the quality of individual parts themselves). This was innovative as there was no requirement for distributors to be able undertake such quality management within AS

9120 (i.e. the service was above and beyond what was expected within the conventional AS standard). This, it was reported, enabled OEMs to significantly streamline the process of acquiring spares. The informant regarded this as an industry-leading practice that afforded the SME concerned a competitive advantage.

- The second parts distributor had purchased an off-the-shelf IT management system; this that enabled it to trace any individually numbered part from its arrival on site to its use on a job.

Manufacturing SMEs did not report process innovations of this type. However, organisational learning (i.e. understanding where jobs had been completed very successfully) was emphasised by one component manufacturer as critical to the ongoing success of the company (this particular SME was attempting to implement practices to reach the standard required by ADS as part of the SC21 initiative; see 1.9.1).

14.7 Key relationships

Typically, the most crucial relationships SMEs had were with clients and suppliers. These were as follows:

- **Long-term relationships with clients:** within Aerospace, there was a tendency for OEMs and Tier-1 suppliers to use “known” providers who had consistently met standards in the past; it was therefore critical for SMEs to maintain these relationships:

Obviously people are making new aircraft and I think with [name of major OEM], with the relationship that we've got when they make a new aircraft we are on that programme. We don't really have to fight very much for that. We're there, we're the first on their mind, so we get that sort of work.
(Aerospace SME 1)

We'll get fag packet drawings almost literally from these top military customers. And [they'll] say, "Look, we're thinking of this, can you knock us a prototype up?" And then they'll come down sometimes weekly and say, "Well

actually, no, we want more holes there and can you change this bit.” So they’re practically working with us. (Aerospace SME 5)

- Relationships with **suppliers** were also key, particularly as there was a growing need to ensure that suppliers were improving their own standards:

At one time we were producing 96% of the added value [of each component] and there would be 2/3% through suppliers, whereas now it might be 70/30, so there’s a lot more technical effort needs to go into managing supply chains because the technical requirements that float down from the customer are much more complex. (Aerospace SME 2)

We are trying to educate our supply chain to become as good as we are. What can we do to help you guys get it right for us? What can we do to change your mind-set or help you get it right? (Aerospace SME 7)

The monitoring of suppliers had therefore become more extensive among these SMEs. However, the degree of leverage that SMEs had over suppliers varied, and the smallest companies were less able to exercise this. The latter of these companies (SME 7) routinely sent six or more of its own staff (out of a total of only 26) to advise suppliers about preventative and corrective actions; this was essential in order to ensure that the SME was able to meet its target of achieving Silver accreditation through SC21 (see section 3.9).

The developer of the intermittent fault-testing equipment had a key relationship with **Cranfield University**, which was helping to improve its reliability. Similarly the laser optical engineering company had relationships with a number of universities, although these were outside the scope of Aerospace.

With regard to wider industry relationships, ADS was mentioned by three informants as a key partner, usually in reference to the SC21 best practice programme (see section 3.9.1). One component manufacturer was involved in the North West Aerospace Alliance, which represented SMEs in the Aerospace cluster in that region.

- One component manufacturer was a member of the ADS Component Obsolescence Group, which was a key means of keeping abreast of relevant legislation such as REACH and ROSH.
- Another SME had previously been a member of the Farnborough Aerospace Consortium.

14.8 Regulatory environment

14.8.1 Regulatory requirements for flying parts

For those manufacturing or supplying parts intended to fly with aircraft, extensive regulatory approval (and certification) was required to work in the Aerospace industry. Regulators mentioned were:

- EASA in the EU (for type certification and air-worthiness)
- CAA in the UK
- FAA in the US
- A Chinese equivalent of the FAA (which one informant reported as having been established so that in the near future standards required to enter Chinese Aerospace markets would be the same as those in North America and Europe).

The regulations concerned the air-worthiness of all components and equipment flying with aircraft. As a multi-national industry with aircraft operating in multiple territories, these regulations were largely harmonious across different territories. In the UK, monitoring of companies to ensure compliance with EASA and FAA regulations was carried out by the CAA. For instance:

- The galley equipment manufacturer had to conform to the **DO-160** testing evaluation for the air-worthiness of all equipment (in which all equipment was required to withstand 20G of force).

The consequences of failing to meet regulations could be catastrophic – potentially grounding aircraft, which would be extremely detrimental to SMEs' credibility as suppliers.⁴

⁴ See <http://www.p-r-i.org/nadcap/>. This was the only interview in which Nadcap was discussed.

This had a bearing on some informants' views about standards, many of which were understood to derive from very strict, internationally-applicable regulatory requirements, and from which deviation was impossible.

14.8.2 Regulatory requirements for non-flying equipment

There were fewer regulatory requirements for those manufacturing **non-flying** machinery, with organisations other than EASA/FAA playing the key roles. This appeared to pose some challenges, particularly concerning the different regulatory drivers in different environments (which were less harmonious than those for flying machinery).

- The manufacturer of the intermittent fault testing equipment was required to comply with the following regulations:
 - CE marking for components sourced from outside the EU
 - European Commission Low Voltage Directive in order to sell equipment in Europe
 - Federal Communications Commission Electro-Magnetic Interference tests in order to sell equipment within the US.

- In addition, evolutions in the Restriction on the Use of Hazardous Substances (RoSH) in Electrical and Electronic Equipment regulations would require the use of lead-free solder in printed circuit boards in the UK after 2016. However, there were no such regulations in the US; this could pose some issues for the company, as some of the equipment used in the new portable version of the device was procured from the US and would potentially fall foul of RoSH regulations in future.⁵

14.8.3 New regulations

The only anticipated regulatory change discussed by interviewees was the upcoming removal, in 2015, of the requirement for suppliers of fasteners and fixings to have CAA approval (which would open up the market to suppliers that did not have CAA approval). For the SME operating in this particular market (SME 7), signing up to AS 9100 standards was one way of ensuring that, in the absence of regulatory approval, quality standards would still be met in the future.

⁵ See <https://www.gov.uk/government/publications/restriction-on-the-use-of-certain-hazardous-substances-in-electrical-and-electronic-equipment-regulations-government-guidance-notes-rohs-2>.

14.8.4 Other regulations

The SME that was manufacturing “mock-up” fuselages for safety training reported some difficulties in meeting **Health and Safety regulations**:

If you cut a craft fuselage you may be cutting into all sorts of exotic metals which may or may not require various controls. And there's nowhere that anyone can give you any advice for any of that. It's very hard to comply with a regulation that was built for a normal manufacturing environment. (Aerospace SME 6)

14.9 Best practice

14.9.1 SC21

The ADS SC21 code of practice (a change programme designed to accelerate the competitiveness of the Aerospace and Defence industries by introducing leaner methods of production and reducing costs) was discussed at length by three SMEs, all of whom were providing **flying equipment** (although the code was of little relevance to those producing non-flying machinery or parts).⁶

- Those adhering (or attempting to adhere) to SC21 viewed it positively as a means of demonstrating a quality standard to potential new customers, although it was unlikely to drive new custom without AS 9100 accreditation
 - One component manufacturer reported that the North West Aerospace Alliance ASCE 2 programme aimed to ensure that all companies achieved ADS SC21 accreditation. This informant was a little critical of the rigid quantitative targets that had to be met in order to qualify, feeling these failed to take into account the wider cultures of individual SMEs.⁷
 - Aerospace SME 7 (a parts supplier) had a specific target in 2014 of winning **Silver** SC21 accreditation. This was particularly challenging, as because its own improvement programme had been in place for some years, there were

⁶ SC21 required companies to achieve a minimum score in each of six categories (95% on-time delivery to at least 80% of the customer base) in order to qualify: see <https://www.adsgroup.org.uk/pages/91430300.asp>. SC21 uses a “medal” system of accreditation, with companies winning Gold, Silver or Bronze SC21 accreditation according to how far they are able to meet defined quality criteria.

⁷ See <http://www.aerospace.co.uk/projects/asce2>.

few remaining “quick wins” available.⁸ There was, however, little reason to achieve a Gold standard, which would involve a considerable volume of audit and paperwork. This SME used visual control boards in its office so that all staff could visualise how their own work practices were required to contribute to achieving Silver SC21 status.

In defence, one SME noted that British Aerospace did not yet recognise the value of SC21 and paid little attention to it (even though the purpose of SC21 was to reduce the audit burden that OEMs imposed on manufacturing SMEs).

14.9.2 Other forms of best practice

There was some evidence of the use of lean techniques, among two SMEs in particular:

- One of the parts suppliers spoke at length about using lean methods (e.g. fishbone diagrams; value stream mapping).
- A number of the intermittent fault testing kit manufacturing company’s staff had experience of using lean methodologies when working previously for defence companies, and were applying these in current work to manage costs.
- Continuous improvement plans were also mentioned by the two component manufacturers (which originated before SC21, but had very much evolved to fit the needs of that code of best practice)
- One component manufacturer aimed to have all managerial staff complete an NVQ Level 2 in Business Improvement, but was only at the beginning of this process (this SME also sourced external consultants, and had reciprocal arrangements with its closest OEM customers to share knowledge of best practice, although this was not a common practice elsewhere).
 - This SME also reported that SMEs and OEMs could learn best practice from each other as part of a reciprocal relationship (in particular, one OEM, with which it had a very close and long-standing relationship, was keen to share best practice in this way).

⁸ See <https://www.adsgroup.org.uk/pages/91430300.asp>.

The smallest companies in the sample had developed their own internal best practices (or, in the case of SME 6, had no written codes at all because of a lack of time to produce them).

14.9.3 Seeking improvements

Often, SMEs were focused on the “day-to-day” – particularly the smaller companies, which reported that strategic decision-making was often a lower priority than meeting immediate client needs. However, improvements that SMEs had identified and wished to implement were as follows:

- The manufacturer of specialist safety testing equipment reported a need to “modernise” the company mindset, which was that of a very small, family-run business. This was regarded as inappropriate given the company’s goal of becoming a successful Medium-Sized Enterprise. The company had made a number of new appointments in the past 12 months (including a new Operations Director) to drive this process:

We’re moving away from these one-off prototypes into fancier, more complex design and manufacturing of twos, threes, fours, sixes... maybe even in ten years’ time we’ll be making ten of something. (Aerospace SME 6)

- The galley equipment manufacturer required improvements in supplier control, manufacturing control, and design control. This company aspired to become a much larger business in the near future and recognised a need to exercise much more rigorous control over its manufacturing processes, although it did not report having any specific improvement strategies in place.
- For those SMEs that were developing early-stage technology (primarily SMEs 3 and 4), specific business improvements were of less importance than growing sales in Aerospace (although SME 4 did report a need to reduce the cost of supplies, which it currently undertook through simple Google searching); one of these SMEs reported a lack of awareness about where they might source advice to improve the business.

14.10 Standards

14.10.1 AS 9100

Those SMEs that were manufacturing components or equipment for use in the air all reported that OEMs required **AS 9100 (Revision C)** accreditation (or, reported by one parts supplier, a closely related standard, such as AS 9120). This was a version of ISO 9001 that had been adapted specifically to reflect the requirements of the Aerospace industry. OEMs typically insisted that suppliers were accredited to these standards as a pre-condition of approval (among the interviewees, this was the case with both manufacturers and the parts suppliers).

SMEs did not have any concerns about being able to meet AS 9100 Revision C. They were, however, concerned that adherence did not reduce the burden of additional audit and inspection from OEMs, above and beyond AS 9100:

The whole industry really is based around the Revision C, but all the different companies have got their own little things. They're interested more about our procedures being tailored towards what they need, as well [as Revision C]. (Aerospace SME 1)

If something is paint-stripped [one OEM] may specify exactly what to use; others might just say 'paint-strip to a standard', but... at the end of the day you've still got to come back and meet a [bespoke OEM] standard. (Aerospace SME 8)

One parts supplier reported that AS 9100 standards were written from a manufacturing perspective and that auditors therefore had difficulty understanding how to inspect parts suppliers.

They are used to new things coming off a food chain and First Article Inspection and that type of thing, which is meaningless in our business. (Aerospace SME 8)

One of the component manufacturers reported that AS 9100 standards appeared to be written for high-volume manufacturing, and were not always appropriate for the manufacture of high-value, low-volume components and equipment.

- One of the parts suppliers expected all of its own suppliers to be AS 9100-compliant. This had itself been driven by OEMs' demands for AS 9100 compliance for every part used in aircraft.
- The galley equipment manufacturer reported that existing Aerospace standards were not specific enough to apply to the very particular type of equipment that they manufactured.

14.10.2 ISO standards

Some SMEs (typically those manufacturing equipment that was **not intended to fly** with aircraft) were using ISO 9000 or ISO 9001 standards. As with the AS standards, this was driven by client requirements.

Where manufacturers of **flying** parts had used these standards, this was a legacy of adherence that pre-dated OEM insistence on meeting AS 9100 (i.e. none of the manufacturers of flying machinery used ISO standards instead of AS 9100).

- One of the component manufacturers expected its own supplies to be ISO 9001 accredited, although this was not widely reported elsewhere.

14.10.3 British Standards

- The only named British Standard used by any of the informants was **BS60825 (Safety of Laser Products)**, used by the laser optical engineering company as it related directly to the safety of laser technology. The SME in question reported that whilst BS60825 accreditation was valuable in most industries, Aerospace companies did not recognise its value. Direct demonstrations of the technology were a more effective means of entering the market than possession of a British standard alone.
- The fault-testing equipment manufacturer had bought IT security standards, but was not able to name the specific BS number.
- Two informants (both manufacturing non-flying equipment, and therefore not usually required to meet AS 9100 standards) commented that the brief descriptions of British Standards provided on the BSI website did not provide enough detail to be able to make an informed decision about whether to purchase them or not.

It is very difficult for us to find out how to comply with things. Our equipment tends to drop into medical and test equipment for instance, so then there are all the various British Standards for that, but what is relevant to us? I have not got a clue because you read the BSI blurb it says 'you need 53331'. What is that? I am not going to pay £250 to find out I do not need it. (Aerospace SME 4)

These comments reinforced a theme that was evident in other industries beyond Aerospace, particularly among smaller SMEs: namely, an unwillingness to risk buying standards that could be irrelevant or superfluous to requirements.

14.10.4 Others

- One manufacturing SME reported that in the defence sector, BAE had its own named standards and specifications (unique to BAE's particular aircraft). These were:
 - Panavia standards (a component specification manual for the Tornado and Typhoon aircraft)
 - R-Spec.⁹

The SME that refurbished parts for the Lockheed C130 reported that it used more "basic" standards that it had developed in-house to meet OEMs' requirements:

We do use standards but it would be mainly for sort of generic issues, like if we keep a stock of tyres, how often they're turned. If we keep O-ring seals in stock, dependent on their coding, how often do you do a batch sample? It's that type of thing. That's really the extent of how we use standards. (Aerospace SME 8)

14.10.5 Meaning

Standards were widely understood as mechanisms to ensure that components and parts were produced to a consistent quality. Standards were regarded as being less precise than regulations, and that the latter usually took precedence over the former:

⁹ The Panavia standards are used by BAE Systems to accurately define components used in the Tornado aircraft. See, for example, <http://www.aerco.co.uk/downloads/Aerco-BAE-2-Systems-News-Mar08.pdf>.

ISO is very generic, so where your business falls into it, it does always leave itself room for argument because it's quite generic and it's not a black and white statement... [ISO] doesn't actually say 'okay, you must have traceable paperwork for this split bit,' it doesn't actually say that, whereas the FAA and the EASA [regulations] do. (Aerospace SME 8)

For those manufacturing non-flying equipment – where there were fewer regulatory and client-driven compliance requirements – the core problem was knowing whether to use standards at all and, if so, which one(s) would be most beneficial to use.

14.10.6 Further standards expected and required

There was some expectation that Aerospace OEMs would require suppliers to meet ISO 14001 (Environmental Management) and OHSAS18001 (Health and Safety), or AS equivalents, in the near future, simply as this was becoming commonplace in other (non-Aerospace) sectors.

In the supplier questionnaires that our clients fire at us, we see more increasingly 'Have you got an environmental standard? If so, which one? Have you got occupational health and safety? Which one?' There's lots of questions appearing time after time now. (Aerospace SME 7)

There were mixed views about this prospect; where one thought it would add to already burdensome audit requirements, another welcomed the embrace of such standards as they could potentially help to simplify management systems. This latter informant thought, however, that it would be beneficial for any Environmental and Health and Safety standard to be simplified for SMEs, as the smallest companies, in particular, lacked the resource required to master the requirements of these standards.

This informant also thought that requirements for Aerospace plating houses to reach certain NADCAP standards would also become commonplace in future.

14.10.7 Drivers for further use

None of the informants expected that the purchase of standards beyond those expected by OEM clients would help them to meet their challenges:

If [our clients] are not demanding [that we use a named standard], why would we go there? Unless we saw something of our own value in it. (Aerospace SME 4)

The galley equipment manufacturer thought that British Standards were of less relevance to the organisation than the air-worthiness regulations they were required to meet in order for their equipment to fly with aircraft:

There's not many British Standards for our type of equipment because it's all airworthiness controlled [particularly DO-160], so those kinds of directives are available and we generally look them up online. (Aerospace SME 5)

The smallest SMEs thought that standards carried a cost burden that was difficult to meet (both in terms of buying standards, and of ensuring that suppliers met standards):

We are so small, money is an issue, so we work with [the suppliers] we have got at the moment... we assume that when we buy an electronic switch and it says it is to BS123 we assume that that is what it needs to be. (Aerospace SME 4)

14.10.8 Best way to access standards

Although most Aerospace informants were happy to receive standards as PDFs, or via an online portal, several informants also wished to have the facility to print them or receive hard copies. This was usually a personal preference, rather than a result of any specific need for printed versions.

However, one components manufacturer commented that there was a danger that outdated versions of hard-copy standards could be used inadvertently, instead of the most up-to-date electronic version; this SME therefore implemented a policy of using standards online only, as this was the most effective way of ensuring that the most up-to-date version was always being used.

14.11 New standards development

14.11.1 Areas where new standards might be useful

Aerospace informants struggled to identify areas where new standards would be useful to the industry, given:

- The expectations that OEMs had regarding the need for SMEs in their supply chains to be fully compliant with AS 9100 standards (which meant that the drive for standards was entirely top-down, rather than SMEs requiring new standards to demonstrate business improvements that could help drive custom)
- The extensive transnational regulatory requirements within Aerospace
- The sometimes more exacting internal standards relating to the implementation of Quality Management Systems that OEMs imposed on top of these requirements..

Most commonly (again, among those manufacturing or supplying flying parts), informants reported that there was a need for standards and audits within the industry be streamlined; in particular, AS 9100 certification had done little to reduce the audit burden associated with Aerospace supply chains.

In some of the huge organisations I think it gets a little bit lost. They might not know a great deal around the [AS] aerospace accreditation and their standards, so they may feel the need that they still do need to do [their own] surveillance audits. (Aerospace SME 1)

It would, therefore, be preferable for work to be undertaken to ensure that AS 9100 certification could be accompanied by a corresponding reduction of OEM audit burdens on manufacturers and parts distributors (albeit not all Aerospace SMEs are required to be AS 9100-certified, particularly those manufacturing non-flying equipment).

14.11.2 New standards for new and innovative technologies

The company developing the fault-testing equipment reported that a standard for the on-the-ground testing of intermittent faults in aircraft electronics would be potentially very useful as part of the effort to bring the technology to market and encourage its uptake within defence.

We are trying to push a standard through at an Aerospace level. There is a current standard, an ARINC standard for No-Fault found. It is a White Paper that is being written but, certainly from our perspective, it falls woefully short of what it needs to be. Intermittence is not that well understood out there generally. (Aerospace SME 4)

This was, however, the only example of a specific, identifiable new standard that would be helpful to Aerospace SMEs.

14.12 Participating in standards development

14.12.1 Stakeholders in standards development

There was a very strong sense that the OEMs would be key stakeholders in any further development of standards for the Aerospace industry, as these typically set standards that were used, and would absolutely be required to “buy into” any new standards that were developed (whether through BSI or elsewhere):

The enabler would have to come from the bigger organisations because the SMEs haven't got the man hours. (Aerospace SME 7)

It would be particularly important for any industry-wide discussion about standards to involve a market education element among OEMs and Tier-1 suppliers within Aerospace, specifically to reduce the level of external audits imposed on SME manufacturers by the industry:

It would be going into the bigger companies and saying, 'Look, this is the standard which the aerospace industry is working to.' If they do feel the need to have external auditors, they could then develop that to tailor around the specifics for their supplier, rather than actually going through the same thing – contract review, company documents, company records [for each individual audit] – which they [currently] do. (Aerospace SME 1)

Some informants commented that standards in Aerospace were unlikely to be developed at BSI (or UK) level, as many existing practices were expressions of a regulatory environment that was transnational in nature. Evolutions in these regulations were unlikely to be driven by national standards bodies (at least not without the involvement of regulators).

There will be revisions to the current European regulations [for air-worthiness], so it's not likely that somebody like ourselves [is] going to be on those committees because they are such a high level – as opposed to a British standard or an ISO standard for specific products – [and] because we're not in that product market [that requires British standards]. (Aerospace SME 5)

If you start with any area of responsibility, if it's a universal control for everything that you do then it's got to start with government. (Aerospace SME 2)

It was widely reported that SMEs would not be able or willing to fund the development of standards, either “up-front” or through independently purchasing standards (other than those required for supplier approval by OEMs). There was a widespread sense that the brunt of costs should be borne by OEMs (i.e. Boeing; Airbus; Augusta Westland). The challenge, reported by a number of SMEs, would be convincing OEMs to pay for the development of new standards.

- Another informant (Aerospace SME 2) suggested that the government also be involved in developing new standards.
- The manufacturer of the intermittent fault testing equipment thought that Cranfield University, with which it was working to develop the technology further, should be involved in setting a standard for this.

14.12.2 Barriers to SME participation in standards development

Although many informants were keen to be involved in the evolution of standards within the industry, there were barriers to their participation, reported as follows:

- Some concern that BSI might not be the most appropriate place to develop new standards for such a globalised industry unless OEMs were fully “bought in” to the process.
- That the existing standards for flying equipment were based upon regulatory requirements established by organisations such as EASA and FAA, and that there was little scope to create standards for such equipment beyond very strict regulatory

requirements (indeed, if such standards contradicted regulatory requirements then they were very unlikely to be used).

A further barrier to SME involvement in standards development in Aerospace was the perceived time and financial commitment required.

If I went to my MD and said, 'I want to go to a two-day forum to discuss standards,' he'd tell me where to get off. He'd say [I've] got more important things to do than worry about that. (Aerospace SME 6)

There are supply committees that I would like to attend occasionally, but it's very, very difficult because we're pretty much maxed out with what we do here, trying to develop the business from a sales perspective. (Aerospace SME 8)

Related to concerns about time, many informants thought that the need to travel to London to discuss standards was also a barrier (none of the companies consulted was based in London, and one was based in northern Scotland).

There was also some fear that a committee system might be dominated by large companies with the resource available to commit to regular meetings and to significant input, or else amount to "talking shops" that were "over-facilitated" and provided slow returns:

We get invited to materials and testing forums that we go to, but when we go to these it seems to be that what you've normally got is a couple of big [companies], not so many small ones, but then the remainder of people are facilitators [that] don't actually do anything. (Aerospace SME 3)

In two cases, views about participation in standards development processes with BSI were coloured by previous experiences of working with BSI as an auditor of ISO and AS standards.

- One had previously used BSI as an auditor for AS 9100, but had had to move this to a different provider on cost grounds (part of a cost-saving initiative associated with a previous Managing Director). This informant had found the process of changing difficult, as BSI had reportedly terminated the audit agreement ahead of schedule, rather than simply allowing the agreement to lapse; this had left the company without an auditor.

I've been a great fan of BSI but... with us only being small they're not really bothered about us. We ring the phone with a problem and it's basically, 'Are you finished?' I think that's the sort of thing which, if they're looking to improve their business, that's something which they'd really have to look at. (Aerospace SME 1)

- Another informant reported some recent difficulties in accessing information from BSI:

I contacted [BSI] just before Christmas for a draft of the new ISO 9000 standard 2015. But it was online and the lady I spoke to said, 'Oh no, you can only access it online.' And I tried to get it online and couldn't, so I never did get a copy. (Aerospace SME 6)

There was, therefore, some underlying concern about BSI's own capacity to understand SME perspectives.

14.12.3 Overcoming barriers

Primarily, the most important means of overcoming barriers to participation would be some form of **financial recompense** for participation:

The only way to actively get the SMEs engaged in it is to recompense them for the loss. (Aerospace SME 1)

If you paid for us to come down, happy days. Small companies, small amount of people; we have got to be doing the stuff [i.e. manufacturing] that keeps the wolves from the door. (Aerospace SME 4)

Time was a further barrier to SME participation, particularly for those based well outside of London; to this end, one informant suggested that alternative formats, allowing SMEs to “dip in” to standards development processes online, might be a more conducive means of encouraging their participation in such work:

I do happily join in with [online] forums and that sort of thing. That would be a good avenue to get people's opinions that couldn't actually tie themselves to going and sitting there all day at a committee. (Aerospace SME 8)

However, these barriers could only be addressed if a standards development process actively involved Aerospace OEMs, as the uptake of standards was driven almost entirely by the requirements of OEMs (i.e. requiring suppliers to adhere to particular standards, notably AS9100, in order to enter their supply chains).

15 Automotive

15.1 Overview

This report details the findings from eight interviews with SMEs in the UK Automotive industry, addressing the following topics:

- The major challenges they faced
- Issues concerning innovation and Intellectual Property
- Key business relationships
- The regulatory environment in the Automotive industry and its impact on SMEs
- Best practice and business improvements that SMEs wished to implement
- Standards used in the industry and areas where new standards may be useful
- Ways in which SMEs may wish to become involved in standards development.

15.2 Automotive industry: findings from Stage 1 report

In 2011, the UK Automotive sector produced over 1.4 million cars and 2.5 million engines, exporting in excess of 80% of its production. There is an expectation that it will be producing some 2 million vehicles by 2015. The sector generates around £50 billion in annual turnover and has recovered from recession, with production of both cars and commercial vehicles up 12% over the first half of 2012.

- As of 2013, the 70,200 companies within Automotive account for 3.3% of the SMEs within the UK. Of those, by far the largest number are engaged in the 'Maintenance and repair of motor vehicles' (SIC 4520)
- The total number of SMEs in the sector grew by 1.5% over the two-year period 2011 to 2013
- There is clustering in the West Midlands, Northern Ireland, the Leeds-Bradford area and Humberside.

The UK automotive supply chain typically generates £4.8 billion of added value annually. About 80% of all component types required for vehicle assembly operations can be procured from UK suppliers.

The sector is structured in a manner very similar to Aerospace, with multiple tiers. Supply chains of OEMs are typically split by commodity; for example, sub-frames, exhausts, radiators and trim/bodywork are typically sourced from the UK, whereas electrical components tend to be sourced from the Far East.

The Automotive Council suggests that the three leading UK supply chain opportunities are in engine casing, steering systems, and trim (door cards, headlining, and plastics).

The main challenges for automotive SMEs are:

- Barriers to growth, as follows:
 - Poor understanding of the automotive sector among banks and lenders, who often insist on personal securities as collateral for business loans, despite the sector's health
 - Deteriorating credit conditions, and declining availability of credit
 - Lack of awareness of finance options among SME owner-managers, and a conservative approach to investment among some of these.
- A shortage of skilled workers and apprentices.
- Meeting the needs of rapidly growing UK-based OEMs (the Automotive Council has suggested that there are currently around £3 billion of unfulfilled opportunities for OEMs to buy from the UK supply chain).
- Meeting the challenges posed by the unfolding **transition to low carbon transportation** and **new supply chain opportunities**. The Automotive Council estimates that by 2040, no new car manufactured in Europe will be powered solely by a petrol or diesel powertrain.

Key **government initiatives** in the automotive sector are:

- *Driving Success: UK automotive strategy for growth and sustainability*, a strategy for the future of the UK automotive industry over the five years from 2013.
- The government and automotive industry investing £500 million each over the next ten years in an **Advanced Propulsion Centre** to research, develop and commercialise the technologies for the vehicles of the future.

15.3 Interviews

15.3.1 Organisations

BSI wished interviews to focus on the following types of ICT SME:

Table 3 Automotive sub-sectors for interview focus

SIC Code	Title	Rationale	Type of standard
29320	Manufacture of other parts and accessories for motor vehicles	Standards relevance. Current under-capacity in the UK supply chain, and therefore unable to meet the needs of UK-based OEMs. Opportunity for standards to help.	Product Process
29100	Manufacture of motor vehicles	Largely as above.	Product Process Behavioural/organisational potential?
29310	Manufacture of electrical and electronic equipment for motor vehicles and their engines	% growth between 2011-13, and for above reasons.	Product Process
45320	Retail trade of motor vehicle parts and accessories	% growth between 2011-13. Potential opportunities for behavioural standards	Behavioural/organisational potential?

Two SMEs were interviewed per sub-sector (Table 4).

Table 4 Automotive SMEs interviewed

Automotive SME	SIC Code Title	Number of employees	Job Roles
1	Manufacture of other parts and accessories for motor vehicles	4	Owner
2	Manufacture of other parts and accessories for motor vehicles	18	Owner
3	Manufacture of motor vehicles.	17	Owners
4	Manufacture of motor vehicles.	15	Production and procurement manager
5	Manufacture of electrical and electronic equipment for motor vehicles and their engines	30	Quality Manager
6	Manufacture of electrical and electronic equipment for motor vehicles and their engines	52	Quality Manager
7	Retail trade of motor vehicle parts and accessories	6	Owners
8	Retail trade of motor vehicle parts and accessories	122	Managing Director

For a number of the informants, job roles were more wide ranging than their specific title suggested. This was especially true for the smaller companies with fewer than 10 employees. For example, the owners of SMEs 1, 2 and 6 fulfilled a number of different roles within the company, often including an active role in the manufacturing process.

15.4 SME activities

15.4.1 Manufacture of other parts and accessories for motor vehicles

Automotive SME 1 created custom exhaust pipes for sports cars, and had also supplied them for racing teams. Ideally, it aimed to supply batches of exhausts, making racing teams its main customer focus rather than individuals. The company also manufactured batches of

exhausts for mobility vehicles, having predicted that the custom exhaust market would shrink in the next five to ten years.

Automotive SME 2 produced passenger seating for a range of vehicles. The company had 209 variants of passenger seating for a range of different applications. As a result, its customer base was very eclectic, ranging from taxi companies and minivan conversion companies to OEMs and the defence market. The company had moved into refurbishing vans and school buses and also offered tilt-testing to meet manufacturing regulations.

15.4.2 Manufacture of motor vehicles

Automotive SME 3, based in the West Midlands, produced three different models of sports car, including factory-built vehicles and kits that customers could build themselves. This meant sourcing a number of parts and components (such as engines and drivetrains) from other manufacturers, often OEMs, and then undertaking the assembly of these into a vehicle at its own site. The company had dealers worldwide. It had very recently been bought by an Aerospace manufacturer, but continued to operate as a separate SME.

Automotive SME 4 was a motorcycle manufacturer that produced road bikes and motocross bikes as well as motorbikes for the military. These were relatively niche, specialist vehicles intended for both on- and off-road use, and were regarded by the SME as industry-leading. The company designed and assembled the bikes, using an innovative gluing process, but the manufacture of the individual parts for each bike was outsourced. In addition to motorcycles, the company also had a number of other special projects – including supplying security grilles for military vehicles – but motorbikes were expected to remain the mainstay of the business for the foreseeable future. This SME had qualified for European growth finance and was creating 30 new jobs as a consequence.

15.4.3 Manufacture of electrical and electronic equipment for motor vehicles and their engines

Automotive SME 5 manufactured cable assemblies and wiring harnesses for a variety of markets, including the automotive, aerospace and medical industries. Since 2010, the company had been growing at around 9-12% per year.

Automotive SME 6 produced flexible circuit materials and adhesive coatings for a range of sectors, but primarily for the Automotive industry overseas (where the Indian automotive industry market was a major customer). Its products were also used in the clothing and maritime industries. In addition, the company supplied material to insulate busbars within trains, power boxes and electric cars.

15.4.4 Retail trade of motor vehicle parts and accessories

Automotive SME 7 was a car showroom that stocked high-value second-hand vehicles, but had since expanded into a workshop that maintained cars, sold replacement parts, and also offered MOT tests. The SME had no relationships with any specific trade body or vehicle manufacturers, instead selling second-hand cars from a range of carmakers.

Automotive SME 8 supplied car parts to local repair shops, franchises and individual customers, but did not specialise in any particular type of vehicle or manufacturer. A large majority of the business was wholesale trade to customers with credit accounts. The company owned a fleet of delivery vehicles and a large proportion of its staff were van drivers.

15.5 Challenges

15.5.1 Costs and economic challenges

Major economic challenges and costs faced by the Automotive SMEs were as follows:

- For the manufacturing companies, the cost of materials was an important concern – especially steel, and oil-based products, including plastic, which was used in applications such as webbing for seatbelts.

The tooling is expensive, so every time we want to change a tube size or a radius of a bend that we want to manufacture, we have to invest in new tooling every time... we can do some of it now in-house with the CNC machines, so that's why we're investing in those. (Automotive SME 1)

The fact that we're moving into more esoteric materials... very, very high grade steel, which is immensely strong... that makes it more expensive, but

on the other hand you have the merit [that] because it's strong it doesn't need to be thick or heavy, so that ameliorates that slightly. (Automotive SME 2)

The high cost of materials was also a challenge for the **electronics** SMEs; one informant reported that materials had to be ROHS-accredited, and therefore sourced in the EU rather than imported from China or another low-cost economy.

- For the motorcycle manufacturer (SME4), a major cost was having to buy bulk quantities from suppliers. For example, its supplier of one particular motorcycle frame required the company to purchase 250 frames upfront.
- A further difficulty that SMEs reported was in terms of funding development and growth, particularly with regard to securing bank loans:
 - Even though the recession was over, banks were still reportedly hesitant to lend to or offer extended overdrafts to SMEs, even those with successful track records (e.g. SME 2). Consequently, one SME was considering using more unorthodox funding streams, such as peer lending, to help fund the development of in-house manufacturing facilities.
- Staff wages, purchase of equipment, rents and the cost of maintaining manufacturing equipment were all identified as chief costs for most of the businesses. For SME 8, there was the added cost of running and maintaining a fleet of about 50 vehicles.
- Although the recession had not impacted the Automotive SMEs as directly as those in Construction, it had had some impact on SME 2 (the passenger seating manufacturer), which had had to reduce its total staff from 44 to 18.

By Christmastime of '08... [our] year, 18 months, forward order book had totally evaporated; it was all cancelled or postponed. We have over the last four or five years survived rather than thrived... in fact, 30 customers and suppliers all around us all failed, but we weathered it, which was good. (Automotive SME 2)

This SME, which prior to the recession had supplied a small number of OEMs, had had to diversify into other markets in order to survive, such as converting vans and

disused buses into school transportation vehicles, and fitting taxi seats and cabin crew seats for aircraft. However, none of the other informants reported the recession as having posed as many challenges as it did for this particular company.

15.5.2 Market challenges

The core market challenges reported by the Automotive SMEs were as follows:

- **Establishing and maintaining a reputation**, particularly among smaller manufacturers.
 - SME 6, in particular, wished to establish a 'name' for its products, particularly in the US where it faced considerable market competition. The company did not have a production base in the US, so faced challenges competing with US-based manufacturers.
- Retail structures were challenging for the motorcycle manufacturer (SME 4), as it was not able to offer sufficiently competitive mark-ups on the retail price of its bikes to interest dealerships.

...if the dealer has a rubbish Chinese motorcycle for £1,500 and he's going to make £500 on that sale and our bike is going to make £300 [for him], then our bike is rubbish, that bike's the best. That's what we find a problem, so we try to sell directly from the factory. (Automotive SME 4)

SME 4 therefore sold bikes directly using online advertising and relying on word of mouth; this meant lower sales than might otherwise have been the case.

- Meeting the demands of customers was a particular challenge for the **retail trade informants** (SMEs 7 and 8). As with other service providers in the research, there was a clear concern that one bad customer experience, irrespective of hundreds of other, more positive experiences, could have a disproportionately negative impact on business.

You always get headaches and people want this right now and people won't take the fact that it is a [second-hand] machine and sometimes they break. If

they do break we will fix them, no problem, while they are under warranty, but you know it's just the bad feeling that causes. (Automotive SME 7)

The core challenge was therefore to reduce these occasions and to minimise reputational damage when they did occur.

15.5.3 Supply chain challenges

Both of those informants whose companies were manufacturing parts and accessories for motor vehicles reported considerable challenges in relation to supply chains:

- SME 1 sourced materials for custom exhausts from Europe after a poor experience of using Chinese materials. However, these materials were more expensive, and the SME sometimes therefore struggled to compete with others who continued to use China for raw materials and were able to offer cheaper (if inferior quality) custom exhausts. The challenge was therefore to ensure that it maintained a high reputation for manufacturing in order to compete with lower-cost providers who had a poorer record with the reliability of products.
- The seasonality of demand was a major issue for the manufacturer of passenger seating (SME 2). There was a 'spike' in passenger seat orders from the school transport market during the summer holiday period when vehicles would be purchased or refurbished. Currently, the company sourced metal frames for seats from other suppliers, but had found that it was not always easy for suppliers to cope with uneven demand, and had experienced delays in receiving metal frames in the past. The SME intended to address this challenge by bringing all manufacturing in-house, and had extensive plans to do so, although obtaining finance to realise this ambition was very challenging (see above).
- The car manufacturer (SME 3) reported major challenges with regard to sourcing components (like drivetrains and engines) from major OEMs such as Ford and GM, which were the technological bedrock of its vehicles; the OEMs were unwilling to supply this SME because of the relatively low volume of parts required. Consequently, these parts were sourced from second or third-tier suppliers instead, often at greater cost than directly from the OEMs. The motorcycle manufacturer (SME 4) reported a similar issue with regard to purchasing motorcycle frames.

- The motorcycle manufacturer (SME 4) also reported that UK suppliers were less efficient than those in mainland Europe and China:

A lot of the UK suppliers, you have to chase them to get an answer. It's a shame. That causes issues for us. Just one I dealt with this morning down the road, I had to ask him [for a quotation] three or four times, and that's the general norm within this sector. It's so frustrating and annoying. (Automotive SME 4)

- Others reported difficulties with payment terms, particularly when an SME's own customers were late with payments, which in turn impacted upon its own ability to pay suppliers promptly. Usually these issues were resolved through personal trust between the SME and its customers:

We have a good share of good customers, but we all spend too much time chasing people that like to hold onto the money as much as possible. (Automotive SME 8)

This SME had also found that because many automotive OEMs stored spare parts in warehouses on the European mainland (such as Citroen storing spare parts in France), there could be delays in receiving the spares and supplying them to customers.

15.5.4 Legislative challenges

Two manufacturers reported that legislative changes had impacted heavily on their businesses:

- For SME 3 (a whole-vehicle manufacturer), changes to the administration of IVA (Individual Vehicle Approval) as a result of government austerity measures meant that gaining IVA licences for vehicles had become a much lengthier process, increasing from two days to two months in some cases. This had cost the company some sales in recent months. Changes to European regulations had also impacted heavily on export markets (see section 4.5.6).

- For SME 1, changes to European legislation concerning emissions had had an impact on the custom exhaust market:

European regulations... changed the law on catalytic convertors, where you weren't allowed to fit [them to] sports cars any more. We'll do it on vehicles that you're allowed to do it on – non-type-approved or vehicles that were outside the cut-off date – but anybody that comes in with a new vehicle, we just have to say no, which to be honest has knocked a big part of the business on the head. (Automotive SME 1)

15.5.5 Exports

Four SMEs (all manufacturers) were exporters. The challenges reported in this regard were as follows:

- SME 4 exported motorcycles to Europe on the open market, and was also looking to export to Canada for the US market.
- SME 2 exported a wide range of products and services all over the world, and was particularly active in providing seating for military vehicles in the Middle Eastern Defence markets. A large amount of export work was trade in refurbished school buses, but other clients included the Hong Kong police force and a number of defence contracts. This informant reported that adherence to manufacturing standards was a major driver in growing export markets for automotive seating products.
- Exports accounted for 88-90% of sales for SME 6 (in the electronics industry); in particular, the Indian automotive industry was a key customer. This company aspired to grow sales in US markets, but faced considerable challenges in doing so, despite promoting extensively:

The biggest stumbling block we have with that market is the fact that we haven't got a production base there; they want stock fairly quickly... (Automotive SME 6)

- SME 3, which manufactured an EU-approved and registered model of car, found that some of the established export markets for its vehicle had shrunk dramatically as a consequence of changes in EU legislation, particularly carbon taxation; this had reportedly reduced its sales in France from around 300 vehicles a year to only three or four:

...at the moment we have a vehicle we can sell through the whole of Europe, but we have so many things stopping us doing that, it is very difficult. It has massive potential for growth, but people look at it... they can see the potential but the risks are too high and they won't touch it with a barge pole because there are so many changes happening in the legislation. (Automotive SME 3)

Furthermore, for this SME, the process of passing the legal requirements to gain approval to sell cars in Japan had taken a year. The difficulties associated with building export markets had led to further difficulties with regard to seeking investment, as banks and venture capitalists were reluctant to invest in a company that faced this type of barrier to export. The SME was now focused on an alternative growth strategy of building sales of kit cars within the UK – which it had successfully managed – but noted that it was fortunate that a market for these existed, and that the company's reputation was sufficiently strong to drive this growth.

This SME also reported some difficulties in obtaining reliable information to help build export markets, and was somewhat critical of UKTI, which, it argued, lacked specialist expertise in the sports car market. Other than the impact of regulatory change, the core challenge with regard to overseas growth was that the company did not sell vehicles to dealers or showrooms, but to individual customers to order. Growing the overseas customer base was therefore a major challenge.

For the other SMEs, significant barriers made export difficult, even to Europe:

- For SME 1, high insurance costs prohibited the export of products specifically to the US; however, a small number of those who bought products from this SME, notably mobility vehicles, did then export those products.

- The remaining SMEs were not involved in export markets and did not envisage exporting in the future. In particular, exporting was irrelevant for the retail motor trade informants whose trade was predominantly regional.

15.5.6 Diversification and growth

Both of the SMEs that were manufacturing electronic and electrical parts had markets outside the Automotive industry that they considered more valuable, including the medical, maritime and defence industries. SME 6 (which manufactured printed circuit boards and adhesives) wished to grow its business in non-Automotive markets.

Other companies also reported a need to diversify in order to survive as businesses. As noted, SME 1 had developed exhausts for the mobility vehicle market in order to address the declining markets for custom exhausts among car owners and also had plans to begin importing very high-quality industrial oils from the US; to do so, the SME was investigating whether to split the company into an exhaust arm and a separate oil importing company.

- Neither of the retail trade informants indicated any need to grow the companies beyond their current sizes and geographical remits; both informants reported that their companies were profitable and manageable, and were winning sufficient work to prosper. One was particularly concerned that a larger company would be very difficult to manage, as staff numbers could soar into the hundreds in order to manage the delivery of spare parts as well as maintain numerous retail environments.

15.6 Innovation

15.6.1 Product innovation

The **vehicle manufacturers** reported a strong requirement to be innovative in order to stand out from OEMs, but also because innovation was currently a very strong theme within vehicle production:

- SME 4 was the first motorcycle manufacturer in the UK to glue bikes together rather than welding them, using a technique first developed in the Aerospace industry to glue wings to aircraft:

The bike we're building at the moment is glued together [with] aluminium adhesive. It's much better than welding. It's lighter, and we tested it for three years in our MX1 race team, and it worked out perfectly. (Automotive SME 4)

- As a vehicle manufacturer, SME 3 reported that it was essential to be innovative. The major OEMs in the sector had invested considerably in innovation in recent years – particularly around hybrid and electric vehicles – and there was market pressure on smaller manufacturers to be similarly innovative. SME 3 had recently received investment from an Aerospace company, which had provided more R&D funding. This had led the company to experiment with different materials in the manufacturing process – including composites such as carbide titanium – in order to reduce the weight of its vehicles. The company was also actively exploring the use of other Aerospace materials:

Aluminium lithium, which is what's used in aviation... It's never been used on a vehicle before and it is also very difficult to get hold of anywhere in the UK, so we have been looking at things like that. (Automotive SME 3)

SME 3 had also received some government funding for R&D into technologies to reduce the weight of vehicles in order to improve their fuel efficiency; however, it was the only SME interviewed to have received this type of funding.

Elsewhere, there were fewer direct examples of product innovation:

- SME 2 was investigating the use of bonding processes for passenger seats in order to produce lightweight and recyclable products, and had also produced a prototype for an extremely lightweight passenger seat (3.5 kg), which was sufficiently durable to pass mandatory strength tests. This seat was currently too expensive to produce for automotive markets, however.
- SME 5 produced components for a number of innovations in other industries, especially in the Medical sector, but less so for Automotives.

Some **emerging technologies** were discussed by two informants, though none was thought likely to have much impact on the industry:

- Two manufacturing SMEs thought that there was some potential in 3D printing, although one of these (the custom exhausts manufacturer, who reported challenging economic conditions) thought that it was currently too expensive to use:

Some of the 3D printing things that involve lasering powdered metals together, we think it would be quite a good little prototype resource for the area, and because of some of the contacts that we have with motorsport, it could be quite good [to] use, but it's limited to what we can afford. (Automotive SME 1)

- SME 4 discussed the possibility of manufacturing electric motorcycles in the future, but thought that battery life would be very short. It also noted that as emissions regulations for bikes were much more flexible than for cars, there were few drivers for the development of electric motorcycles in the foreseeable future.

15.6.2 Service innovation

The introduction of new IT systems had resulted in some changes to the way that both retail traders (SMEs 7 and 8) managed their services. This was particularly so for the used car and MOT business, which reported that the increasing electronic sophistication of recent vehicles meant that that diagnostic software always had to be up-to-date:

We have an interface which is a platform; it can be used for any cars, but currently [only] BMW, but you can upgrade that [to] Audi or Mercedes software which we have, and then you have dealer-level diagnostics – so a lot of money. The technology behind it is very, very important because that is going to drive customers to you. The manufacturers are releasing different software on a weekly basis so you have to update that to do a job to the highest standards. (Automotive SME 7)

SME 8 did not focus on product innovation, but did attempt to speed up its overall process and make the business more efficient by using computers where possible, such as for tracking orders of car parts.

15.6.3 Intellectual properties and patents

The two vehicle manufacturers had Intellectual Property rights over their vehicles – which only applied to the whole vehicle rather than individual components, which were not subject

to IP – as well as trademarks; these were the only SMEs interviewed to have any registered IP.

Patents were reportedly too expensive and time-consuming to obtain, and several informants expressed doubts about the extent to which these could realistically be protected by SMEs with limited resources:

At one time we were talking about patenting the [individual] body work but the cost and administration to do [so] for a guy that is copying and selling the panels for maybe two years, it's not worth doing. All they have to do is change some small thing on the body work and that's it – you can't protect it. (Automotive SME 3)

The motorcycle manufacturer (SME 4) had considered patenting its adhesive bonding technique, but had concluded that if a bigger company with more money copied the technique, the company would not have the financial resources to fight a court case.

15.7 Key relationships

15.7.1 Customers and suppliers

For most of the SMEs, especially the manufacturers in niche markets, relationships with customers and suppliers were key to the success of their businesses. Some – notably SME1 – had long-term relationships with specific customers (e.g. motorsports racing teams) that were very highly valued.

- The relationship that SME 1 had with the mobility vehicle manufacturer was critical to its custom exhaust business, especially as this manufacturer had approval to export the vehicles into US markets.

We've got very good relationships with both [customers and suppliers] because we will basically bend over backwards to help customers if we possibly can... for instance, the mobility one, we'll work silly hours at night if he needs something doing. (Automotive SME 1)

We're very close to the customers on this particular site. It's daily contact with them. We even guarantee that one of us will see a customer face to face

once or twice a week, so it's quite close relations with the customers in that respect. (Automotive SME 5)

- SME 2 had manufactured seats for VDL, a major bus and van manufacturer in the Netherlands; this was a very close relationship in that each company had visited the other's factory.
- SME 3 was intending to work more closely with a number of parts manufacturers, such as Morgan and Aerial.

Customer relationships were also especially important to the retail trade informants.

Suppliers overseas could cause problems for a business, however, particularly the consistency of supply. This was especially important for companies that relied on delivering a speedy service, such as SME 8.

15.7.2 Other organisations and sources of strategic business advice

Some automotive SMEs had key relationships with a number of different groups and organisations, including government (national and regional) and industry bodies, partnerships with other businesses, and good relationships with their clients and suppliers.

- There was only sporadic membership of industry bodies. This was most important for the **vehicle manufacturers**:
 - SME 3 (the car manufacturer) was a member of The **Niche Vehicle Network**, which helped to share knowledge and best practice about the industry among small vehicle manufacturers. This SME had attempted to work with members of the Network to secure joint European Small Series approval for a number of comparable manufacturers (e.g. Caterham).
 - However, there remained a tendency for manufacturers to seek this approval separately because of a fear that IP could be compromised – a fear that the SME consulted thought was misplaced
 - In contrast, the SMMT was regarded by this informant as a body that represented OEM interests more than those of SMEs. For example, the SMMT was reluctant to fight for legislative exemptions for SME

manufacturers of niche cars, such as with regard to installing ABS braking systems in cars (which were extremely expensive for niche sports car manufacturers).

- SME 4 was a member of the **Motorcycle Industry Association** (MCIA), which was a governing body for the sale of motorcycles in the UK. This included an auditing role to ensure that motorcycles conformed to traceable manufacturing standards.
- SME 8 belonged to a national buyers group for spare parts; there were around six of these in the UK, and non-competing companies used these to try to drive competitiveness against some of the larger spare parts suppliers:

We try to get together with non-competing colleagues over the country and pool our buying strengths, and hopefully gain a few extra discounts... to make some profit or to pass it through to remain competitive against the other bigger players in the marketplace. (Automotive SME 8)

- SME 2 had acquired some funding from the Welsh Assembly to help develop its in-house manufacturing. This was important at a time when bank loans were becoming more difficult to arrange.

Two SMEs were previously members of the Federation of Small Businesses (FSB), but reported that this had delivered little benefit to their companies and had not been renewed.

We joined the Federation of Small Businesses when we set up and to be honest it was probably a waste of £500. It's not that I don't agree with it; it's just [that] we're not rich enough to just throw the money into something. (Automotive SME 1)

15.8 Regulations

15.8.1 Type approvals

For the **vehicle manufacturers**, the key regulations related to approval to sell vehicles in different territories.

- The car manufacturer (SME 3) was required to obtain Individual Vehicle Approval (IVA) in order to sell any vehicle in the UK.¹⁰ Similarly, in order to export small sports vehicles to Europe, European Community Small Series Type Approval (EC SSTA)¹¹ was required. This was similar to the IVA process.
 - However, whilst this did not present any major technical challenges, there were significant costs associated with the European approval process.
 - Most notably, if the company switched engine supplier, then an entire new approval process would be required, at a reported cost of around £250,000-300,000 (this included the cost of the engine as well as the approval process).
- In order to sell motorbikes in Europe, SME 4 was required to gain approval from a recognised homologation testing provider (e.g. DEKRA in Germany, which the company used for this purpose). This involved testing every part of the machine as well as assessing noise emissions; once approved, bikes could be sold anywhere within the EU. The informant did note, however, that the IVA process in the UK – which motorcycle manufacturers could use to sell into the UK market – was less stringent; passing IVA would not entitle a company to sell motorcycles in mainland Europe.

The motorcycle manufacturer did not report any cost or technical issues with approval processes, and thought that the level of regulation for motorbike manufacture was “about right”.

- SME 3 had also faced legislative changes concerning carbon taxation, which had reduced its sales in certain European markets (see section 4.5.5). However, these changes did not impact the motorcycle manufacturer, as emissions from motorcycles were low.

¹⁰ <https://www.gov.uk/vehicle-approval/individual-vehicle-approval>. The IVA is currently administered by the Driver and Vehicle Licensing Agency (DVLA); until April 2014 it had been administered by the Vehicle and Operator Services Agency (VOSA).

¹¹ <http://www.dft.gov.uk/vca/vehicletype/ec-small-series-ecssta.asp>.

15.8.2 Other European regulation

The manufacturer of **passenger seating** (SME 2) had to adhere to very extensive seat safety testing regulations, the majority of them European in origin. All of its products had to gain VCA certification before sold in the UK.¹² The informant reported that different EU countries had different agencies that performed similar tests and certification. Examples included:

- RDV (Netherlands)
- TUF (Germany)
- IATA (Spain).

Theoretically, VCA certification was intended to be recognised as an equivalent of these other agencies within European markets, although in practice this was not always the case. For example, the German police (a potential client) had required the company to pass TUF tests prior to purchase, and would not recognise the equivalence of VCA certification.

- In addition, this informant highlighted the recently introduced **Regulation 80**, which had significantly added to the burden of safety testing. Regulation 80 specified that any seat had to be able to move forward between 100 and 450mm in the event of an accident, where previously there had been no requirement for seats to move forward at all. This had created a serious issue, because ensuring that seats could bend forward in an accident in accordance with the new regulations was extremely difficult to achieve without compromising existing regulations with regard to seat strength. Only three companies (including SME 2) had accomplished this as of July 2014.
- This change also meant that seats now had to be tested within the vehicle in which they would eventually be installed, rather than as separate items as had previously been the case. This presented further challenges with regard to sourcing chassis for testing purposes, which OEMs were very reluctant to supply. In addition, each iteration of a vehicle, or different seating arrangement, was required to be tested individually under Regulation 80.

¹² The Vehicle Certification Agency is another executive body of the UK Department for Transport and the UK's national approval authority for new road vehicles. <http://www.dft.gov.uk/vca/aboutvca.asp>.

- The informant thought that Regulation 80 had not taken into account the implication for spinal damage in passengers in seats that had to be designed to move forward, but had little power to confront or challenge the new regulation.

The company felt that, prior to Regulation 80, safety testing regulations, though extensive, could be met by small manufacturers. However, Regulation 80 had greatly increased the difficulties that manufacturers faced with regard to producing safety-certified seating, and had cost the company over £150,000 in recent years, during a downturn in the economy.

- The manufacturer of custom exhausts (SME 1) was also critical of EU regulations concerning the use of sports caps on catalytic converters and noise regulations for exhausts on recent vehicles, both of which significantly reduced the market for custom exhausts (which were often louder than the 70dB limit now proposed). Whilst the company could continue to fit exhausts to older models of car, and for use in motorsports, the consumer market among more recently manufactured vehicles was thought likely to disappear entirely.

One of the retail trade informants noted that spare parts stocked and supplied – including both the part and its packaging – had to meet European standards:

You should only be stocking and having European standard parts and packaging. So we all comply with that understanding of what the basic legal requirement is, so that we don't get ourselves into trouble. (Automotive SME 8)

- One of the electronics informants (SME 5) noted that all of its products were required to be RoHS-accredited; in practice, this meant sourcing all materials from within the EU. The second electronics manufacturer was working to a number of named industry standards, rather than regulations (see section 4.10.2).

15.8.3 Other laws and regulations

Beyond regulations specific to the Automotive industry, SMEs had to abide by a number of other laws and regulations:

- The key regulations for the **retail** trade informants (SMEs 7 and 8) were **Trading Standards** laws and **employment** laws.

- One informant (SME 7) reported that whilst it had never fallen foul of **Trading Standards**, the regulations appeared to be balanced very much in favour of customers – even if the company wished to dispute the claim being made – and that this could make life very difficult for business owners:

Just reading Trading Standards is incredible. You can offer a three-month warranty [on a used car] but if a fault occurred with a car 18 months down the line – for example, a fault with the gearbox – even if the car is ten years old, it would be presumed that the gearbox was at fault at point of sale. (Automotive SME 7)

- Similarly, SME 8 reported that **employment law** could constrain the business, but accepted that there was little that it could do about this:

We have to go through the processes of disciplinary [action], but it's getting very bureaucratic. Perhaps enough formalisation of the basic approaches should get the messages across that somebody is not doing it right and [get that person to] explain yourself. (Automotive SME 8)

- Health and Safety Regulations were discussed at some length by the custom exhaust manufacturer (SME 1), arguing that it was unreasonable to expect very small businesses always to be 100% compliant. This SME was currently hosting an engineering student who was not allowed to conduct any practical work because of Health and Safety regulations; this was reported to be unhelpful, both for the company and for the progress of the student:

He's not allowed to operate a lathe, a milling machine, a band saw, a grinder, anything like that at college. And he's an engineer; he needs to learn, he needs the practical side of things as well as the theoretical side... (Automotive SME 1)

15.9 Best practice

15.9.1 Use of codes of best practice

In most cases, codes of best practice were developed by SMEs in-house. In the case of the smallest companies, these were not written down, but simply embedded within working practice.

- SME 1 had best practice embedded into the company as a form of unwritten code of conduct (such as switching off welding equipment when not in use). There was, however, no written code of practice. This company had only four staff, who were often asked to work additional hours, and was focused on completing client jobs, meaning that there was little time or inclination to write a code of best practice.
- Similarly, SME 7 reported that with a small, tightly-knit team running the business, there was little need for any written code of practice, particularly on the sales side; this informant felt that written best practice guidelines were more relevant for larger companies. There were, however, various Health and Safety regulations on the MOT-testing side of the business that had to be observed diligently.
- SME 8, also in the retail trade, had no written code of practice, and the informant (the owner of the business) reported that the business had a relatively simple ethos, derived from their own personal values. Best practice was understood in reference to competition within the industry, and related specifically to delivery needs (i.e. always delivering a part to a customer within two hours).

Where written codes existed, these tended to follow regulatory frameworks or requirements, or, in a couple of cases, particular standards.

- The most extensive written code of best practice was at SME 2 (the manufacturer of passenger seating), which had drawn on the expertise of external consultants; both Crownford and William Battle were mentioned as consultants that the company had actively used. This company was working in a heavily regulated area in which products were required to undergo extensive strength testing, and where failure to pass tests could be extremely costly. It was therefore critical to have systems in place to prevent this type of outcome:

We have meetings about once a month with William Battle where we have working groups and we work through what we do and how we do it, in terms of control plans and responsibilities. If you're looking about having quarantine areas, about having inspections, function checks, visual inspections... We work very, very hard at controlling all the information we have [and] we have our own pretty rigorous systems within the company. (Automotive SME 2)

- SME4 had developed a best practice manual in order to comply with ISO 9001 accreditation.
- SME 5 had a very strong and well-established quality management department that operated an internal code of best practice. This was developed in order to meet IPC¹³ standards.

It's a level of standard so that you have a continual flow of good product going out the door... Anywhere new I've ever gone to work, I like to show [that] the quality department is insistent on quality and making improvements, and if you set your standards from there it's easier to pass that information and sense of responsibility onto other people. (Automotive SME 5)

15.9.2 Desired business improvements

Four SMEs outlined areas where they would like to make some improvements to their businesses; however, these were very specific to individual businesses, rather than representing any broader types of change or improvement across the Automotive sector:

- SME 7 identified a need to source a more regular supply of second-hand cars if the business was to grow successfully. Currently, this SME sourced second-hand cars from private owners and a small number of local dealerships. Whilst the company's trading site was small – and could therefore appear to potential customers to be 'full' with only a small number of cars for sale – current supplies were not adequate if the company was to grow and occupy a larger site.
- SME 1 wished to develop its business in the distribution of imported, high-quality industrial oils, particularly as a supplier for wind turbine operators, because the

¹³ <http://www.ipc.org/ContentPage.aspx?pageid=Mission-Statement>.

custom exhaust market was unlikely to be a source of future growth. However, to be financially viable the SME needed to deal directly with the oil supplier itself, rather than through a third party, and had had little previous experience of establishing distribution deals of this nature.

- SME 8 reported an interest in sourcing some consultancy to help to identify areas where the business could be more efficient – such as in the use of energy in its warehouse – but would prefer this type of advice to be available free of charge.
- SME 5 was investigating the possibility of using Value Stream Mapping to streamline production, though this was at only a preliminary stage.

15.10 Standards

15.10.1 Overview and relevance

Standards were only partially relevant to the Automotive informants, and were of most relevance to the electronics manufacturers. For the electronics SMES, clients often insisted on adherence to standards as a condition of undertaking business; however, some of this adherence was driven by both companies' clients *outside* the Automotive industry. One informant had previously worked in the Aerospace industry and commented that the need for (and general use of) BS and ISO standards in the Automotive industry was considerably less than in Aerospace.

- As was the case in a number of other sectors, the smallest SMEs tended not to use formal standards. This was usually because of a perception that BS or ISO standards were irrelevant to their commercial success, and could impose a level of cost and administration on businesses that was counter-productive:
 - SME 1 thought that standards would only be relevant if the company was bigger, and was manufacturing products in significant volume for major companies; currently, its clients did not require the use of any standards:

If you talk about BSI and things like that, it's basically bureaucracy – writing everything down, having a system in place that has everything recorded – and they're all added costs to a company. And yes, in

some situations it may be relevant, for instance traceability of parts on an aircraft and things like that, but on a motor car? Not really, not in our environment anyway. (Automotive SME 1)

- SME 3 did not think that it would benefit from ISO, BSI or TS approval. The company only acquired European Type Approval because of the need to gain export licences. The informants from this SME reported that there was little commercial reason to subscribe to any BS or ISO standards, as these would not drive sales or improve its current business. However, because of its association with Aerospace, it was beginning to use some manufacturing traceability standards from the Aerospace industry (but was unable to cite specifically which standards these were).
- Similarly, the retail traders tended to perceive formal standards as not relevant to their businesses, and were usually using internal Standard Operating Procedures:

In terms of standards, our tyre policy... Our tread depths are a minimum of 3mm; [those of a Mercedes Benz dealership] are 2.8 mm. I did that on purpose to be higher... [But generally] I think the relevance of standards decreases with the size of the business. (Automotive SME 7)

Other than tyre tread depths, these standard operating procedures related to:

- Sales processes (e.g. how to deal with new and existing customers)
 - How used cars were prepared (e.g. ensuring there were no marks or scratches on vehicles).
- Similarly, SME 8 had developed its own standards over time, focused on providing the best products to customers, as well as on behaviours in the workplace. There was, however, no adherence to formal standards. Parts supplied to customers were expected to be certified to European standards, although this was the responsibility of suppliers rather than the retail SMEs.
- The cost of adhering to standards was also a key issue for several SMEs.

...the only crib I've got is that of a small business with cash flow problems – [standards are] expensive. If they could look at how much they charge people, and maybe do it on a per capita basis of how many people are employed, that might be interesting. (Automotive SME 2)

15.10.2 Specific standards used

Four SMEs (both electronics manufacturers and the motorcycle and passenger seat manufacturers) subscribed to ISO 9001. As with informants in other sectors, this was driven largely by client requirements.

If we're talking about wanting to deal with some of the major players, they won't even consider you unless you have standards and can demonstrate that you adhere to them. (Automotive SME 2)

Although SME 2 reported that the need to retain volumes of paperwork in order to prepare for audits could be time-consuming, there was a concern that any simplification could simply result in a "lowest common denominator" Quality Management standard that was weak and easy to circumvent.

SME 6 (an electronics manufacturer) was the only company to adhere to a number of other standards in addition to ISO 9001. These were:

- ISO 2000:2014¹⁴
- TS 16949:2009 (SME 6 was the only company using this standard).¹⁵ The cost of subscribing to TS 16949 was cited as a significant issue, as certification fees were reported to have increased by 38% in one year. In addition, this informant reported that German clients were increasingly using the German VDA system of auditing Quality Management systems, so were less inclined to recognise TS 16949:2009
- ISO 14001
- UL standards
- IPC standards approval.

¹⁴ http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=51091.

¹⁵ http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=52844.

Some of these standards were used because clients in sectors outside Automotives had required them (e.g. Aerospace; Medical).

SME 6 saw standards as a very useful means of proving that Quality Management procedures were in place, though it was the only SME to view standards in this way:

Oh I think, without a doubt, standards are beneficial to a company... I can see how over the years the standards have improved, how easy it is to maintain and produce good products, and taking out a lot of the so-called quality control, so inspection for the sake of it, and working more on procedures and processes and making sure your processes are right. (Automotive SME 6)

The vehicle manufacturers were also required to have vehicles certified, but tended to view this as a regulatory requirement, rather than a standard as such. Certification schemes reported were:

- European Community Small Series Type Approval (EC SSTA)
- Independent Vehicle Assessment (for cars in the UK)
- MCIA Conformity of Production certificate (this was reported by SME 4, which was manufacturing motorcycles)
- VCA Conformity of Production.

15.10.3 Drivers for further use

As in a number of other industries, Automotive SMEs thought that further standards would only be used if clients requested these as part of tendering processes.

- The custom exhausts manufacturer (SME1) was very reluctant to use standards in their current form and thought there was a need to reduce the paperwork associated with audits. In particular, this informant was concerned that audits were focused on ensuring that subscribers produced the correct paperwork, rather than on the quality of the products they produced, and that standards amounted to a 'tick-box' exercise, rather than a means of adding value to small businesses.

Both electronics informants (SMEs 5 and 6) thought that further standards would primarily be required if business was grown beyond Automotives.

It all depends [on] how the business does develop further. Once we have a lot more space, I'm sure our MD will go back on the road looking for further orders, and potentially there's a strong possibility that we'd have to look at further standards – maybe within Aerospace and Medical, because we do supply a lot of those areas.
(Automotive SME 6)

15.11 New standards development

15.11.1 New standards required

No new areas requiring standards were suggested by the companies. Several SMEs – such as SME 2, whose seats were subject to extensive safety testing regulation – had derived best practice procedures directly from regulatory requirements, and were more concerned about meeting these than developing new standards as such.

Some SMEs reported a need to streamline or alter existing regulations:

- SME 3 wanted to streamline vehicle regulation processes so that individual approval would not be required simply because a custom-built vehicle used a different make of engine.
- SME 8 reported a need in the UK for better training of people undertaking vehicle repair.

Probably 80% of vehicles that are repaired in the UK, most of the guys who repair the cars probably have no extra qualifications than their first certificate. I know it happens better in Germany. I think it's somewhere between every three and five years they have to go back to college for a week and keep up to speed with the latest technology... you could get down to perhaps encouraging the repair shop to have a quality standard [to show] that he's making sure that he's training his staff and keeping [them] up to speed as well as himself. (Automotive SME 8)

This informant thought that engineering qualifications were increasingly important for those replacing car parts as the sophistication of vehicles had increased significantly

in recent years and older, manual diagnostic processes to determine car faults were no longer appropriate.

This informant also commented that as the use of electric vehicles became more commonplace in the future, new skills may be required among engineers and mechanics.

More widely, there was a need for standards to be priced more appropriately for SMEs:

- For SME 1, the core requirement was to reduce the costs associated with subscribing to standards. This company had lost business in the past (e.g. for bending tubes for nuclear power stations in Romania) because it did not subscribe to BS/ISO standards. The informant expressed a desire for a different method of payment, and to reduce the administrative burden associated with audits, in order to make standards more accessible to businesses in a similar position.

15.11.2 Best ways to access

PDFs were highlighted as being the best way to access standards, as this format could facilitate the printing of hard copies if there was a preference for these.

15.12 Participating in standards development

15.12.1 Stakeholders in standards development

A number of the SMEs argued that smaller companies should be more involved in standards development for the automotive industry. There was, however, some disagreement about how best to proceed; several informants were concerned that SMEs often had a very narrow focus, and would struggle to give a “whole-industry” view on the type of standards that may be required in future.

It's like you're designing a horse isn't it? You end up with a camel. I think everybody will have their own view on it... (Automotive SME 2)

It needs to be done with groups of manufacturers and a standard agreed between them. It's pointless [us] coming up with something, because it would be different to Caterham, it would be different to Morgan. (Automotive SME 3)

To this end, some informants reported that industry groups and trade associations to which SMEs belonged were a better way of representing smaller companies in standards development. These included:

- The Niche Vehicle Network
- Wales Quality Centre
- Welsh Automotive Forum.

Others thought that the involvement of smaller companies would be better facilitated if groups or consortia of SMEs could be formed to present views.

Although several informants thought that larger OEMs ought to be involved as stakeholders in standards development, there was some concern that the larger companies in the sector would dominate proceedings due to their greater resourcing (such as their ability to spare staff to attend standards committee meetings).

- One informant (SME 1) reported several cases in which regulatory changes concerning exhausts had been introduced through the lobbying of major car manufacturers, with very little input from SMEs. This had resulted in the proposed reduction of maximum noise levels from exhausts, which the SME thought would damage the company's business.

15.12.2 Funding of standards

The majority of informants thought that the government should take a lead in funding the development of further standards; less commonly, informants argued that OEMs should do so (either alongside or instead of government). Either way, most felt that it was unrealistic to expect SMEs to fund standards development themselves, either upfront or by purchasing new standards.

Generally the standards are driven either by law or by OEM requirements. So for me if they want to impose these standards then I don't believe that those costs should be passed on to the supplier. (Automotive SME 6)

I think there should be an element of government funding... whether that's via industry bodies, I don't feel costs should be met by businesses, as they have a hard enough time in this climate. (Automotive SME 7)

When there are major changes going forward – perhaps a good example is the vehicles where it's likely to go electric, because that is a totally different infrastructure compared to one we're already used to – I think the governments have to look at ways of picking up most of the tab to make it happen quicker. (Automotive SME 8)

Two informants reported that as SMEs were currently struggling to secure bank finance, it would be very unrealistic to expect them to make a financial contribution to new standards.

15.12.3 Barriers to SME participation

Several of the SMEs did wish to be involved in the development of standards, but reported a lack of time to do so:

We work on a very lean basis here within the company, which obviously a lot of small to medium enterprises do; it's then finding the time to [do] that, basically. (Automotive SME 6)

We could have things to say on it that would be relevant, but in practice we don't have the time to do whatever that would look like. (Automotive SME 7)

Further, two SMEs (1 and 2) did not believe that being part of a discussion about standards of practice would necessarily be of benefit:

- SME 1 would be happy to be involved with the development of standards, but noted that, in previous meetings concerning regulatory changes, smaller companies were not listened to. Rather, they felt that meetings had been more like “token” gestures than meaningful dialogue with SMEs: “...they just want to push the regulations and do what they want to do but not listen to anybody else.”

SME 2 was also sceptical about committees as a means of producing effective standards that were the product of stakeholder dialogue:

I've been on committees in the past and I've travelled the length and breadth of the country and quite honestly I've never found it did any good... People just do what they want to do anyway... you often find it's just a token thing.
(Automotive SME 2)

One of the vehicle manufacturing SMEs (SME 4) was involved in meetings with the MCI and VCA, and was positive about these experiences. They acknowledged, however, that larger companies tended to have more influence in these types of structure on account of being able to dedicate more staff resource to them.

15.12.4 Ways of overcoming barriers

Three SMEs reported possible ways that barriers to SME participation in standards development might be overcome.

- By **being flexible** about how and when SMEs could participate:

I would spend a couple of hours in an afternoon or an evening and go out and put time in and sit and do something. I would get involved, but like a lot of things... they don't seem to want to tell you about it; they just want to push the regulations and do what they want to do but not listen to anybody else.
(Automotive SME 1)

I think it would all depend how often any committee would meet, but I think if it was a quarterly type thing, or six monthly type thing, I think [our MD] would be very interested in using somebody to get on board with that. (Automotive SME 5)

- **Targeting the most appropriate staff:** the informant from the motorcycle manufacturer (a Production and Procurement Manager) was sceptical about having sufficient time to take part personally, but did note that some of the company's design staff who were below Director level would be appropriate participants.

Several informants had earlier commented about the cost of current standards documents, and that this was sometimes prohibitive. An alternative pricing strategy for standards might also encourage more SME participation in this process.

15.13 Key findings

15.13.1 Challenges facing Automotive SMEs

The main challenges identified by Automotive SMEs related to:

- **Costs and financial management:** In the case of manufacturers, this related particularly to raw materials, but also to securing access to finance, which had become much more difficult for SMEs since the recession. Costs of staffing were not as high as in some other, more hi-tech sectors, but were nevertheless closely managed. The recession had not affected SMEs in Automotive as strongly as in Construction, and many of the SMEs that were consulted had niche markets that were relatively insulated from the recession. There was, however, some evidence of downsizing, and of firms having to focus on different markets, especially for the seat manufacturer.
- **Developing and managing customer relationships and business reputations:** The costs associated with securing vehicle dealerships were also highlighted.
- **Supply chains:** Small vehicle manufacturers, for example, were often required to purchase parts from OEMs in bulk. Some payment terms could also be problematic.
- **Legislation** was a challenge for some SMEs – particularly for companies manufacturing parts and accessories – as European regulations for exhaust emissions and noise, and for passenger seat safety, had increased costs and, in two cases, reduced markets for products. For the car manufacturer, legislation limiting carbon emissions had significantly limited the export markets for its vehicles in mainland Europe.
- **Exporting** posed some challenges, particularly for vehicle manufacturers that were required to secure Type Approval for any vehicle. This presented some issues for

custom-made vehicles, each of which had to be separately licensed. Growing sales in US markets without having a production base in that country was also a challenge.

- **Diversification** presented challenges, particularly for the electronics manufacturers, both of which were diversifying into other markets (i.e. Medical and Aerospace) that were thought likely to deliver more growth than was Automotives.

15.13.2 Innovation

- Vehicle manufacturers needed to be innovative, and both of the informants in this sub-sector were using new processes, particularly for vehicle assembly (e.g. gluing parts together rather than welding them).
- The passenger seating SME was also using innovative bonding processes for seats, and finding ways of reducing seats' weight.
- There may be some potential in 3D printing of bodywork and other parts, although this appears to be several years away from adoption by SMEs in the sector.
- Service providers (i.e. retailers of spare parts and second-hand cars) reported the growing use of software-based diagnostic systems for repair or for identifying parts needs.
- Vehicle manufacturers owned Intellectual Property in their vehicles, although SMEs did not mention registering patents.

15.13.3 Key relationships

- Important relationships were primarily with customers and suppliers.
- Some SMEs also belonged to trade associations, although these were not mentioned as extensively as in Food or Aerospace. Membership of niche associations, such as the Niche Vehicle Network and Motorcycle Industry Association, appeared to be more relevant to SMEs than membership of industry-wide bodies such as SMMT. None of the informants mentioned the Automotive Council as a key relationship. The retail trade informants did not mention belonging to any associations of this nature,

although there were some national buyers groups in which consortia of small retailers collaborated in order to secure supply deals for spare parts.

15.13.4 Regulation

- Vehicle manufacturers were required to secure Type Approval, to confirm that production samples of a design (for whole vehicles, vehicle systems, or separate components) met specified performance standards. In Europe, Type Approval is derived from EC Directives and from United Nations Regulations.
 - Obtaining Approvals could be very costly for the car manufacturer, as a separate Type Approval was required if modifications were made to vehicles; for custom car manufacturers, who may source different engines, this was a significant issue. Type Approval concerns were not reported by the motorcycle manufacturer, though systems are in place for Type Approval for motorcycles – including the mandatory European Community Whole Vehicle Type Approval (ECWVTA) and, for low-volume manufacture, the UK's Motorcycle Single Vehicle Approval (MSVA) scheme.
- Carbon emissions regulations had also reduced significantly some export markets for custom-made sports vehicles.
- There were extensive regulatory requirements for testing the safety of passenger seating, and a lack of harmonisation with the EU about these; notably, multiple certifications were sometimes required to sell in multiple EU states. The recent introduction of Regulation 80 in European law posed major difficulties, as this:
 - Required seats to bend flexibly in a forward direction, which was very difficult to reconcile with the need to protect the seat user from injury. Very few manufacturers had reportedly resolved this to date
 - Fundamentally changed the way in which tests were conducted, moving from the testing of individual seats to tests within vehicles, which were very difficult to arrange.
- Manufacturers of accessories and parts were especially critical of EU legislation, reporting that whilst it was usually introduced with good intentions, it had a significant cost implication on their businesses and would not impact as heavily on large OEMs.

- RoHS regulations applied to some electronic parts, which therefore had to be sourced from within the EU.
- The key external requirements for the **retail** informants (SMEs 7 and 8) came from laws relating to **trading standards** and to **employment**. These were relatively straightforward to meet.

15.13.5 Best practice

- Best practice was often developed in-house rather than sourced externally. This was particularly the case among the retail trade informants, who commented that best practice in customer interaction was well understood.
- Where written codes or operating practices had been developed (as within the vehicle manufacturers, passenger seating manufacturer and electronics companies), these tended to follow regulatory frameworks or requirements or, in a couple of cases, the ISO 9001 standard. Only one company had used an external consultant to help drive process improvements.
- Four SMEs outlined areas where they would like to make some improvements to their businesses; these were very specific to the businesses concerned (e.g. securing more regular supplies of second-hand cars; diversifying into the oil distribution market; better energy efficiency in warehouse environments).
- One SME in electronics manufacturing was investigating the possibility of using Value Stream Mapping as a specific technique to help streamline production, although this was at an early stage.

15.13.6 Standards

- There was little use of BSI/ISO standards among the Automotive SMEs, other than ISO 9001, which was used by a number of informants because clients required it; this driver for ISO 9001 adoption was also noted in other sectors.

- Those not using standards did not report any commercial imperative to begin doing so, but noted that adherence was costly for what was perceived as a “tick-box” exercise
 - Two of the smallest manufacturers thought that if their companies grew significantly and worked with OEMs more often – and on a longer-term basis – then standards (particularly for traceable manufacture) could be required
 - The retail trade informants did not perceive any requirement to use British Standards within their own businesses.
- The most extensive use of standards was among the electronics manufacturers, which included IPC and UL standards, as well as ISO 9001 and TS 16949).
 - Adoption of additional standards may be more appropriate when SMEs are manufacturing for sectors outside Automotives (e.g. Aerospace).

15.13.7 New standards development

There was very little reported need for new standards. Several SMEs were more concerned about meeting regulatory requirements than developing or adopting new standards.

- Some SMEs suggested a need to streamline or alter regulations, for example changing Type Approval rules in the EU so that vehicles did not require new approval with every slight change. SME 2 reported that UN/ECE Regulation 80, for passenger safety, also required further thought.
- Retail trade informants suggested a need for standardised training for those undertaking vehicle repair, particularly as there was no legal requirement for mechanics and engineers to update their knowledge in this area.
- More widely, there was a preference for standards to be priced more appropriately for SMEs, and for the administrative burden associated with audits to be reduced.
- SMEs preferred a PDF format when accessing standards documents. However, a facility to receive/print paper versions was important to some.

15.13.8 Participating in standards development

- The development of standards is likely to require a range of participant companies, including SMEs, OEMs and the main trade associations.
- The majority of SMEs thought that the standards development process for the Automotive sector should be funded by government.
- As among the other industries researched, time was seen as a major barrier to SME participation. Some SMEs also reported having had negative experiences when participating in previous committees within Automotives (albeit not specifically concerned with standards development), and had often found these to be dominated by OEMs or other large companies.
- To encourage participation, there may need to be flexibility in the ways that SMEs can participate. Those involved are likely to include not only senior staff but also, for example, design specialists.

15.14 Conclusions and recommendations

The Automotive industry is likely to be a very challenging environment in which to develop new externally-derived standards for SMEs. Other than ISO 9001, and some additional standards used by electronics manufacturers, there was little use of externally-derived standards among the SMEs researched. For the most part, SMEs are developing internal operating procedures, rather than using external standards. SMEs were more concerned about the regulatory environment, particularly European regulation, and the difficulties this created for their businesses (e.g. significant changes to passenger seating regulation).

If any standards were to be developed for this sector, interviewees have suggested that to encourage participation, there may need to be flexibility in the ways that BSI enables SMEs to participate, including the use of online forums, but also to allow SMEs to participate in committees on an occasional basis, rather than attend every meeting. BSI will also need to ensure that it targets the most appropriate staff within SMEs as participants; in some cases this may not be Managing Directors or Quality Managers, but could include design specialists. It would also be important to reassure participants that meetings would not be dominated by OEMs.

16 Construction

16.1 Overview

This chapter details the findings from eight interviews with SMEs in the UK Construction industry, addressing the following topics:

- The major challenges that those SMEs faced as businesses
- Issues concerning innovation and Intellectual Property
- Key business relationships
- The regulatory environment in the Construction industry and its impact on SMEs
- Best practice and business improvements that SMEs wished to implement
- Standards used in the industry and areas where new standards may be useful
- Ways in which SMEs may wish to become involved in standards development.

16.2 Construction sector: findings from Stage 1 report

Construction is one of the largest sectors of the UK economy, contributing almost £90 billion (or 6.7%) in value added, and comprises over 300,000 businesses covering some 2.93 million jobs (equivalent to about 10% of total UK employment). 14% of the UK's registered SMEs are in the Construction sector.

- There was a significant fall in the number of registered SMEs between 2011 and 2013 across several of the most sizable SIC classes. For example, the number of SMEs engaged in the 'Construction of commercial and domestic buildings' (SIC 4120) fell by 6.0%, while the number of SMEs within 'Development of building projects' (SIC 4110) dropped 13.7%.
- However, the overall reduction in the number of SMEs was a more modest 1.2%, with the large falls in some classes offset by large increases in others – for example,

an 18.5% increase in the number of registered SMEs engaged in 'Architectural activities' (SIC 7110) between 2011 and 2013.

The sector was heavily impacted by the recession. However, recent data has shown a pick-up in the construction economy, with activity in January 2014 growing at the fastest rate since 2007.

The UK construction sector is characterised by **high levels of fragmentation**, with 83% of firms employing no more than one person. There is a very high proportion of self-employment in the sector compared with mainland Europe.

- For a 'typical' large building project (i.e. the £20 - £25 million range) a main contractor may be directly managing around 70 sub-contracts, of which a significant proportion are worth less than £50,000.

Key challenges facing construction SMEs are:

- Difficulties in accessing finance compared with other sectors, due to lenders viewing construction SMEs as higher risk than SMEs elsewhere.
- **Low levels of innovation** compared with other sectors because of:
 - A strong culture of subcontracting
 - Concerns over product and professional liability
 - A culture of risk aversion among both contractors and consumers.
- Difficulties in winning work for major public sector contracts.
- Skills gaps (around 20% of vacancies in construction are hard to fill).
- Driving export growth in a sector that has historically supplied domestic markets, particularly in the case of construction contractors (only 6% of whom export at present). Worldwide demand for green buildings, mass housing and world-class architecture could collectively increase exports three-fold by 2025. However, this is likely to require cultural change if such a domestically-focused sector is to take advantage of the opportunities on offer.

The Government's Industrial Strategy for Construction aims to narrow the trade gap in the UK construction industry by doubling exports. There are also various initiatives to deregulate planning laws in an effort to increase both residential and commercial building in the UK.

16.3 Interviews

16.3.1 Organisations

BSI required research to focus on SMEs from two activity groups, Infrastructure and Building. Within each group, several SIC codes were specified for interviews, as follows:

Table 5 Construction activities to be targeted for interviews: Infrastructure

SIC Code	Title	Rationale	Type of standard
42120	Construction of railways and underground railways	Very large % growth between 2011-13. Current and future large infrastructure projects (e.g. HS2).	Product Process Behavioural/organisational potential
42220 & 42210	Construction of utilities (electricity, telecoms and fluids)	Very large % growth between 2011-13. High relevance given future energy needs.	Product Process Behavioural/organisational potential
74901	Environmental consulting activities	Very large % growth between 2011-13.	Process
74204	Civil or structural engineering focus	Standards relevant.	Product Process Behavioural/organisational potential

Table 6 Construction activities to be targeted for interviews: Building

SIC Code	Title	Rationale	Type of standard
71111	Architectural services	Substantial % growth. Standards relevance.	Product Process Behavioural/organisational potential
23610	Manufacture of concrete products for construction purposes	Standards relevance – CPR etc.	Product Process?
25110	Manufacture of metal structures and parts of structures	Standards relevance – CPR etc.	Product Process?

One SME from each of these SIC codes was interviewed, with the following exceptions:

- Two Architectural practices were consulted
- Two Environmental consultants were interviewed
- Although a number of manufacturers of metal structures and parts of structures were contacted, none agreed to take part in the research; in order therefore to avoid delays, this SIC code was not included.

Interviews were as follows:

Table 7 Construction SMEs interviewed

Construction SME	SIC Code Title	Number of employees	Job Roles
1	Construction of railways and underground railways	5	Managing Director
2	Construction of utilities (electricity, telecoms and fluids)	c.250	Business Development Manager
3	Environmental consulting activities	6	Managing Director
4	Environmental consulting activities	120	Director
5	Civil or structural engineering focus	170	Business Development Manager
6	Architectural services	10	Associate Architectural Technologist
7	Architectural services.	12	Partner
8	Manufacture of concrete products for construction purposes.	3	Director

16.4 SME activities

16.4.1 Construction of railways and underground railways

- **SME 1** was a consultancy and project management company that worked exclusively in the rail sector, mostly on small works (such as strengthening rail bridges), rather than large-scale rail infrastructure. The company worked for major rail contractors (e.g. Volker Fitzpatrick), rather than directly for Network Rail. The company also manufactured air quality monitoring systems for railway stations in collaboration with another firm.

16.4.2 Construction of utilities (electricity, telecoms and fluids)

- **SME 2** was a North West-based company that specialised in installing gas and electrical infrastructure for new housing developments; the infrastructure subsequently being sold to Distribution Network Operators (DNOs). Projects could range from installing infrastructure for a single new street of houses to working across an entire estate. At the time of interview, the company was competing for a contract for a new 3,000-dwellings development in Nottinghamshire. It had also undertaken work for the MediaCityUK project in Salford and for shopping centre developments (all large-scale projects). The company did not lay telephone or television/cable lines.

16.4.3 Environmental consulting activities

- **SME 3** was an environmental consultancy that was registered as a social enterprise. Its work mostly comprised field-based ecological surveys, including endangered species assessments, in order to help developers minimise environmental impacts. It had customers from Scotland to Lincolnshire, including major utilities companies, who required surveys prior to installing new infrastructure (for example, to understand whether above-ground infrastructure could be vulnerable to bird strikes). The company undertook similar work for smaller-scale developments, including individuals applying to convert garages into living areas, and for restoration projects. In the future, the SME intended to focus on winning work with larger clients, as this was more profitable than smaller-scale surveys.
- **SME 4** was a second environmental consultancy, founded in 1997, with offices in the North East, North West and South of England. Its services included landscape architecture and management, culture, environmental assessment (e.g. tree survey reports) and ecological surveys of land intended for development. It had undertaken a wide range of work for private developers, housing projects, commercial projects, the energy industry (including for National Grid, which was a major client), and government.

16.4.4 Civil and structural engineering

- **SME 5** was a civil engineering company based in North East England, with a turnover of over £35 million per annum. It undertook work across a range of infrastructure and building projects, and had some niche work in the construction and refurbishment of sports stadia. Around 70% of its work was carried out as a main contractor. The remainder was sub-contracting work for clients such as Balfour Beatty and Carillion.

16.4.5 Architectural services

- **SME 6** was an architectural practice based in North East England that undertook a very wide range of projects, from individual kitchen extensions through to major sustainable housing projects in the developing world. It had ten employees, having grown rapidly in its early days, though the recent recession meant that the practice had remained the same size for the last four years.
- **SME 7** was an architectural practice that had been established for 51 years and which worked predominantly on restoration/conservation projects (though, some decades earlier, it had worked on major transport infrastructure projects). English Heritage was a major client. Most of its work was in North East England, although there were occasional projects in northern Europe and the Republic of Ireland. Six of the 11 staff in the practice were RIBA members.

16.4.6 Manufacture of concrete products and structures

- **SME 8** was a small-scale producer of paving, garden ornaments and (more recently) an innovative concrete product that stabilised headstones in cemeteries. The latter product was becoming its main revenue stream in the wake of the recession. This company had three employees and a turnover of less than £1,000,000. It had no plans to expand in the near future.

16.5 Challenges

16.5.1 Recent recession

The **recession** had impacted Construction SMEs much harder and more directly than those in other sectors, with most reporting having either shed staff or else reduced working hours. The recession had affected those SMEs working for private clients first, but had subsequently also impacted those working in the public sector because of government spending restrictions. There was some evidence that private construction was now picking up, although the picture among SMEs was mixed.

- The **concrete structures manufacturer** (SME 8) had found that the market for garden ornaments and concrete structures (such as paving) had almost completely disappeared through the recession and did not seem to be returning very quickly, if at all. Several direct competitors had gone out of business between 2008 and 2014. This SME's move into the niche market of stabilising structures for headstones in cemeteries had effectively saved the business.
- Both **architectural practices** (SMEs 6 and 7) reported a decline in work since 2008, particularly for smaller projects such as house extensions. Both had suspended staff recruitment, frozen salaries and (in one case) reduced working hours, but had avoided making redundancies. Both felt that a recovery was underway, but that this was fragile and was gathering strength very slowly.¹⁶ Both practices had also built niche areas of work (in Central Asia and in heritage/restoration projects respectively) that had somewhat insulated them against the worst effects of the recession.
- The **civil engineering company** (SME 5) had seen a significant downturn in volumes of public sector work since 2010.¹⁷ Although private sector investments were beginning to grow again, this was emerging only in "fits and bursts". This company had suspended recruitment, a solution thought preferable to reducing the workforce.

¹⁶ As with several of the informants based in North East England, across all of the sectors researched, those whose business was primarily local in nature felt that the North East was likely to recover much more slowly than London or the South East.

¹⁷ Prior to 2007, this SME's work was split around 50/50 between the public and private sector; it was currently trying to grow its work among private sector clients.

- The **rail engineering firm** (SME 1) also reported challenges with regard to the intermittency of work with Network Rail, meaning that it was difficult to resource the company appropriately.
- Even those firms that had retained a healthy volume of work through the recession (such as SME 2, the utilities construction company) reported that markets had become more price sensitive than before the recession. The main challenge for this SME was to convince developers of the value of investing in one contractor to supply multi-utility work, rather than sourcing different utility connections from a multitude of providers (which could be cheaper, but could also compromise on quality).

Whilst most SMEs reported continuing economic challenges, one environmental consultancy (SME 4) found that **managing rapid growth** was the main challenge that it faced:

- This consultancy had doubled in size over the last three years, including opening two new offices, because of a large, long-term contract with the Homes and Communities Agency. This had necessitated changes in management structure and processes, as the Chief Executive could no longer provide personal oversight for every project.

16.5.2 Major cost challenges

For those directly involved in construction work, rather than consulting, the fluctuating cost of raw materials was a major challenge:

- For the civil engineer (SME 5), steel was subject to significant variations in price.
- The concrete products manufacturer (SME 8) reported a tendency among some larger concrete suppliers to, as they saw it, 'overcharge'. Manufacturers such as Blue Circle would offer bulk discounts for large purchases, but SMEs did not buy in sufficient quantity to trigger such discounts and therefore usually had to pay full price.

- This SME had addressed the issue by establishing a long-standing relationship with Hanson, a major manufacturer of cement and concrete mixes. This had led to discounted materials, even when not bought in bulk, and some bespoke strategic business advice so that the SME could grow and eventually buy a greater volume of supplies from Hanson.
- The cost of **labour** was also an issue for the larger Construction SMEs (such as SME 2, the utilities construction SME), as commissioning clients were increasingly keen to award tenders on cost grounds.
- For the Architects and environmental consultants, the **salaries of highly-skilled staff** were the major cost and could not be reduced without losing valued knowledge. Consequently, cost savings were made elsewhere (such as by running paperless offices).

16.5.3 Public sector procurement rules

Some SMEs working in the public sector faced difficulties in meeting procurement rules.

- Local authorities increasingly required registration and compliance with the following regulations and frameworks:
 - Constructionline¹⁸
 - Construction Design and Management (CDM) Health and Safety.¹⁹

These requirements were reportedly imposed with very tight deadlines:

A lot of clients, particularly public sector clients, will insist you have a Constructionline registration. To get a registration you have to go through quite an onerous prequalification of all of your processes, your financial standing and insurances, health and safety, environmental references from existing clients, all those sort of things. (Construction SME 5)

¹⁸ See <http://www.constructionline.co.uk/static/about-us.html>.

¹⁹ See <http://www.hse.gov.uk/construction/cdm.htm>.

With very little warning there is a letter that comes out to say [a local authority] requires you to participate in this scheme within two weeks, and if not then you're not going to win any work. (Construction SME 3)

For SMEs that were new to large public sector frameworks there were resource implications, both in terms of staff time (for example, in drawing up extensive policy and procedure documents that the SME had not had to use before) and cost.

- The rail engineering consultancy (SME 1) reported significant challenges in complying with Network Rail's supplier approval process, which was said to be weighted heavily in favour of larger companies. Consequently, this SME was not currently an approved Network Rail supplier, instead working as a sub-contractor for approved organisations.
- Similar issues were discussed by the civil engineering company (SME 5), which reported that public sector framework places tended to be won by the largest competitors (such as Carillion and Balfour Beatty). SMEs therefore were reduced to bidding for less lucrative and lower profile sub-contracted work.

16.5.4 Architects: Building Information Modelling (BIM)

Building Information Modelling (i.e. computerised 3-D modelling from the outset of the design process) was becoming the industry standard for architectural design processes in the UK.²⁰ Both architects reported that whilst BIM had considerable potential to streamline their work, its use posed some particular challenges:

- That smaller companies could struggle to afford to purchase the necessary software and training:

I think it's very unfair that this has been thrust on the industry because it's fine for the massive organisations who demand it. For them it's just a percentage of one project, whereas the layout for us will take a few

²⁰ For a definition of BIM, see <https://www.gov.uk/government/publications/building-information-modelling>.

projects' work to get it in, and the payback won't be as quick as it would be for a larger practice. (Construction SME 6)

- A lack of conviction that BIM was useful for every type of project. Informants thought that the use of BIM as an industry standard was driven by large firms in London that worked on high-value projects. In contrast, small-sized practices had concerns about the appropriateness of BIM for their own projects:

I'm sure the people selling the whole BIM idea will tell you that it works on all projects, [but] working on [a restoration project] isn't really going to hit all the buttons that the BIM system would warrant. (Construction SME 7)

- That the use of **Revit** as an industry standard for BIM required small practices to use much larger IT servers than previously.

16.5.5 Other challenges

Two SMEs were concerned about the targeting of support for smaller businesses. The concrete structures manufacturer (SME 8) commented that government support tended to be aimed at larger companies rather than SMEs, or else was used to provide what they saw as largely irrelevant assistance, such as generic enterprise workshops. This SME would have preferred to access professional mentoring schemes, rather than enterprise workshops. However, these were not available in the area concerned, other than privately, which the SME was not able to afford.

One of the architectural practices (SME 6) was completing a great deal of confidential design work for projects in Central Asian states, which involved spending considerable periods of time in those countries. The informant preferred that details of those projects be excluded from the report, but did highlight some of the associated challenges:

- Low fees – the practice undertook this work to establish a 'name' for itself overseas, but did not expect to profit from it at this early stage
- The requirement for staff to travel overseas for lengthy periods to manage projects (out of a total staff of just 10). This needed to be balanced with the need to generate local work within the UK, which remained more lucrative.

None of the other SMEs was undertaking any work outside the UK.

Succession planning was a growing concern for one environmental consultancy, whose two directors were approaching retirement age.

16.6 Innovation

16.6.1 Product innovation

Construction SMEs were not, on the whole, product innovators, and much work was completed to a 'spec' in which there was no requirement for innovation.

- Although the utilities construction company (SME 2) had developed an innovative technique to install utilities through existing pipework, this could not be used in new-build developments, as there was no existing infrastructure through which to feed cables.
- The civil engineer (SME 5) commented that whilst some competitors had made efforts in the past to streamline processes by using innovative technology (e.g. automated bricklaying), some of these were less efficient than manual work.

The environmental consultancies and architects reported a need to be 'up to date', but noted that being technically innovative could be a barrier to winning business, as this would carry with it a perceived risk.

The last thing some of our clients want is us to be innovative. They just want us to get on and deliver the service they require. (Construction SME 3)

We're not pushing the envelope in any sense. [What matters is] what did you bring to the last project that made [y]ourselves the better architects to do it than our neighbours down the road or someone else? (Construction SME 7)

One architect reported that low-carbon building initiatives impeded innovation in architecture, particularly for social housing projects, as energy efficiency criteria (such as insulation levels) were closely stipulated in advance.

- The headstone stability product manufactured by SME 8 was innovative, and there were no competitors. This was now produced to standard specifications and could be mass produced, albeit not to a named British Standard.

- The rail construction SME (SME 1) had developed a new air quality monitoring system for railway station and platform environments (in partnership with another company), but this remained at prototype stage and the SME was unclear how to develop it further commercially.

16.6.2 Emerging technologies

- One architectural practice (SME 6) reported that 3D printing might have a major impact on Construction in years to come, including printing out modules that could be interlinked to create homes. However, the informant was sceptical about the suitability of plastic as a material for buildings, both in terms of its strength and its environmental sustainability.
- The second architectural informant (SME 7) reported a growth in ‘modular’ approaches to Construction, particularly for projects such as new student developments where most of the rooms within a scheme were of the same size, and the fittings were identical throughout:

They build those [individual rooms] in factories. They don't have to worry about the weather; the supply chain of getting materials to site doesn't happen... (Construction SME 7)

- One of the environmental consultants (SME 4) cited a new French technology that could determine the presence of great-crested newts by conducting DNA analysis on local water samples. This would facilitate testing on a year-round basis, whereas existing techniques could only detect the newt in a narrow timeframe in spring; currently, missing this window could delay new housing developments for several months.

16.6.3 Intellectual property

There was little development of Intellectual Property among Construction SMEs, and very little expectation of a need for this in future. One of the architects speculated that it may be possible to patent forms of ‘quick-build’ housing that could be mass-produced, but that

a patent would be worthless without also having direct control over the manufacture and construction of such properties.

16.7 Key relationships

16.7.1 Relationships with clients and suppliers

Whilst the Construction SMEs worked for a very wide range of clients (from multi-national power companies to, in some cases, individual householders), close collaborative relationships with clients were very important. This was especially critical for the environmental consultancies and architects.

- SME 4 worked with a wide range of clients and sub-contractors, including hydrological consultants, local councils and housing associations. The company had developed a *Sustainable Supplier Charter*, intended to ensure that its suppliers – often self-employed ecologists who worked for the SME on a regular basis – were able to deliver high-quality work. The Charter document was one means of ensuring that sub-contractors could be successfully appended to framework tender bids.
- The architectural practices also regarded close collaboration and good communication with clients as critically important throughout the life of projects.

Elsewhere in Construction, relationships with clients and suppliers, though still key to the success of their businesses, were not as close or embedded as those of the environmental consultancies and architects.

16.7.2 Sources of strategic business advice

The sourcing of external advice was more extensive in Construction than in a number of the other sectors researched.

- One environmental consultancy (SME 4) had found the Investors in People (IIP) framework and the advice that accompanied this to be helpful.²¹

²¹ <http://www.investorsinpeople.co.uk/about-us>.

I find the IIP... in terms of business mentoring, growth, probably the most helpful... because we are a people-centred business at the end of the day...
(Construction SME 4)

This SME also sourced assistance from consultants Instep UK²² in Leadership and, Management Development, Interpersonal Skills and Trainer Development.

- Staff in the other environmental consultancy (SME 3) were encouraged to become members of the Institute for Ecology and Environmental Management²³, while the respondent was also a member of the Institute of Directors.²⁴ Both of these institutes provided guidance to members through conferences and training events.
- One of the architectural practices (SME 7) used professional support offered by RIBA on an ad hoc basis:

It's advice, and because we're a chartered practice we follow that advice. And we agree with some of it, we don't agree with others, and we've tweaked how we do things. (Construction SME 7)

- The civil engineering company (SME 5) sought external advice from a specialist HR company and two local training providers.

The remaining SMEs did not elicit external business advice, but reported that the Construction industry was fairly 'tight-knit', and that other SMEs and businesses in the industry were often prepared to offer advice informally.

16.8 Regulations

16.8.1 Overview

There were very few national or international regulations specific to Construction that SMEs were required to meet; rather, several codes of best practice and standards were

²² <http://instepuk.com/what-we-do>.

²³ <http://www.cieem.net/>.

²⁴ <http://www.iod.com/>.

used throughout the industry in lieu of strict regulation. Local planning authorities (or organisations such as Network Rail) functioned as de facto regulators, and much of the focus of discussions centred on certifications and accreditations that SMEs were required to have in order to qualify as contractors (as discussed in section 5.5.3).

16.8.2 Building regulations

Both architectural practices had to abide by Building Regulations, and had mixed views about these.²⁵

- SME 7, whose practice worked predominantly on new-build private developments, student accommodation and restoration work thought that, for those who did not design innovative or unusual buildings, regulations were relatively straightforward to meet:

The regulations are just saying you should make the building weather-tight and there's an approved document saying how you do that. And we still use that approved document as the way to do it, but it's only one way.
(Construction SME 7)

There had been some changes to Building Regulations in recent years (such as in relation to the right to light), and there was a sense that the regulations were growing in number, but this informant did not report any significant issues with regard to meeting regulatory requirements.

- The second architectural informant (SME 6) commented on the increasing tendency for social housing and other public sector clients to request adherence to the Code for Sustainable Homes and BREEAM certification. This imposed some very strict criteria on architects bidding for design work:

We were doing social housing which had to be HCA compliant, [had to be compliant with] building regulations, the Code for Sustainable Homes, and Buildings for Life, and on that we had to do HQIs [Housing Quality Indicators], which is a questionnaire based on the neighbourhood. Is there

²⁵ <http://www.legislation.gov.uk/ukxi/2010/2214/contents/made>.

a doctor close by? How far are schools? That kind of thing. You have to get at least 65% or over on the HQI. (Construction SME 6)

This informant thought that some of these codes could be difficult to reconcile, and that it would be very useful if all could be brought together in a single set of cohesive regulations.

The rapid pace at which these codes could change also posed issues. This informant had heard rumours that the Code for Sustainable Homes would be replaced by a new environmental code for housing design, but was unclear when this might happen, or to what extent this would be optional or mandatory for housing developments. Presently, in the case of private developments, these regulations were voluntary.

16.8.3 Ecological guidelines

Other than some regulations concerning the protection of endangered species (most notably the Conservation of Habitats and Species Regulations 2010), regulations concerning ecology were relatively few, with environmental consultancies relying on best practice and standards in lieu of regulation (see section 5.9 below). There were, however, some areas that had ramifications for environmental consultancies, particularly surveys for great-crested newts:

If you're going to develop [housing] in an area affected by great-crested newts you have to get a licence for development, and to get a licence you have to submit [ecological] surveys in accordance with guidelines. If they see a report is not done to [best practice] guidelines, they'll just say 'sorry, we're not giving planning permission until we get a guideline-compliant report.' So in a sense that becomes regulation, doesn't it? (Construction SME 4)

16.8.4 Health and safety regulation

Health and safety was the major source of regulation for those working on construction sites (namely the SMEs in utilities construction and civil engineering):

- SME 2 (the utilities construction firm) had its Health and Safety procedures audited a number of times every year by Lloyd's Register.²⁶ These audits included both site visits and audits of written policies and procedures. In addition, employees of the company were required to have NVQ qualifications in order to lay electricity cables or fit gas mains; without these qualifications, it would be very difficult for the SME to bid for work.
- The SME working with rail companies (SME 1) was required to adhere to Personal Protective Equipment (PPE) standards as part of Achilles Link Up (now known as RISQS) registration, which was required by Network Rail of all contractors and sub-contractors. If working trackside, the nature of the activity being carried out had to be audited to a separate standard from others.
- SME 8, which was the smallest of the manufacturing SMEs, thought that Health and Safety regulations were difficult for very small companies to manage as they were often updated without notice and imposed an administrative burden on the company.

We understand what weights [people can lift] and what people can do, what is required with the products that we use, what equipment's required, i.e. masks, dust masks, ear defenders and things, all of that side of it. [But] with the way things are today you've got to really look into it. You're constantly being bombarded with paperwork, and people who are doing work for you come and look at how you're running things, which I find difficult. (Construction SME 8)

This informant relied upon the advice of a trusted confidant, familiar with Health and Safety regulation, to keep abreast of changes, and did not have time to monitor relevant websites themselves.

16.8.5 Other regulations

PAYE rules and pension auto-enrolments were criticised by the concrete structures manufacturer (SME 8) as placing unnecessary financial and administrative burdens on the business, although none of the other Construction SMEs discussed this.

²⁶ <http://www.lr.org/en/>.

16.9 Best practice

16.9.1 Use of established codes

A number of codes of practice for the conduct of ecological and landscape surveys were available from:

- The Environment Agency, in the case of surveying river environments
- Natural England, with regard to surveying animal habitats
- National Trust Natural Vegetation Classification guidelines when surveying flora at a development site
- Individual charities in the case of non-protected species (e.g. RSPB guidelines for surveying bird populations)
- Chartered Institute of Ecology and Environmental Management
- Institute of Chartered Foresters.

Guidelines typically included information about how to conduct surveys, how to write assessments, how to present findings, and codes of conduct and ethics. One informant noted that the demand for adherence to these guidelines diminished when working on very small projects, where cost was a much stronger factor in purchase decision-making than adherence to guidelines.

Elsewhere, SMEs tended either to develop their own codes of practice, in addition to the adoption of ISO 9001, which was widespread among the SMEs in Construction.

- **Architectural practices** did not use external codes of practice unless requested by clients. Typically, most projects followed a similar process: a brief, then the sketching of proposals, before more detailed drawings and planning applications would be submitted. As design practices, both reported a need for relatively flexible working, and that writing volumes of procedures and policies tended to distract from the design work that was the core of the business. Architectural practices did not have quality managers or similar roles.

- Both architecture informants were routinely required to have in place the ISO 9001 standard – particularly when bidding for any public sector project work – therefore their understanding of best practice tended to derive from that standard.

Those working on construction sites tended to work to well established practices. On the whole, these were thought not to require or reward innovation.

- SME 2 had a very extensive series of written procedures that covered all aspects of the company's work from the digging of initial trenches to procedures for the final installation of gas and electricity mains. The need for this extensive codifying of procedures and processes was client-driven.
- The civil engineering company (SME 5) noted that having a detailed operating code was expected when tendering for work. The company had developed its own code internally and had used client feedback to further develop this:

There might be very, very basic things like keeping the site tidy, or you know, segregating waste and things like that and what I think the best way for us to learn as to what best practice is often, is where we have a client, maybe not naming names but will tell us their other contractors who are doing this in a different and better way. Construction SME 5 (Civil Engineering)

- SME 1 operated to Network Rail contract requirements; as a specialist working solely in the rail industry, this SME did not require or use any additional codes. This informant reported that best practice across the wider rail subsector tended to amount to variations on the same contract requirements.

In contrast, as SME 8 was not working for major contractors, its operating code had been developed in a more ad hoc manner than among SMEs 1, 2 and 5, but was still extensive, including:

- The use of particular types of equipment for cutting concrete
- The use of certified procedures for the manual lifting of heavy concrete products
- The use of dust masks at all times

- A high standard of cleanliness in the working environment

16.9.2 Desired business improvements

As operating practices were well-established among most of the SMEs in Construction, few identified specific areas where they would like to make significant improvements to their operations. Some potential areas identified, however, were:

- For the construction company that focused on utilities (SME 2), a more efficient proposal and quotation writing process; this company's proposal documents were very long compared to competitors.
- The civil engineering company (SME 5) found it difficult to win work for education and health clients, simply because it had no track record in these areas.
- The company that produced concrete structures (SME 8) aspired to grow; to do this it needed to employ more people. However, the market for its headstone stabilising product was not sufficiently developed to justify doing so. Similarly, the company was also in need of new computer systems but could not currently afford to invest in these.

16.10 Standards

16.10.1 Overview

There was extensive use of ISO 9001 among Construction SMEs, and several also subscribed to ISO 14001. This was usually in order to demonstrate Quality Management credentials when bidding for work, particularly in the public sector.

There was some use of BSI standards although this was sporadic, and also of codes that were required by particular customers or that were specific to certain areas of activity.

16.10.2 ISO standards

Adoption of ISO standards among Construction SMEs was common, with six of the eight SMEs subscribing to at least one ISO standard, and some to more than one. This was

usually because public sector clients required SMEs to have some form of ISO accreditation in order to be considered for work.

ISO standards to which Construction SMEs subscribed were as follows:

- All six currently subscribed to **ISO 9001**. In most cases, use of **ISO 9001** was very well-established. Some SMEs, particularly in civil engineering and utilities construction, had been using ISO 9001 for sufficiently long that they had become 'routinised' within their companies, and posed few issues for the SMEs concerned. Clients within Construction usually required ISO 9001 accreditation:

If you've got [ISO 9001], it saves you hassle filling in government forms, or most government forms... if you've got ISO you can jump the next ten questions, at least that's come in now, and similarly in health and safety usually. (Construction SME 4)

One of the Architectural practices had previously missed out on contractual work because of lack of ISO accreditation, which had driven the company to seek this.

- Five SMEs also subscribed to **ISO 14001** and one was in the process of obtaining accreditation; this was usually attained much more recently than 9001.
 - Architects' use of ISO 14001 had been driven by a shift within the wider Construction industry to low carbon approaches to building design. The Architectural practices both reported that ISO 14001 was becoming as essential an accreditation as 9001, particularly for public sector or housing associations tenders:

Because of our PQQ process. In order to qualify for getting onto frameworks or winning projects, most of the time we get asked if we have ISO 9001 and ISO 14001. (Construction SME 6)

It's the whole drive for more carbon neutral and use of less energy through the industry really. (Construction SME 7)

Views about ISO standards were mixed:

- For the civil engineering company (SME 5) and the utilities construction company (SME 2), ISO standards (especially 9001) were seen as helping to ensure that the business made fewer costly mistakes:

It is a good check, a good quality management system, it's a good check to make sure that... you try and do it right first time; because it's costly to the business and obviously affects client relationships if you don't do it right. So they are of benefit definitely. Construction SME 5 (Civil Engineering)

It's something that's an aid to the business and it's alright, for a bit of paperwork it's a hindrance now and again but at the end of the day if it helps the business then [it is worthwhile to have them]. Construction SME 2 (Construction of Utilities)

- Both **Architectural** practices, thought that ISO 9001 accreditation was a more effective route to best practice documentation than developing a series of procedures in-house:

For us it was easier to get the accreditation and just do that tick box rather than write a ten page essay on how we manage our company. That would be every time, and it's not a copy and paste exercise because it has to be tailored... (Construction SME 6)

- However, the smaller environmental consultancy said that adopting and adhering to ISO standards could be time-consuming for very small businesses which were new to using standards: a view that echoed those expressed in other sectors.

It is looking at a dedicated person, and I have been thinking over the last week and that it's almost an intermittent job to bring someone in and just get us to this point. Construction SME 3 (Environmental consultancy)

This informant was also concerned that ISO 9001 was more a 'tick-box' exercise than a series of procedures that delivered meaningful benefit to the company.

Only the SMEs engaged in rail construction and concrete structure manufacturing were not subscribers to ISO 9001 or ISO 14001. Neither was currently required to do so by their clients, however, one of those companies was considering adopting ISO 9001:

- The rail SME, though meeting the requirements of the RISQS scheme (the UK's rail industry supplier registration and qualification scheme²⁷), was actively exploring ISO 9001 accreditation to help improve business processes.
- The concrete structures manufacturer had the lowest turnover of any Construction SME interviewed and viewed ISO and BS accreditation as too expensive to obtain.

16.10.3 British Standards

British Standards were less common among the SMEs than were ISO standards, although some SMEs had had previous contact with BSI or had heard of the organisation. Current British Standards used by the Construction SMEs were as follows:

- The civil engineering company (SME 5) and one environmental consultant (SME 4) used BS OHSAS 18001 Occupational Health and Safety Management.
- One of the environmental consultancies (SME 4) subscribed to BS PAS 2060 (Carbon Neutrality); this was regarded as important for a company that worked in the environmental sector, although the second consultancy (SME 3) did not subscribe to this.
- Both environmental consultancies were interested in the Biodiversity Standard that BSI had recently introduced (BS 42020), although both were waiting to see whether clients would require this before subscribing.

Though seen as a potentially useful standard, one informant felt that BS 42020's introduction had been very poorly publicised, that it did not relate to other standards and best practices within the environmental/ecological planning sector, and that few clients were aware of its existence (and therefore did not stipulate it within contracts).

²⁷ http://www.achilles.co.uk/en/?option=com_content&view=article&id=285.

We have it on the system. It's been circulated to staff. Has it made any difference to the work we do or the clients we work with? Do the clients know about it? They have no idea. It has seemed quite odd to me. Construction SME 3 (environmental consultant)

- The Architectural practices used a multitude of British Standards when specifying the design of buildings, as most features in a building (e.g. doors; sinks) were required to be certified according to a quality standard; often this was BS or EN.

We would specify how to put wall ties in to British Standard. We would specify how to do certain things to British Standards. There's so many of them and if we do a very detailed specification there's a lot of references to certain British Standards. (Construction SME 6)

As these were used in an 'off-the-shelf' way for design specification purposes, the informants did not report any areas where standards were either outdated or absent. One suggested that Architects working on more innovative buildings, such as The Shard in London, might have taken a different view and may have required standardisation in currently non-standardised areas of innovative design.

As regular users of British Standards, both Architects accessed these either through RIBA or IHS Technical Libraries.

Suppliers did sometimes pitch for work by visiting Architects to demonstrate products that had been certified outside of BS or ISO. Some of these alternative accreditations were largely unknown to Architects, but the products were usually priced much cheaper than BS-accredited equivalents. This created a dilemma for SME Architects that were seeking to ensure that the overall design cost for a project was as low as possible, but without compromising on the standard of fittings and fixtures that were installed.

There was no suggestion, however, that British Standards could help Architectural practices in carrying out their own work, nor in running their businesses.

I do come across them and do use them, but not within our practice as such. It would be the design and the specification of that design.
(Construction SME 6)

- The civil engineer (SME 5) reported that it was critical for suppliers to provide materials that had passed various quality tests (e.g. strength) and carried either a CE kite-mark or a BS/EN standard, but had little need for standards in its own work.

Few of those using BS standards offered views about the value of these, in contrast to the often extensive views that were put forward about ISO standards. However, one environment consultancy (SME 3) stated that BSI was seen as the easier standard to obtain and that clients tended to prefer (and require) ISO standards:

[Standards from BSI weren't] worth a great deal, could be easily manipulated to get the standard and didn't necessarily indicate that you were doing something to the best of your ability. Construction SME 3 (Environmental Consultant)

The concrete structure manufacturer (SME 8) noted that it was not able to produce structural elements for projects because it did not subscribe to the relevant British Standard:

We haven't got a BS standard, and if we were doing anything structural and anything was to happen it would come back on us, so we make sure we do non-structural elements only. Construction SME 8

Consequently, the company could not make lintels or support stones for windows and doors. This had impacted on its ability to win work when a potential contract to supply edging for rail platforms for Network Rail had been lost.

The company had strength-tested its new headstone stabilisation product and was very confident that it met BS EN 206 criteria; however, this had not been formally assessed and the company did not have the financial resources to obtain the Standard.

I've had it tested [independently]... they've provided me with the data and the specs, and I've got the data sheets to prove it as well, but I can't claim to have the BS certificate, to have that BS standard. The stuff we're

manufacturing they build bridges with, so I know the concrete we use in that product is fantastic strength, but because it's been designed for something that hasn't really been looked at it's up to me to go to all the costs of getting the BS standard for that product. And at the moment, as a firm my size, I just cannot get that. (Construction SME 8)

The interviewee had explored obtaining the standard but had found that each of the three different designs would need to be independently tested, at a total cost of £15,000 to £20,000. As the company had a turnover of £100,000 to 200,000, this was not affordable. At the very least, it was suggested, SMEs in this position needed much clearer information about specifically which standard(s) would be of benefit to their business, whereas they were currently expected to buy standards 'blind' with limited information:

If they had somebody to come out and advise you what to put in place to be able to achieve the BS standard and then, once you've got everything in place, then you know what you're aiming for, so you're not spending all this money up front blind. [It would be useful] knowing what to go for and how to go about it. (Construction SME 8)

16.10.4 Other standards and codes

Some Construction SMEs had adopted or were considering other externally-derived standards, sometimes because customers required these:

- SME4 carried out work for the National Grid, which audited its QA systems independently of ISO and/or BS standards. These audits were said to be excessive and were undertaken at the supplier's expense:

Everybody in the business who is ever going to work on a National Grid job had to have an alcohol and drugs test, including people like Receptionists and people who work on maps who are never ever going to leave the office. You can understand if they're up on an overhead light and you don't want somebody on Speed and with a hangover, but [it] was a bit hard for us to swallow the cost of all that.. (Construction SME 4)

- SME 1 (rail construction) needed to meet the requirements of the **Railway Industry Supplier Qualification Scheme** (RISQS) in order to work for Network Rail; ISO accreditation was not, however, required. The informant from SME 1 was critical of Network Rail's stance:

Network Rail is such a dinosaur of an organisation and they seem to hide behind standards that aren't really relevant and it is very hard to get involved with Network Rail directly. I think it is because it is such a big organisation and a lot of standards, things have moved on but the standards have stayed the same. Construction SME 1 (Rail)

- The second architectural practice (SME 6) used the Information Commissioner's Office Guide to Data Protection, in order to ensure compliance with the Data Protection Act. This was seen as helpful, particularly as BIM use increased within the sector:

It's not really our standard but it's another thing we've done to just have another tick box and make our quality management watertight in that area. Construction SME 6 (Architectural Practice)

- Public sector clients increasingly required ConstructionLine certification; whilst relevant for civil engineers and utilities contractors, this was also required of one environmental consultant which struggled to understand its relevance to the type of work that the company undertook.
- One Architectural informant thought that certifications/accreditations for BIM were likely to emerge in the future, but were currently embryonic. Neither Architectural interviewee was able to offer suggest how BIM certification might evolve, or whether their own clients would require this as a precondition for contracts.
- SME 8 reported that standards for the headstone stabilisation product were currently being developed under the auspices of the National Association of Monumental Masons (NAMM).²⁸ This accreditation process will require companies to submit information about the basic manufacturing processes and design of the

²⁸ <http://www.namm.org.uk/>.

product, which will be assessed against certain criteria. There will also be forms of 'mystery shopper' trial and a 'topple test' for monumental products used in cemeteries.

16.10.5 Views about standards

On the whole, the Construction SMEs suggested that standards were a worthwhile quality 'benchmark' that all companies in the construction sector should abide by.

...it's about best practice and standardisation, that there is an acceptable way of working that delivers a particular outcome and that when people see that you have the standard and you work towards it it's a sign of best practice. (Construction SME 3)

- For Architects, 'off-the-shelf' standards were very useful insofar as they helped streamline the specifying process within design. One informant commented that any relaxation of standards could potentially create difficulties for smaller Architectural practices:

What is helpful is, you can go to a standard and that's the way to do it. There's a lot of talk about relaxing standards and saying it's down to the individual [architect] because it's more flexible. That's a nightmare for a smallish practice; we've got to know what everybody sees as the correct way of doing things and then we can adhere to it and make sure we're right. (Construction SME 7)

- For one of the environmental consultancies (SME 4), standards provided a means to avoid excessive paperwork. They also had a greater value of allowing an SME to assess its operations to see where they were lacking:

...the bigger value, I think, is that it allows us to hold ourselves to account and when our management review meeting it does at least allow us to shine a bit of a spotlight on where we're not doing so well and see if it's something we can improve on and sometimes if it's worth improving on. (Construction SME 4)

Further, the company stated that having standards in place showed that the organisation was committed to doing its best and could therefore be used as a selling point.

However, some SMEs highlighted potential problems in conforming to industry standards. Some believed that standards could sometimes be a burden on the smaller companies, and that it could be difficult for companies to choose which standards to follow if these were not specified by clients:

- SME 3 thought that, beyond ISO 9001 and 14001, there were too many standards to choose from, which made it difficult to know which would be most relevant for its work:

There's so many of them now you struggle to know what applies to what. They're rolling them out with very little communication and training, and that needs to be adopted, and how you can embed it into your working processes and procedures. I genuinely feel there is no point in churning out any more... (Construction SME 3)

- One environmental consultant (SME 4) suggested that standards were too process-driven; though a sign of good working practice, they gave potential clients little understanding or sense of the quality of reports that consultants would produce. This interviewee also believed that the application of standards should perhaps be discretionary:

There's nothing wrong with standards, it's just sometimes the over-application of them... It would be great if standards were all applied slightly more in a discretionary way with regard to the business itself, rather than [businesses] against the standard [rigidly].
Construction SME 4 (Environmental Consultancy)

- One Architect (SME 6), whose business already subscribed to ISOs 9001 and 14001, thought that using some standards could be “like being told how to breath”. He would resist adopting any additional standards, seeing them as inhibiting creativity:

As soon as you want to use something that's totally different that might not be governed by a standard then the hands go up and [we say] 'we're not going to do that.' And you kind of think... How are you going to innovate, if all you want to do is be governed by standards? A practice, especially of this size, this is kind of our playground. We've got the freedom to move and express ourselves and do our thing. Construction SME 6 (Architectural Practice)

- SMEs 3 and 5 suggested that standards were too easy to obtain and complained about the 'tick box' nature of their implementation.

16.10.6 Best way to access standards

Those Construction SMEs interviewed would prefer to access standards documents online as PDFs. A minority stated a preference for paper versions.

I think PDF would be great, because everything we do is done online, and the less paperwork to lose the better. Construction SME 8 (Concrete structures)

Several informants felt that it would be useful to have the option of printing PDF versions of standards, rather than accessing them online alone.

16.11 New Standards Required

Construction is a mature sector, where change – apart from that required to meet environmental regulation – tends to be incremental. As such, there were few areas in which a need for greater standardisation was identified.

It was the Architects and Environmental Consultancies who showed most interest in new standards. The rail and utilities construction informants, along with the civil engineer, could not identify any areas where an additional standard would help improve their business, as most of their work was tightly specified by clients.

So I suppose there is always people looking at improving standards that will require accreditation from somebody like [BSI], to give validity. But I can't think of

anything where our business itself would be at the forefront of pushing for that quite frankly. Construction SME 5 (Civil Engineering)

- The concrete structures manufacturer (SME 8) reported that any standard for the headstone stabilisation product would need to be much more simple and easy to meet than a typical British Standard:

If British Standards come out with a basic criteria that you had to meet, like for instance if you're manufacturing a sub-base X by X by X and you're using this material and this mix design, you're using so much cement, you're using so much water, you're using so much colorant, and you can tick the boxes and get the BS standard, that's a great way forward, but it doesn't work like that. (Construction SME 8)

16.12 Standards Development

16.12.1 Who should be involved

As in other industries researched, those who had an interest in standards development thought it was crucial to have industry associations and larger companies involved alongside SMEs, in order to give the process legitimacy. Four of the eight SMEs researched had some interest in being involved in standards development. These were the environmental consultants and architects rather than those working on Construction sites; the latter tended to deliver jobs to a clear specification and saw little to be gained from involvement in developing new standards.

- One of the environmental consultancies thought that a wide range of informants from across Construction should be involved in standards development, and that this should not be limited to particular sub-sectors:

You never have one particular sector or person involved, otherwise you get a skewed product at the end of it, and so it does need to be a broad range.
Construction SME 3 (Environmental Consultancy)

- The other environmental consultancy (SME 4) noted the role of the Institute of Ecology in formulating the BS 42020: 2013 Biodiversity Standard, and the need for

the Institute to be central to developing any further ecology-related British Standards.

- Architectural practices suggested that standards development should involve only those SMEs who could bring sufficiently broad knowledge and experience:

I think that the point is if the person has got the ability to do it, no matter where they are, they should get involved with it... Do they have the knowledge and the necessary background to be able to input appropriately, because the last thing you want is a bunch of people just talking about nothing and everything around a table. Construction SME 6 (Architectural Practice)

One of these practices (SME 6) was previously involved in the creation of the Construction Industry Council (CIC) Occupational Standards.

- The civil engineering company emphasised the need for those involved in standards development to have an 'insider' perspective of the industry and to understand how it (i.e. SMEs rather than just large firms) operated; a view that was shared by the utilities construction informant:

I think the danger you get sometimes is that clients who don't actually understand the process, can sometimes come up with standards and maybe not understand the implication of having them. Construction SME 5 (Civil Engineering)

We're not afraid to speak up as the little man and I think it would be a sort of vested interest to get in there and actually get your hands dirty. (Construction SME 2)

- SME 8 thought that the standards development process should involve SMEs but also trade associations such as NAMM (when developing any standard for the manufacture of concrete memorial structures), as well as the Federation of Small Businesses (FSB).

They've got the members who need the help, what they're trying to provide. They've got the expertise within small businesses. They're the ideal people to get together with. Twenty-two thousand small businesses within the UK. Let's get them merging together to come up with something. (Construction SME 8)

The involvement of such representative bodies was particularly important to this SME, which was a very small business with a relatively low turnover, and which would not be able to participate directly.

16.12.2 Funding standards development

All of the SMEs commented that standards development should receive government funding of some sort. Some of these SMEs believed that, in addition, larger companies should pay a higher proportion of the costs of new standards development than did SMEs.

I think government has got a role in this because good business has obviously got to be better productivity, hasn't it? And so there is definitely a role for government, so I would have thought it's got to be at least 50/50, the way it should be done, and recognising that industry does put a lot in already, not necessarily to British Standards directly but via the institutes and so on. (Construction SME 4)

If the government wants buildings built properly then yes I think so. The majority of it has to be government funded. The legislation even quotes British Standards... (Construction SME 6)

I do believe the government could help businesses out a bit more. The BSI's are there for a reason, let's help companies out to achieve those and then move it all forward you know, we're all singing from the same hymn sheet rather than one company say 'Oh yeah well we'll pay to go and get that' and another company thinking 'Oh I could really do with that but I can't afford it'. (Construction SME 2)

16.12.3 Barriers to SME involvement

Time was a major barrier to involvement among Construction SMEs, particularly as these were often small companies. The companies thought that they would find it difficult to devote the necessary resources to standards development, especially staffing.

It would be a big resource issue for us to commit a lot of time to that. (Construction SME 5)

I think it's time. And I'm sure everyone would say the same thing. At the moment every moment ... there just isn't the slack in a business like ours for perhaps the management side of the practice – whether that be Partners or Associates – to have time to invest in that sort of thing. (Construction SME 7)

BSI's location in London was also seen as a barrier for those SMEs based in the North of England, and one of these companies suggested that Birmingham would be a more appropriate venue for meetings as it was more central.

The concrete structures manufacturer was critical of the committee structures by which standards were currently developed, as there was no guarantee that those involved in committees had the most up-to-date knowledge. In addition, there was a risk that standards developed in this way were ultimately a compromise; achieving only an approximation to what was required.

- This informant reported that concrete production was evolving very rapidly at present and that numerous small companies were developing ways of making much stronger concrete, by including a range of additives, none of which was standardised. In such a dynamic operating environment, a slow, committee-based approach to standardisation was not considered helpful.
- One of the environmental consultancies would rather be involved in finding more effective ways to promote current standards (particularly BS 42020) than contribute to the development of new ones:

I'd be keener to get involved with BSI if it was around how they raise the profile of the existing standards and get them adopted than involved in developing something new. Construction SME 3 (Architectural practice)

16.12.4 Ways of overcoming barriers

Two of the companies suggested that online engagement and virtual forums were a more convenient way for SMEs to be involved in standards development, as this would save time and money, and would make it easier for the SMEs to put their opinions across. These informants were from the Architectural and environmental consultancy groupings and tended to be office-based (making it easy to take part in online discussions). In contrast, the utilities construction firm would prefer face-to-face committees, and was a sufficiently large organisation for the Chief Executive to do this without any detriment to the business.

Some form of compensation could offset the cost of participating, particularly among smaller SMEs where the staff member taking part might otherwise be generating revenue:

I think there has to be a benefit to the SME to warrant the time to do it, and maybe BSI [could] offer some free support and training so that those participants who are advising them get something back from that process that enables them to adopt the standards that are relevant to them. (Construction SME 3)

16.13 Key Findings

16.13.1 Challenges

- **Recession:** the recession had affected the Construction SMEs more heavily than those in other sectors, with several companies reducing working hours, freezing recruitment or freezing salaries (or a combination of these). One SME, the concrete structure manufacturer, had had to diversify (develop an entirely new product for a different market) in order to survive. Although the worst of the downturn was believed to have passed, work streams were still intermittent (particularly in the public sector), though both of the environmental consultancies were growing.
- **Cost:** For those directly involved in construction work, rather than consulting, the fluctuating cost of raw materials (particularly steel and concrete) was a major challenge, as was the cost of labour. For the Architects and environmental consultants, the salaries of highly-skilled staff were the major cost.

- **Public sector procurement** rules in Construction increasingly required SMEs to be accredited to ISO standards, and to be Constructionline-registered. These demands, it was suggested, were placed on SMEs irrespective of their relevance (e.g, insisting on ConstructionLine registration for environmental consultants).
- The growing use of **Business Information Modelling (BIM)** software within Architecture posed some challenges for the Architectural Services interviewees, who argued:
 - That smaller companies could struggle to afford the relevant software and the training associated with it.
 - That it was not appropriate for every type of Architectural design project (e.g. restoration projects), but was becoming so embedded within the sector that it was difficult to decide not to use it.
 - That the use of **Revit** as an industry standard for BIM required small practices to use much larger IT servers than previously.
- Difficulties in accessing **bank finance** and the inappropriateness of existing **government funding initiatives** for SMEs in Construction.
- **Other** reported challenges were issues of succession planning (one environmental consultant) and managing overseas Architectural work whilst simultaneously continuing to deliver and generate work in the UK.

16.13.2 Innovation

- Construction SMEs were not, on the whole, product innovators, and much work was completed to a 'spec' in which there was no requirement nor incentive to innovate.
- The environmental consultancies and architects reported a need to be 'up to date', but indicated that being technically innovative could be a barrier to winning business, as this would carry with it a perceived risk.
- There were some emerging technologies of interest to Architects (3D printing and the modular construction of buildings using pre-fabricated rooms), and also in

environmental consultancy (more effective DNA testing for great-crested newts), although little that was of interest to those working on Construction sites (e.g. civil engineers).

- The development and management of Intellectual Property were not deemed important among Construction SMEs and this was not expected to change in future.

16.13.3 Key relationships

- The Construction SMEs worked for a diverse range of clients (from multi-national power companies to, in some cases, individual householders). The nature of their relationships with those clients therefore differed. Among environmental consultancies and architects client relationships were close and collaborative, whereas elsewhere they tended to be less close and more 'contractual'.
- The sourcing of external advice was more extensive in Construction than in a number of the other sectors researched. Interviewees drew upon help from:
 - The Institute for Ecology and Environmental Management and the Institute of Directors (environmental consultancy).
 - RIBA, which provided support on an ad hoc basis (Architects).
 - Private sector consultants, including:
 - a specialist HR company and two local training providers (civil engineering)
 - a training and development company (Instep UK) for Leadership and Management Development, Interpersonal Skills and Trainer Development (SME 4: environmental consultancy). The same company had used Investors in People (IIP) consultancy support.
- The remaining SMEs did not seek external business advice, but reported that the Construction industry was fairly 'tight-knit', and that other SMEs and businesses in the industry were often prepared to offer advice informally.

16.13.4 Regulations

- There were very few national or international regulations specific to Construction that SMEs were required to meet; rather, several codes of practice and standards were used throughout the industry in lieu of strict regulation. Local planning authorities (or organisations such as Network Rail) functioned as de facto regulators.
- Both architectural practices had to abide by **Building Regulations**, and had mixed views about these. One thought they were relatively easy to meet, whereas the second, working more often in the public sector and in social housing, reported a tendency for clients to request adherence to the Code for Sustainable Homes and BREEAM certification. These codes were reportedly difficult to reconcile (i.e. compliance with one could result in non-compliance with another).
- Whilst regulations concerning **ecology** were reported as being virtually non-existent, local authorities increasingly requested developers to have ecological surveys carried out according to best practice guidelines; this had effectively become a form of regulation.
- **Health and safety** was the major source of regulation for those working on construction sites (i.e. the SMEs in utilities construction and civil engineering). This could include audits from Lloyd's Register and adherence to RISQS accreditation (the latter to work on Network Rail projects). Failure to gain these accreditations could mean an inability to bid for work on Construction sites. Health and Safety regulations could be difficult for very small companies to manage.
- **PAYE** rules and **pension auto-enrolments** could also pose issues for the smallest SMEs.

16.13.5 Best practice

- There was extensive use of codes of practice among Construction SMEs:
 - The environmental consultants were adhering to established codes of practice to a much greater extent than others in Construction. Guidelines

typically included information about how to conduct surveys, how to write assessments, how to present findings, and codes of conduct and ethics.

- Elsewhere, SMEs tended either to develop their own codes of practice, in addition to the adoption of ISO 9001, which was widespread among the SMEs in Construction.
 - Those working on Construction sites were mostly using established working practices that did not require or reward innovation (e.g. SME 2 had a very extensive series of written procedures that covered all aspects of the company's work from the digging of initial trenches to procedures for the final installation of gas and electricity mains). This developing of detailed operating practices was usually client-driven.
 - In contrast, SMEs that did not work for major contractors tended to develop written operating codes in a more ad hoc fashion.
- Given that operating procedures were usually very well-established, few of the Construction SMEs identified opportunities for significant improvements to their businesses.

16.13.6 Standards

- There was extensive use of ISO 9001 among Construction SMEs, and several also subscribed to ISO 14001 (especially the environmental consultancies and the Architectural practices). This was usually in order to demonstrate Quality Management credentials when bidding for work (especially in the public sector). Use of ISO 9001 in particular was very well-established and posed few difficulties for the SMEs concerned. Clients within Construction usually required ISO 9001 accreditation:
 - Five SMEs also subscribed to **ISO 14001** (and one was in the process of obtaining accreditation); this had usually been attained more recently than ISO 9001. Architects' use of ISO 14001 had been driven by a shift, within the wider Construction industry, to low carbon approaches to building design.

- Views about ISO standards were mixed:
 - For the civil engineering company (SME 5) and the utilities construction company (SME 2), ISO standards (especially ISO 9001) were viewed positively as a means to ensure that the business made fewer costly mistakes.
 - Both Architectural Services interviewees thought that ISO 9001 accreditation was a more effective form of best practice than was developing a series of procedures in-house.
 - However, the smaller environmental consultancy reported that implementing and then managing adherence to ISO standards could be very time-consuming for the smallest firms. This informant was also concerned that ISO 9001 was more a ‘tick-box’ exercise than a process that delivered meaningful benefit to the company.

- British Standards were used less frequently than ISO standards by the SMEs, though there was evidence of some awareness or any prior contact with BSI. Current British Standards used by the Construction SMEs were as follows:
 - The civil engineering company (SME 5) and one environmental consultant (SME 4) used BS OHSAS 18001 Occupational Health and Safety Management.
 - One of the environmental consultancies (SME 4) subscribed to BS PAS 2060 (Carbon Neutrality); this was regarded as important for a company that worked in the environmental sector, although the second consultancy (SME 3) did not subscribe to this.
 - The environmental consultants thought that BS 42020 (the recently-introduced Biodiversity Standard) was potentially useful, although both were waiting to see whether clients would insist on this certification before subscribing. One felt that the introduction of BS 42020 had been poorly publicised and that it did not relate to other standards and best practices within the environmental/ecological planning field.
 - Architectural practices used a multitude of British Standards when specifying building designs, as most features in a building (e.g. doors, sinks) were required to be certified according to a quality standard.

- The concrete structure manufacturer had strength-tested its new headstone stabilisation product and was very confident that it met the BS EN 206 criteria, though this had not been formally assessed and the company could not afford to seek this Standard.
- Some Construction SMEs had adopted or were considering other externally-derived standards, sometimes because customers required these (e.g. National Grid audits; RISQS for the rail construction sector; ICO Data Protection guidance). ConstructionLine certification was increasingly required by public sector clients.
 - One Architectural informant thought that certifications/accreditations for BIM were likely to emerge in the future, although were extremely embryonic at this stage.
- The concrete structures manufacturer (SME 8) reported that standards for the headstone stabilisation product were currently being developed under the auspices of the National Association of Monumental Masons (NAMM), rather than ISO or BSI.
- On the whole, the Construction SMEs suggested that standards were a worthwhile quality 'benchmark' that all companies in the construction sector should abide by.
 - However, some SMEs highlighted potential problems in conforming to industry standards. Some believed that standards could sometimes be a burden on the smaller companies, and that it could be difficult for companies to choose which standards to follow if these were not specified by clients.
- As with most other sectors, informants would prefer to access standards documents online as PDFs.

16.13.7 New standards development

Construction is a mature sector, where change – apart from that required to meet environmental regulation – tends to be incremental. As such, there were few areas in which a need for greater standardisation was identified.

- Any standard for the headstone stabilisation to be much more simple and easy to meet than a typical British Standard.

16.13.8 Standards development

- As in other industries researched, those who had an interest in standards development thought it was crucial to have industry associations and larger companies involved alongside SMEs, in order to give the process legitimacy.
 - Four of the eight SMEs researched had some interest in being involved in standards development. These were the environmental consultants and architects rather than those working on Construction sites; the latter tended to deliver jobs to a clear specification and saw little to be gained from involvement in developing new standards.
- All of the SMEs commented that standards development should receive government funding of some sort. Some of these SMEs believed that, in addition, larger companies should pay a higher proportion of the costs of new standards development than did SMEs.
- Similar barriers to SME involvement as elsewhere were reported, particularly time and location, and also some scepticism regarding the value of committee structures.
- Potential ways to encourage SME involvement would be to further facilitate their online participation, and some financial recompense for their involvement.

16.14 Conclusions and Recommendations

Construction is a sector in which the use of standards is more embedded than any of the others researched, with extensive use of ISO 9001 and ISO 14001 in particular. This is being driven by the requirements of commissioning clients, particularly in the public sector. Adoption of these standards is well established and poses few challenges for Construction SMEs. This is likely to pose some challenges for BSI when developing standards that target SMEs.

The greatest need for potential standards development lies in environmental consultancy (e.g. a standard for the conduct of bat surveys; the new technology to survey for great-crested newts). There may also be some potential requirements within Architecture, which may benefit as much from the standardisation of the various environmental codes relating to building (e.g. the Code for Sustainable Homes; BREEAM) and from better European harmonisation of the use of standards. There is, however, little need for standards relating to business processes within Architectural practices, and for those who work on construction sites (e.g. civil engineers; utilities construction companies) there is likely to be little need for any new standards.

Small SMEs that operate in niche markets, such as the concrete manufacturer, do have some needs for standardisation as this would help to legitimise new products. However, any standards that target this type of business need to be very simple and relate to strength testing and manufacturing processes for the product. There is also a need for individual mentoring from BSI – it would be unrealistic to expect companies of this size to buy standards ‘up-front’ or be able to participate directly in their development.

Professional institutes (RIBA: Institute of Ecology), and some larger companies will need to be brought into the process of standards development. Furthermore, as SMEs are unwilling to bear the cost of development, there may be a requirement to source government or industry funding for their development.

17 Food

17.1 Overview

This chapter details the findings from eight interviews with SMEs in the UK Food and Drink industry, addressing the following topics:

- The major challenges that those SMEs face as businesses
- Issues concerning innovation and Intellectual Property
- Key business relationships
- The regulatory environment in the Food and Drink industry and its impact on SMEs
- Best practice and business improvements that SMEs wish to implement
- Standards used in the industry, and areas where new standards may be useful
- Ways in which SMEs may wish to become involved in standards development.

17.2 Food sector: findings from Stage 1 report

Research completed at Stage 1 reached the following conclusions.

The 73,505 SME businesses in the Food sector account for 3.4% of the registered SMEs in the UK. If retail is stripped out of this figure, the remaining 21,325 enterprises account for 1.0% of registered SMEs.

By far the largest class among food retailers is “generalist” stores that do not specialise in particular types of food or drink. Of specialist stores, those offering meat products comprise the second largest class of SMEs.

Outside of retail, the largest number of SMEs consistently fall within SIC 4634 (including the ‘Wholesale of fruit and vegetable juices, mineral water and soft drinks’ and the

'Wholesale of wine, beer, spirits and other alcoholic beverages'). This class has also seen significant growth in the number of SMEs (of 8.8%) between 2011 and 2013:

- Overall, the sector saw a 0.6% increase in the number of registered SMEs between 2011 and 2013, although if retailers are removed from these figures then the remainder of the sector grew its SME base by 2.4% over this period
- Of the most sizable business functions, the 'Manufacture of beer' (SIC 1105) has seen business numbers grow by 32.7% over the period.

As of 2013, the food and drink manufacturing industry generated an annual turnover of £76bn. It is the largest manufacturing industry in the UK:

- SMEs account for 95.6% of food and drink manufacturing businesses, although this varies between different sub-sectors (the bread, biscuits and cakes and meat manufacturing sectors contain a very high proportion of SMEs, whilst the dairy sector is considerably more consolidated)
- The retail and raw materials processing sides of the industry are also very consolidated.

Barriers to innovation among SMEs in the food industry are:

- Obtaining capital funding for technological innovation
- A shortage of appropriately skilled staff
- Some cultural barriers
- Consumer habits in an era of squeezed incomes
- A lack of collaboration within the supply chain with regard to using collective approaches to solve technological problems.

90% of SMEs in the industry do not currently export, and those that do predominantly target neighbouring European markets. UK food and drink exports have, however, grown by 61% over the last five years.

Sustainability is a major challenge within this sector; the Food and Drink Federation's five-fold environmental ambition includes various aims to cut the landfilling of food and packaging waste, and to reduce of CO₂ emissions.

The 2012 Food and Drink International Action Plan (jointly developed by Defra, UKTI, and the farming, food and drink industry, after six months of consultation) aims to:

- Encourage more SMEs to explore overseas opportunities, and support those who already export to do more
- Shift the focus of the sector towards the opportunities of emerging economies where there is the greatest future growth potential.

17.3 Interviews

17.3.1 Organisations

BSI wished interviews to focus on the following types of Food SME (Table 8):

Table 8 Food sub-sectors for interview focus

SIC Code	Title	Rationale	Type of standard
N/A	All those involved in the manufacture/production of foods.	Relevance to regulations and standards.	<ul style="list-style-type: none"> • Product • Process • Behavioural/organisational potential
N/A	Food retailers, independent restaurant/pub chains.	Customer service angle.	<ul style="list-style-type: none"> • Behavioural/organisational potential

This was a more 'open' field than in many other sectors, where BSI had been much more precise about which specific SIC codes to focus on.

Six SMEs were interviewed in the 'manufacture/production of food' category; and two were interviewed from the retail side (both restaurants and/or pub chains) – See Table 9. A number of small retail chains were approached for interview, but none was willing to participate in the research within the specified timescale.

Table 9 Food SMEs interviewed

Food SME	SIC Code Title	Employees	Job Roles
1	Manufacture/production of foods.	30	Managing Director
2	Manufacture/production of foods.	8	Managing Director; Senior Business Manager
3	Manufacture/production of foods.	3	Owner
4	Manufacture/production of foods.	5	Owner
5	Manufacture/production of foods.	4	Director
6	Manufacture/production of foods.	3	Director
7	Food retailers, independent restaurant/pub chains.	200	Managing Director
8	Food retailers, independent restaurant/pub chains.	50	Owner

17.4 SME activities

17.4.1 Manufacture and production of food

Food SME 1, which had been established for 25 years, manufactured a range of buffet and finger foods, most of which were coated (e.g. breaded mushrooms; various meat-based ‘bites’; stuffed peppers). Around 20% of its business was in retail. The remainder was split between independent wholesaling, contractual work for large restaurant and fast-food chains (including Pizza Hut and Domino’s), and – accounting for around 10% of the company’s business – export markets.

Food SME 2 was a brokerage and sourcing firm with eight staff, but a turnover of £14m, which sourced ingredients, usually from overseas, on behalf of food manufacturers in the UK. Though not directly manufacturing food, its work in importing, and in connecting UK SME manufacturers to global supply chains, meant that this SME was extremely well positioned to talk at length about international regulations and standards for the global food industry, and how these impacted upon SMEs in a UK context. The SME mainly imported spice products (e.g. capsicum peppers) for use in food manufacturing.

Food SME 3 was a meat producer and farm owner based in South Yorkshire that supplied meat products (mainly sausages) to restaurants, cafés and also a local university within a 20-mile radius. Although capable of producing a higher volume of products and entering national distribution chains, this SME had chosen to focus on localised markets in order to gain “Made in Sheffield” accreditation, a scheme to promote local businesses, managed by the Sheffield City Region.²⁹

Food SME 4 was a small-scale dairy producer based in the North West of England. It produced mainly cheese, which was available in small retail outlets in the North West and Yorkshire/Humber, but little further than this. Wholesalers also distributed the cheese to hotels and restaurants in the local area. It had been established in 2007, employed five staff, and had a turnover of over £300,000.

Food SME 5 was a small-scale **craft brewery** based in the North East of England, established in 2011. This brewery produced beer for predominantly urban bars; having initially produced only cask ales (which can only be used for seven days after first being opened), it now produced kegs (which are longer-lasting than casks and therefore can be produced at higher volume and distributed much more widely). The company was also beginning to enter retail environments, as well as selling bottles directly online, though its beers were not yet available in supermarkets.

Food SME 6 was another **small craft brewery**, based in the North West. This business had begun as an offshoot of an independent pub, located within the pub premises; however, the owners had subsequently sold the pub but retained the brewery, which had consequently moved to a standalone site. This brewery produced niche beers, often with a higher alcohol percentage than many other craft beers. Its turnover was generated

²⁹ See <http://www.madeinsheffield.org/>.

mainly through selling to pubs and selling casks and kegs to wholesalers, though there was an aspiration to grow the retail trade.

17.4.2 Service activities

Food SME 7 was a pub-restaurant chain that owned six outlets across the North of England, predominantly in 'small-town' or rural locations. The SME owned three of the sites as freeholds; the other sites were tied leases, and the choice of drinks was more restricted. Each outlet was distinctive in décor and internal design, and there was little of the company's own branding within these environments. The chain had bespoke menus at each outlet, and gave head chefs considerable creative control over those.

Food SME 8 was a restaurant chain based in the North West of England. This chain operated a restaurant, and also a separate, more casual bar/café within the same town. The first of these was established in 2000. Both were open seven days a week and could, between the two sites, sit 80 people in one sitting, most of which was trade from the local area. It specialised in British cuisine, such as steaks and roasts.

17.5 Challenges

17.5.1 Quality/technical challenges

It was very important for every Food SME to produce or (in the case of the customer service environments) offer a consistently high-quality product that would win repeat custom. However, this was a more significant challenge for manufacturers of more complex foods than for single-product producers.

- For the manufacturer of coated products (SME 1), products were required to perform to a required standard at all times, which meant producing bespoke foods for different customer environments. The specific requirements differed according to whether a sit-down restaurant or take-away business was being supplied, and products had to withstand very different oven and service requirements; take-away foods, for example, were required to retain heat for much longer than restaurant products.

The most effective way of meeting these challenges, especially when developing a new food, was to be brought in at the very beginning of a project in order to co-create the required product; the company had recently developed a new cheese product for a major pizza brand in this way. A key challenge in this regard was working within often very tight timescales set by major brand owners and food manufacturers, which could include having to devise and produce example foods within a few days. However, this company had sufficient expertise in the field to be able to manage these processes without significant difficulty.

- For those involved in the **pub/restaurant trade**, a strong reputation for quality was essential to the survival of businesses, particularly as websites such as TripAdvisor made reputations more difficult to protect. These SMEs were therefore focused on ensuring that a sufficiently high-quality experience was provided for clientele in order to encourage repeat custom. This was about excellence in customer service as much as it was about ensuring high-quality food and drink products.

17.5.2 Economic and financial challenges

All interviewees reported facing some form of economic and financial challenge; however, the nature of these varied significantly between SMEs and there was little consistent pattern with regard to their nature, or the ways that informants expected to meet them.

- For the manufacturer of coated products (Food SME 1), which supplied products nationally and internationally, the cost of **transportation** from its base in Scotland to the South of England (where products entered import markets) was frequently high. However, the company managed costs in other areas very tightly in order to compensate, such as by selling waste food produce as waste-to-energy for Anaerobic Digestion.
- The restaurant chain (Food SME 8) found the **current state of the economy** to be challenging, as this significantly impacted on levels of consumer spend in a region that had been very badly affected by the recession. The impact of the **increase in VAT** to 20% was also an issue, as the company had chosen to bear the brunt of this, rather than pass it on to customers. The restaurant had frozen prices in both its outlets for six years in order to survive, reduced staffing, and changed the way in which food was sourced, such as by using frozen fish instead of fresh fish. The

life of kitchen equipment tended to be extended through repair work, rather than (as would have been the case prior to the recession) by replacement.

The recession had not presented as many challenges for the small gastro-pub chain (Food SME 7). This chain had premises in small towns and villages that were prosperous, and targeted the “high-end” market, perceived to have more disposable income than others.

- The rising cost of **utilities** was an issue for breweries and the restaurant and pub chains, as these were all high consumers of energy and water. Although conscious of the need to be as energy-efficient as possible, there were limits, for example, to how far water usage in a brewery environment could be reduced.
- The cost of raw materials (i.e. malt and hops) was also highlighted by one of the breweries, since there was a growing tendency to source more exotic hops from overseas. Pacific pale ales, which used New Zealand hops, were becoming a staple of the craft beer market, but these hops cost four times the price of their UK equivalent. This meant there could be challenges in communicating the pricing of particular beers to customers, who were accustomed to the price simply reflecting the ABV.
- For the sausage producer, the major costs were labour and **raw materials**, particularly the cost of maintaining pigs, which was very volatile because of fluctuating commodity markets. Wheat prices, in particular, were problematic since they made up 20% of the price of a pig; therefore, when wheat prices rose, pig prices rose accordingly. This SME bought in advance but still suffered when prices rose rapidly.
- There was also some concern, among both the breweries and the importer, that **payment terms** were becoming more problematic for SMEs, and that there was little that they could do about this. The importer noted that some multi-national food manufacturers were moving to 105-day payment terms, which presented major challenges to cashflow.

17.5.3 Market challenges

The manufacturer of coated food products (SME 1) faced considerable competition for menu places in the fast-food and chain restaurant sector. Within chain restaurants, such as Pizza Hut and Nando's, a menu of starters or sides (the types of product that the company produced) reportedly contained around ten items; chains retained data on which of these were proving the most popular, and those in the bottom half were at continuous risk of being replaced. The challenge therefore was to retain a position in the 'top 5' items in major chain restaurants.

- A typical menu item remained in the top 5 list for no more than 6-12 months as public tastes evolved, and it was important therefore to understand customers' changing requirements. This meant having a close working relationship with the branded chains; broad ideas for new menu items would often be initiated by these major multi-nationals and presented as challenges to suppliers. In this situation, it was important to understand how cost-effective a product would be before committing to manufacture.

For the **breweries**, the main market challenges were keeping on top of rapidly-changing consumer tastes. The craft beer market had grown rapidly in recent years, and was very fast-moving, with new breweries and new beers emerging regularly. Successful breweries had to keep abreast of market trends, and be considered by customers to be "in-trend". This led to the use of the more "exotic" ingredients discussed in section 3.5.2.

- In this market, it was important to brew a combination of year-round beers as well as 'specials' that were available only as limited editions, and to ensure that customers could differentiate the 'specials' from the year-round products.
- Securing outlets for new beers – usually a free house that was prepared to sell batches of untested beers – had become much more difficult, with 'slots' filling up to six months in advance whereas previously it had been possible to put a new beer on sale within a week. It was vital, therefore, to retain longer-term relationships with particular pub outlets and to ensure a regular supply of product so as to sustain a brewing schedule.
- The pub market continued to consolidate as the number of freehold establishments decreased and the control that PubCo chains and brewery pub

owners exercised over products selection intensified. For independent brewers, this created pressures to supply at large volumes and to offer heavily discounted prices, neither of which was sustainable.

- One brewery wanted to enter and grow via the supermarket trade, although the second brewery reported that doing so required SALSA accreditation, which was time consuming, expensive, and potentially disruptive to the main pub/off-licence trade, which did not require SALSA.

Geographical expansion within the UK was difficult for the **dairy**, since the artisan cheese market favoured locally-produced products (i.e. it would be difficult to sell Cumbrian cheeses in Devon).

- The dairy had attempted to expand beyond the North West and Yorkshire in the previous year, by advertising in specialist food magazines, but had found it very difficult. One possible way forward was to enter national supermarket distribution; however, the informant had little desire to do so because the financial benefits were unlikely to outweigh the risks.

17.5.4 Supply chain challenges

The SMEs were concerned with trying to find high-quality supplies at a relatively low cost, which was not always possible.

- The **coated products manufacturer**, for example, sourced ingredients at a higher cost if this would reduce wastage and guarantee quality. For example, whilst it would be cheaper to buy block cheese and shred this on site, buying higher priced, pre-shredded cheese was likely to ensure better quality.
- Maintaining a good supply of raw materials could present some challenges, as the number of malt and hops suppliers was limited, and good relationships were therefore important:
 - There were only a small number of malt and hops suppliers in the UK. Whilst volume of supply was not a problem, this limited number of suppliers meant that breweries had little leverage with regard to payment terms.

- Relationships with suppliers could be affected when pub outlets were not prompt at paying for beers, and the breweries therefore could not pay suppliers on time.
- The second brewery reported some challenges with regard to pubs returning casks promptly. A temporary absence of casks could result in a brewery being unable to supply a customer, which could damage its reputation.
- For the **dairy**, **sourcing milk at a cost-effective price** was challenging; as a small dairy, it was difficult to secure the type of price reduction available to national-scale dairies or supermarkets that bought in bulk.
- The **restaurant chain** sourced locally; the poor economic climate in the region meant that suppliers were willing to negotiate prices and terms to ensure that goods were sold. Hence, the restaurant chain had been able to reduce the price of some of its supplies compared with 2008.
 - In contrast, the pub-restaurant chain used Pelican, an independent procurement organisation, to ensure competitive pricing from suppliers, rather than dealing directly.³⁰

17.5.5 Market differentiation and branding

Market differentiation and branding was a critical issue for **breweries**, but less important to the other Food and Drink manufacturers.

- One of the breweries attempted to differentiate by specialising in unusually strong beers (5-10% ABV), although some pubs were put off by this. These types of beer were intended to be drunk slowly in half-pints, but there was still a tendency in UK pub culture for customers to demand full pints.

³⁰ <http://www.pelicanprocurement.co.uk/>.

The second brewery, which brewed in the more conventional 4-6% ABV range, noted that **branding**, rather than taste, was key to differentiation; the differences between various breweries' IPAs or lagers were relatively minor.

- Both brewery informants reported that, in an urban market that demanded new and exciting products at a rapid pace, it was essential to avoid producing “run-of-the-mill” real ales.

The **sausage producer** (Food SME 3) had sought to differentiate and to promote within the local market, by obtaining ‘Made in Sheffield’ accreditation and by entering competitions.

17.5.6 Labour, skills and recruitment

Labour was a major cost for the smaller manufacturers/producers, and for the pubs and restaurants, although it was less of a concern for the larger manufacturers/producers.

- For the pub chain and restaurant, the challenge was being able to find flexible staff who were committed to high levels of customer service, but who were also willing to work variable hours each week and work shifts at short notice. One (SME 7) had followed some staffing models developed by larger PubCos, and employed managers with considerable experience of working in the sector, particularly for larger pub chains.
- For both small breweries, the head brewer position was extremely important, particularly in creating new beers. One of the breweries was about to lose its head brewer and was concerned about finding an appropriate replacement.
- For the coated food manufacturer, unpredictable client needs could require rapid recruitment of staff. In the lead-up to Christmas 2013, one client had almost trebled an order, a challenge usually met by bringing in temporary staff and offering overtime to full-time staff.

17.5.7 Imports/exports

Only two companies (the coated foods manufacturer and one of the breweries) were actively exporting, and two others (the sausage producer and the second brewery) were

considering doing so in future. Consequently, export markets presented challenges that were often individual to the SMEs concerned:

- Exports accounted for 8-10% of the income of the coated food manufacturer, although the company wished to grow this to around 20%. To achieve this, **accreditations** – standards developed by individual multi-national food suppliers, sometimes, though not always, based on BRC Global Standards – were required. This was similar in some respects to the position within international Aerospace supply chains, where OEMs had individual standards above and beyond those of AS9100.
- The SME that imported ingredients on behalf of UK food manufacturers reported a significant issue concerning **legislation** around **importing** raw food such as spices, vegetables and fruit. Notably, the random portside testing of imports could cause damage to goods and risked cross-contamination, for example with nuts. Other than protest about the practices undertaken at portside, there appeared to be nothing directly that this SME could do to prevent this type of action.
- One **brewery** (SME 5) reported that labelling regulations in overseas territories could act as a barrier to export; Sweden and Italy were reported to be territories with relatively lax labelling regulations, meaning that the same labelling employed in the UK could be used in these territories; however, in other territories, labels specific to those overseas markets had to be produced and used, which was challenging for small-scale breweries.
- The **sausage producer** (Food SME 3) reported that building an export market would require the assistance of the British Pig Executive (BPEX) to find potential customers overseas and lobby on individual producers' behalf, as well as SALSA and (potentially) BRC accreditation. The SME was exploring whether the 'Made in Sheffield' accreditation might be an advantage in export markets, but was unclear about this.

17.6 Innovation and Intellectual Property

17.6.1 Technical innovation

There was relatively little technological innovation among the informants, although several were actively trying to create new products.

- The coated food manufacturer was, as noted, required to create new products to meet the needs of chain restaurant customers, given individual products' usual life cycle, within menus, of 6-12 months.
- One brewery was experimenting with a new process for brewing keg beer, to achieve a similar quality to cask ale. Conventionally, keg beer was produced using pasteurisation and chilled filtering processes; whilst this gave keg beer much greater longevity over cask ale, it was usually with some detriment to its taste. The informant thought that a number of competitors were experimenting with similar processes.
- This brewery was also considering introducing brewing processes that were used by micro-breweries in Germany but were rare in the UK.
- More generally, craft breweries were required to develop new 'specials' on a regular basis.
 - One brewery discussed competitors that had produced dark Pale Ales and light-coloured stouts, and noted that this type of experimentation was commonplace within the craft beer industry.

For the smallest SMEs, innovation tended to be a much lower priority than fulfilling orders and, in busy times, planned new developments were put on hold.

17.6.2 Intellectual Property

Several Food SMEs had trademarked or were considering trademarking their company and product names, though this was not always effective:

We have our brands and our logos protected. I can't remember how much we spent recently trying to protect that [but we] still don't have the offending brand taken down off somebody else's website. (Food SME 1)

For the breweries, securing trademarks over brewery and product names was extremely important; with a growing proliferation of craft breweries, many of which used similar local imagery, there was scope for brand confusion. Hence, trademarking of brands was commonplace.³¹

Challenges in this regard were that:

- Small breweries lacked the financial resources to challenge trademark claims made by much larger organisations.
- Small breweries did not often have the resource to determine whether a new product was encroaching on another's trademark.

The pub-restaurant and restaurant chains had not trademarked their company names.

- The restaurant chain, as a mostly localised business, saw little value in trademarking its name as there was little prospect of brand confusion locally. This restaurant shared its name with a number of other, unrelated restaurant businesses elsewhere in the UK.

17.7 Key relationships

17.7.1 Suppliers

Relationships that SMEs had with **customers** and **suppliers** were key to the success, and many emphasised the importance of long-term commercial relationships, especially with suppliers.

³¹ One informant cited the example of Anarchy BrewCo, which had once been called Brew Star, until a rival brewery, Brewster's, forced a name change. This meant that the brewery had had to develop an entirely new brand, which disrupted its market presence.

When you look at the supplying principles it's almost like having another customer because we have to look after them and their interests as if they were a customer in many ways. So we really have one standard of behaviour and that's by treating everybody with the same amount of respect. Sustainability of relationships is terribly important. (Food SME 2)

We try to build relationships with suppliers because if you do that then you will get support from [them] and they know you and you know them. It's normally better than continually chopping and changing for whatever reason. (Food SME 7)

The breweries had more “functional” relationships with their suppliers, particularly as only a relatively small number supplied malt and hops; such relationships were not therefore particularly close. Similarly, the dairy sourced milk from large suppliers and did not have the type of close relationship with these that the food importer and restaurants had.

17.7.2 Customers

With regard to customer relationships:

- The manufacturer of coated food products (Food SME 1) worked closely with customers to develop new products. As this manufacturer was producing goods that often had very narrow cooking parameters, but which needed to be standardised, continuous dialogue was essential in order to understand customers' precise needs.³²
- The sausage producer's key **customer** relationships were within the Sheffield area. Currently, its reputation was sufficiently strong to be approached by head chefs from restaurants, cafés and hotels in the area, although the company was aware that if it grew into export markets then these relationships could not be as personable, and that the assistance of BPEX would be critical.

³² This SME had recently developed a new cheese product for a household pizza brand, which (because of particular transportation requirements, i.e. the pizza manufacturer was located several hundreds of miles from the SME concerned) was transported in an unusual “semi-defrosted” state, and which could stand up to precisely specific oven temperatures. Development of successful products therefore required close dialogue with customers.

- For **breweries**, relationships with **pub outlet customers** were the most important. The damage that could be caused to a brewer's reputation through producing sub-standard batches was considerable.
 - Ad hoc arrangements with other breweries in order to develop 'swap' deals – agreements to distribute each other's beers in territories that they had yet to penetrate – were also notable. This drove greater national distribution of beers produced by very small breweries that lacked the capital to distribute on a large scale, and was reportedly quite common in micro-brewing.

17.7.3 Membership of industry bodies

Membership of trade associations and industry bodies was extensive, particularly among the manufacturer/producing organisations:

- Food SME 1 (the largest manufacturer in the sample) was a member of a much larger number of industry bodies than any other Food SME consulted. In this case, the business belonged to:
 - Institute of Directors³³
 - Entrepreneurial Exchange (a Scottish organisation that provided business advice, support and networking for entrepreneurs)³⁴
 - British Frozen Food Federation³⁵
 - Scotland Food and Drink.³⁶

Membership of organisations such as the Entrepreneurial Exchange, which did not have an exclusive focus on Food, gave this SME an insight into the challenges faced by – and helped them learn from – SMEs in other sectors, such as renewables.

- The importer of spices and seasonings was a member of the Spices and Seasonings Association (SSA)³⁷, a subsidiary organisation of the Food and Drink

³³ <http://www.iod.com/>.

³⁴ <http://www.entrepreneurial-exchange.co.uk/>.

³⁵ <http://bfff.co.uk/>.

³⁶ <http://www.scotlandfoodanddrink.org/>.

³⁷ <http://www.seasoningandspice.org.uk/ssa/home.aspx>.

Federation (FDF).³⁸ This informant reported that the FDF, in particular, was very close to large multi-national food manufacturers and political elites, but that it could be difficult for SMEs to have a voice within the organisation.

Otherwise, SMEs tended to belong to associations that reflected their specific sub-sectors of the food industry, rather than the wider Food and Drink Federation:

- Both breweries were members of the Society of Independent Brewers (SIBA).³⁹
- The dairy was a member of the Specialist Cheesemakers Association and the Society of Dairy Technology.
- Among the pubs and restaurant chains, the pub-restaurant company (Food SME 7) was a member of the British Institute of Innkeeping and the Association of Licensed Multiple Retailers (ALMR). The restaurant chain (SME 8) did not belong to any trade associations or comparable bodies.

17.7.4 Strategic business advice

Trade associations and industry bodies (e.g. SSA; SIBA) were the key avenues for **strategic business advice**, although SME 1 also used non-sector organisations such as the Entrepreneurial Exchange. These associations provided various benefits:

- BII and ALMR organised conferences and events where SME owners could meet people running similar businesses to share good practice.
- One of the brewers used the Society of Independent Brewers (SIBA), which provided free access to legal helplines and advice about trademarking; there were also local chapters that met on a regular basis. SIBA also provided regular forum events for small brewers to seek advice from each other.
- Though it had not sought strategic advice for some time, the dairy named the Specialist Cheesemakers Association and the Society of Dairy Technology as providing business advice for small dairies if required.

³⁸ <http://www.fdf.org.uk/>.

³⁹ <http://siba.co.uk/>.

Beyond this, there was little reported use of external consultants for strategic business advice.

- One brewery had accessed **Growth Accelerator** for assistance with its rebranding, and for advice about communications strategy, which it deemed had been very useful.⁴⁰ This brewery had also joined the Federation of Small Businesses but was unlikely to remain a member.⁴¹
- The sausage producer used consultant vets for advice about rearing pigs, but did not source any business advice with regard to the butchery and selling side of the business.

The restaurant chain informant (SME 8) cautioned that it was very difficult for those outside the hospitality trade to be able to offer meaningful business advice. One bank manager had advised the business to add 10% to the cost of all menu items in order to boost profitability. However, the restaurant owner sensed that this would deter business, and had decided against doing so.

17.8 Regulation

17.8.1 Food safety: international regulations

- International regulations concerning contaminants in food were increasingly harmonised, although the importer/broker felt that this meant reversion to a lowest common denominator, rather than harmonisation driving up standards. The issue of contaminants was particularly important for the importer, as these could be naturally occurring at agricultural or production sites.

This SME was also concerned that importers faced a number of “ill-conceived” regulations; legislation introduced in 2009 concerning pesticides was said to be particularly problematic:

⁴⁰ <http://www.growthaccelerator.com/>.

⁴¹ <http://www.fsb.org.uk/>.

They were not done on a risk-assessed basis but rather on a default Maximum Residue Level [MRL] basis, and I know there's fresh fruit and vegetables coming into this country that essentially break the law. (Food SME 2)

Although the importer had concerns about these regulations, it was suggested that the rules mainly disadvantaged poorly-resourced importers who lacked regulatory understanding, whilst experienced companies that kept up to date with regulatory changes were able to benefit.

- For the SME manufacturing for global food markets, differences in national regulations could have significant implications for the ways in which products were manufactured:

The Germans changed their law so that you can't set a deep fat fryer above 175 in Germany and in practice that means everyone sets them at 170. So we now need to make the product for Germany with no E numbers that will cook from frozen at 170... (Food SME 1)

Whilst the manufacturer did not see this as a particular problem, and were technically able to meet these revised demands, it had still meant changes to certain manufacturing processes.

The differences between US and EU food safety laws were considerable; one example given by SME 2 was that of McDonald's, whose US outlets could sell food that used GM maize and irradiated spices without having to inform consumers, whereas those products could not be used in the UK at all.

17.8.2 Food safety (UK): manufacturers

Food safety among UK-based manufacturers/producers, including breweries, was regulated by the Food Standards Agency.

- All of the SMEs in the sample were inspected by Environmental Health officers every 18-36 months and could be subjected to 'spot' inspections if there was any reason to suspect unsafe practices.

- None reported any issues with these inspections insofar as satisfying regulations was concerned, and none reported having been subject to spot checks. Most felt that they had sufficiently robust internal procedures in place (e.g. HACCP plans) to ensure the safety of food.
- However, one brewery (Food SME 6) had not updated its HACCP plan for some time and felt that the small number of staff in the business, combined with a lack of experience with such systems, made it difficult to implement the plan.

Things like traceability of raw materials to finished product, I don't think we are good enough on that and it's not that we don't know we should do it but it's time and resources. So a standard should help us there. (Food SME 6)

At the other brewery, the owner had worked for many years in the chemical industry, where rigorous hazard-control procedures were well established, and had simply adapted these to the brewery business; this may be suggestive of a sub-sector in which successful implementation of HACCP plans within the smallest SMEs is dependent upon prior experience.

17.8.3 Food safety (UK): pubs and restaurants

The FSA was the core regulator for food safety and hygiene in the pub and restaurant trade; however, whereas manufacturers had to produce HACCP plans, the pub-restaurant and restaurant chain were subject to the Food Hygiene Rating scheme, which graded food service outlets on a scale of 1 to 5. This encompassed:

- Ensuring that food was sourced from reputable suppliers
- How it was stored once in the premises
- How accurate and extensive details were about dates of arrival, and precise storage location, including identifying a specific fridge if the premises had more than one
- Ensuring that the temperature of storage facilities was checked and recorded every day
- Keeping records of the temperature that particular food was cooked at.

To this end, both the pub-restaurant and restaurant chain had processes to ensure that suppliers were fit for purpose, As noted above, one SME used Pelican, a food procurement business based in Kidderminster, to source its food; the other (SME 8) sourced food itself, usually from local suppliers.

Both pub/restaurant informants thought that food hygiene regulations were a strong positive feature of the industry, as it was hard for companies that failed to meet these rules to survive. However, more could be done to make customers aware of the difference between particular scores:

I think it would be nicer if customers were made aware of what they actually meant, what five stars meant, what four stars meant, what three stars meant; I think that would be good because that would make them have an educated guess as to where to eat. (Food SME 8)

This informant also said that Environmental Health inspections were not always consistent, and that whereas one officer had previously instructed the restaurant to cover a floor area in a sealant, a later inspector was happy for the SME to leave the floor at it was.

17.8.4 Labelling regulations

For food manufacturers, Trading Standards-policed **labelling regulations** were especially important, particularly concerning fat and salt content:

- This applied mainly to product development (e.g. of a particular type of sausage). Once products were established and could be replicated consistently then labelling was routine.

There were mixed views about these regulations:

- The sausage producer reported that labelling regulations were not enforced consistently and that large supermarket retailers appeared to be able to transgress them.

You go into Tesco and you get 97% meat sausages. And then you turn the pack over and there's 20% fat in it. They seem to say that they've made the

sausage and then they've put the fat in as an additive afterwards. Because they're big they can get away with it. So uniformity across the industry, all working to the same [rules], would be a godsend. (Food SME 3)

- The dairy thought that labelling regulations were more beneficial than harmful, and that securing Trading Standards consent for redesigned labels was not difficult.
- Some changes to the labelling regulations for the **listing of allergens** were reported. Two SMEs were especially critical of a lack of communication about this. In particular, the SMEs likely to be affected by these changes reported uncertainty about how best to meet them, and whether it might entail an expensive redesign of all labels.

These changes also concerned restaurants, who noted that most items on menus would have to be labelled as potentially containing nuts, simply because of the risks of cross-contamination in kitchen environments; again, the central concern was the expense of having to redesign and reprint menus to meet the new regulations.

- EU labelling regulations concerning the country of origin of ingredients were also emerging in the wake of the horsemeat scandal of 2013.
 - The sausage producer thought that these regulations were very positive, but noted that some of the multi-national food manufacturers were trying to water them down. The informant intended to continue to emphasise the locally sourced nature of their meat in labelling, and was confident that this would drive sales irrespective of the outcome of the challenges to EU rules.

17.8.5 Other regulations

Among micro-breweries, the sourcing of expensive hops from locations such as New Zealand was partly viable because of favourable duty rules for very small breweries, which qualified for a 50% rebate on Progressive Beer Duty if brewing fewer than 5,000 hectolitres per annum. However, full duty had to be paid at volumes above this, and was due on the entire stock; the 50% rebate no longer applied to any of this once brewing

above 5,000 hectolitres per year. There were therefore some disincentives for breweries to grow beyond a particular size.

17.8.6 New regulations emerging

SME 1 (the manufacturer of coated food products) noted that a new **Scottish Food Standards Agency** was being created. Currently, it was unclear whether this would simply replicate the existing FSA within Scotland, or would seek to implement a different set of regulations, thereby deharmonising food safety in Scotland from the rest of the UK.

- However, it was reported that the Scottish Government wished in future to give the Scottish FSA a greater emphasis on wider public health and education issues – for example, concerning consumption of saturated fats – rather than on food safety alone.
- The company regarded the potential introduction of different regulatory foci in England and Scotland – such as on labelling – as very undesirable, as it supplied retailers and food manufacturers on both sides of the border and wished to continue working with a single set of regulations.

17.8.7 Views about regulations

Perspectives on regulations varied, but all of the SMEs thought it beneficial for firms to be inspected, and for the industry to have to work to a high standard, since this protected the reputation of UK food manufacturers and service providers.

- There were some differences of opinion as to whether regulations were too “onerous”, though these differences did not ‘map’ onto the size of SMEs, or to particular sub-sectors. For example, one brewery reported that regulations were “fine”, but the second brewery felt that the industry was significantly over-regulated and that there was a danger that “we could go too far.”
- The pub-restaurant and restaurant chain felt that whilst food hygiene rules were enforced in an acceptable manner, employment law and other aspects of “red tape” (such as listed buildings status) were more onerous.

There was also a sense, particularly among the coated food manufacturer and the sausage producer, that whilst UK animal welfare regulations were very strict, major supermarket retailers could circumvent these by sourcing products from other countries:

It would be nice to think that everybody applied the same standards. The UK has done away with farrowing crates [for pigs] and we're not going to have caged this and that and the next thing, and the supermarkets still go out and buy stuff that they know is not subject to the same rules... Because they can buy it and punt it out cheap, or make a bigger profit on it. (Food SME 1)

One informant also felt that regulators did not listen sufficiently to the food industry when devising or updating regulations.

I've suggested many times, before any piece of regulation gets drafted why not show it to the industry? You can always ignore what they say, but it might actually help. We would be happy to contribute at the beginning to avoid lots of pain afterwards. (Food SME 2)

17.9 Best practice

17.9.1 Safer Food, Better Business

- The Food Standards Agency's 'Safer Food, Better Business' (SFBB) initiative was a code of best practice for restaurants and caterers; as the sausage producer also supplied outside catering events, it too used the SFBB best practice guide, and regarded it as useful:

It's not onerous; it's just doing what you should do, keeping things safe and clean and knowing what you're doing and not infecting people. (Food SME 3)

This informant did, however, regard much of SFBB as "common-sense", and felt that if SMEs were devising their own codes of best practice then these would probably replicate much of SFBB.

The restaurant chain (SME 8), however, was critical of SFBB; whereas previously the FSA had provided postal packs of information to help businesses abide by this code, SMEs were increasingly expected to invest more of their own resources in documenting compliance:

[When] 'Safer Food, Better Business' came out it was all fancy big packs of this and for your updates you just give them a ring and they sent out the new sheets and everything else. That lasted for about 18 months; now we're responsible for printing them off ourselves, [using] our own paper, and our own ink. In some businesses that's the difference between them saying 'Right, well I'll get shot of an employee' or not. (Food SME 8)

17.9.2 Use of other established codes

Elsewhere, best practice was viewed as either an aspect of the regulatory environment, or related to standards, and was not usually conceptualised independently of these.

- SME 1 (the coated foods manufacturer) had previously used ERP to address internal communication and training, but no longer used this as much of it was contained within BRC standards.
- Both breweries noted that best practice and standards in brewing were established and monitored by **SIBA** (the **Society of Independent Brewers**):

There are standards and best practice from SIBA in terms of how often you should check your beers, for example. ABV is the first one – that it should be somewhere near where you are saying it is – and there are industry guidelines for that; HMRC also tell us what we have to do on that. (Food SME 6)

- One brewery informant reported that whilst SIBA had a code of best practice for small breweries, it was not very detailed, and that most best-practice procedures within the brewery had been learned via earlier brewing education courses. It was suggested that the current best-practice guidance for breweries was poorly structured and too brief.

17.9.3 Individual practices

Other informants had developed what were regarded as best practices in a largely ad hoc fashion. As food safety regulations were strictly enforced, best practice often amounted to following guidance supplied by the FSA to ensure that regulations and standards in safety and hygiene were met.

- One SME (the pub-restaurant chain) had had a best-practice document written by an external consultant (an ex-Environmental Health officer), in an attempt to achieve a higher standard than that required by the FSA. This informant thought that best practice was patchy across the hospitality sector, and that a number of other pubs and small restaurant chains were less diligent in their food safety.
- Food SME 5 (one of the breweries) implemented practices that the owner had learned in previous employment for a large chemical company, simply because these were the best practices they were acquainted with. This informant believed that the practices used by the brewery were probably in excess of what micro-breweries typically used.

17.9.4 Seeking Improvements

The Food SMEs suggested few desired business improvements; most of those interviewed appeared to feel that their businesses were largely sound, requiring only tweaks rather than any significant overhaul of processes or procedures.

- One brewery reported needing to improve its quality management systems, as it did not currently have a central point by which processes and procedures were documented. This was meant to be the purpose of this brewery's HACCP plan; however, the firm freely admitted that it lacked resource to implement the plan effectively.
- Developing more effective staff appraisal procedures was of some concern to the second brewery, but was not discussed in other interviews.
- Tweaks to labelling were reported as one potential improvement by the sausage producer, although these did not appear to be a pressing need.

- For the restaurant chain, there was a need to further streamline aspects of the business, including reducing the number of wines stocked and using materials that gave kitchen floors a longer lifespan. All of this was driven by the need to be more cost-effective.

17.10 Standards

17.10.1 BRC global standards

BRC global standards were discussed by the coated food manufacturer and the importer of spices and seasonings, the only SMEs that were actively exporting. BRC global standards were intended to reduce the number of audits imposed by multi-national food manufacturers on SMEs by establishing a single accreditation scheme, recognised internationally as a 'gold standard'.

There were some differences of opinion between the two SMEs regarding the consistency with which BRC standards were policed:

- The coated food manufacturer thought that BRC standards were not applied consistently, particularly in China, and needed to be policed more effectively:

We're seeing it ourselves in China where there [are] factories with BRC certificates that you wouldn't take dog food out of. There's a certain subjectivity of the individual auditors, different standards in different origins, and linked to quite blatant fraud where people are buying BRC certificates. (Food SME 1)

- SME 2, in contrast, reported that after a slow process of recognition, BRC was widely recognised in the international food industry, even in places that were otherwise poorly regulated, such as China.
- The coated food manufacturer, however, was sceptical about the value of BRC standards and felt that new standards were usually issued for commercial reasons:

We defend ourselves fiercely and generally you end up at an accord, [and BRC] get their tick boxes. But you have to also bear in mind that BRC is a

commercial organisation and has to pay for itself, and it pays for itself by issuing new standards. (Food SME 1)

For the importer/broker, it was essential for suppliers to be BRC-accredited:

When we're selecting [suppliers] we are saying you have to have a quality management system which is based on BRC or on ISO, or, if it's from the States, AIB in some cases. (Food SME 2)

The importer/broker noted that BRC was currently devising a set of standards for brokers, and expected that it would have to adopt these in order to continue working internationally. It was thought that the standards would relate to activities such as handling boxes of imported foodstuffs.

The dairy noted that although BRC accreditation would be useful for large producers trying to enter global distribution chains and international food markets, it added nothing of value to a small company that operated in national markets only. This informant (who had previously worked for a much larger manufacturer that had been BRC-accredited) also suggested that BRC standards achieved little of value to improve food safety and were an administrative burden.

17.10.2 Client standards

Although the BRC global standard was intended to deliver a common accreditation system for SMEs in the global food industry – and therefore to reduce the volume of individual customer audits – this was not the case in practice. Rather, individual customer audits by retailers and multi-national food producers remained common:

Some [clients] do accept [BRC] and don't come and see you, but other people say 'no, we want to come and see you and make sure you're doing our product the way we want it to be done.' So, 'here are the ingredients that have to be declared on the back and that's great and we're interested in those but we're also interested in what sits underneath it, what's been used when you've made that ingredient.' The big restaurant chains are going exactly the same way; they're all following standards of their own devising. (Food SME 1)

This informant felt that the standards required by supermarkets were more harmonious than had been the case some years earlier, although there could still be some differences.

- Yum! Brands (which licensed KFC and Pizza Hut franchises) was reported as one multi-national that imposed its own particular, and more stringent, code of standards upon suppliers, based upon but outside of the aegis of BRC. Notably, Yum! Brands required the use of particular, dedicated types of transport vehicle with specific locking mechanisms.

Customers' use of bespoke standards had discouraged the coated food manufacturer from using any standards outside of BRC, simply because clients did not recognise the value of these. In addition, food hygiene regulations were subject to audit, meaning that the audit burden for manufacturers supplying international food markets was already heavy. There was, therefore, little incentive to adopt additional standards:

I remember going back to quality control standards, so you had BS 5750, and I went and sat on a course on that and thought "what a blooming nightmare; all it is is pushing paper around for the sake of pushing paper." And obviously you've got an overlay of food and hygiene regulation anyway, so I had a look at all that and thought we're not going to bother [with standards] because we already had [individual] customer audits. (Food SME 1)

17.10.3 SALSA accreditation

SALSA (Safe and Local Supplier Approval) accreditation was required for any SME food producer wishing to access supermarket environments. SALSA was intended for smaller producers as a more 'straightforward' accreditation system than that expected of large multi-national food manufacturers; the sausage producer noted that a manufacturer such as Wall's would typically be required by supermarkets to have full BRC accreditation.

Among those interviewed:

- The dairy was SALSA-accredited
- The sausage producer was halfway through gaining SALSA accreditation.

SALSA required those accredited to be audited once a year by a registered member of the IFST Register of Professional Food Auditors and Mentors (PFAM). Auditors were other food industry professionals and were usually located in the same region as the manufacturer/producer concerned.⁴²

The big thing about SALSA is integrity of ingredients, so that batch of beer that you drink, I know which malt's gone in, which hop's gone in, which batch has gone in... [but] nobody really needs that [when supplying pubs]. (Food SME 5)

The significant advantage of SALSA was that it opened up the possibility of selling products through large supermarkets, rather than through artisan outlets, online or in pubs. The need to be SALSA accredited was therefore to some extent a function of the extent to which producers/manufacturers wished to enter these markets in the future.

The major concern that SMEs had about SALSA was the amount of paperwork required to gain and to sustain accreditation, which could be challenging for the smallest SMEs. However, no concerns were expressed about meeting SALSA's technical or quality requirements.

The breweries were not SALSA-accredited and were not currently considering this as neither saw supermarket sales as core to their growth strategies. One local competitor had acquired SALSA accreditation in order to drive supermarket sales, particularly in Waitrose, but was reportedly the only small brewery in the region concerned to have done so.

17.10.4 BSI and ISO standards

Among the SMEs interviewed, there was very little reported use of or interest in British Standards or ISO standards.

The coated food manufacturer (SME 1) had previously used BS 5750, and had upgraded this to ISO 9000. However, because of the diverse and overriding nature of individual client standards, this SME 1 no longer subscribed to any standards other than BRC (i.e. had allowed ISO 9000 to elapse).

⁴² <http://www.salsafood.co.uk/am.php?p=2>.

The smaller manufacturers were not using any British Standards and did not intend to do so, as it was not a customer requirement.

Food SMEs reported that adherence to ISO or British Standards was likely to be too time consuming, particularly if it was in addition to the various labelling and food hygiene regulations, and would therefore increase the already heavy volume of audit/inspection:

It's pointless getting ISO for [food safety] when I've already got a procedure in place. I wouldn't get in trouble from the HSE for not having ISO; I would be in trouble by HSE for not having a risk assessment in place [covered by the SME's HACCP policy]. (Food SME 5)

- The dairy had encountered British Standards some years earlier, through the informant's role in the Society of Dairy Technology – when BSI had been involved in helping draw up what were now established practices for dairies – but had no recent experience of British Standards.
- The breweries reported that accreditation, whether from BSI or any other organisation, was not required by their pub customers, and that decisions to source particular beers were taken on the basis of the taste of a product, its branding, and the reputation of the brewery. Consequently, there were few incentives to subscribe to standards.
 - One brewing informant reported that the need for standards would arise from managing the risks associated with growth:

As business grows I think standards become more relevant. Standards come in as the risk to the business of not getting it right becomes more significant. And sometimes staff need a structure to work to, which standards could bring to the business. (Food SME 6)

17.10.5 Made in Sheffield

For the sausage producer, accreditation from Sheffield City Council (as part of the Made in Sheffield scheme) was very important. This accreditation referred specifically to the

geographical basis of companies, their suppliers and their markets, emphasising locality but not covering any other aspect of meat production:

It proves that the product is made in Sheffield, [and] that the pigs are born, bred, reared and slaughtered in an S postcode. (Food SME 3)

The informant reported that there was a considerable drive locally to embed the Made in Sheffield initiative, and that high-end restaurants were now tending to source meat locally in order to emphasise its freshness and the fewer road miles involved in sourcing it. Indeed, local sourcing was said to be replacing organic sourcing.

17.11 New standards development

Whilst the majority of the SMEs consulted did not see standards as relevant to their businesses, largely because their clients did not insist upon standards, there were some areas where informants thought that new regulations, best practice or standards could be useful to the industry.

- For the coated food manufacturer, greater harmonisation and consistent international application of high standards would be welcomed:

I think that in the UK we have some of the highest standards of any country's manufacturing... But it would be nice to think that everybody applied the same standards. (Food SME 1)

- The food importer noted that **Fair Trade accreditations** were very difficult to acquire as there were over 400 separate such schemes across different aspects of the food industry, and in different territories; it could therefore be difficult to understand which of these schemes was most beneficial. There was therefore a need for standardisation, although the informant was unclear whether BSI was the most appropriate forum to take this forward:

Those are the things we're grappling with. Whether we can rely on someone like BSI to wave a magic wand over all this and make it better...

frankly, I do not think so, because this is competition in action. (Food SME 2)

- **Simplification of labelling regulations** would also be useful for the sausage producer, since supermarkets appeared to be able to circumvent existing regulations:

I think... simplifying labelling and making it more across the board, [to give] us a level playing field. (Food SME 3)

- One of the breweries commented that it would be useful for a single standard to act as a “**wrapper**” that combined the currently distinct regulation and best-practice environments to create a “streamlined” code of practice for brewing:

If we moved to a brewing standard it should be a wrapper for what's already there; it could reflect a lot of information already out there in terms of best practice or legislative necessity. There would be some things that would be considered best practice, such as checking your gravity every 12 hours, [which] would in my opinion be a no-brainer; that would be best practice. That would be one element of [a brewing standard]. (Food SME 6)

- A standard way for brewers to calculate Original Gravity might also be potentially useful. Currently, this could be difficult to calculate in the case of beers where sugars were added after fermentation began, which in turn made an exact calculation of the ABV of the finished product difficult to ascertain precisely, even though this figure was required by HMRC. Hence, cumbersome and time-consuming lab tests were sometimes involved.
- Service providers thought that a **standard for customer service in restaurant environments** might have some uses, though standards for food hygiene and safety were already well covered through the FSA Safer Food, Better Business scheme.

However, the restaurant chain suggested that any customer service standard could be difficult to define, as different restaurants had different types of clientele,

with variable expectations for service. There was, therefore, a need for any customer service standard to be very flexible.

Our other restaurant, where it's a bit more of a relaxed environment, [staff] have time to spend with the customer, but some customers are just not interested; [they] just want to sit there and have a quiet meal and be left alone. You have to tailor [service standards] towards the [individual] customers. (Food SME 8)

- The restaurant chain informant also reported some desire to tweak Environmental Health regulations as part of food safety standards (e.g. one desired change was to check chefs' and waiting staffs' fingernails twice a day). The informant suggested that any such standard remove the use of disposable gloves from restaurant environments.

If you've got something on your hands you go 'urgh' and you have to wash them, whereas with the vinyl gloves you don't feel it. (Food SME 8)

17.12 Developing and accessing standards

17.12.1 Who should be involved

A majority of the SMEs interviewed felt **that trade associations** would be the most appropriate vehicle for developing new standards, as they could bring whole-sector views to the process, rather than SMEs being involved individually.

- Both breweries noted that with over 1,200 small breweries in the UK, it would be challenging to involve individual SMEs in this process unless via a trade association, and they questioned how representative any sample of SMEs would be.
- The coated products manufacturer and the import broker identified the **Food and Drink Federation** as an essential partner within any discussions about standards and best practice in food manufacturing.

- Sub-groups within the FDF, such as the Seasoning and Spices Association, were also viewed as important contributors to standards for specific types of foodstuff, particularly as these sub-groups were known to be active in producing position papers around the regulatory environment. However, the SSA was only one of over 20 similar sub-sector organisations within the FDF; consequently, the specificity of concerns related to spices and seasonings could sometimes be lost within the wider FDF. The broker was critical of the FDF as “over-representing” large food manufacturers, and being insufficiently adversarial with the government concerning food regulation.
- In the hospitality industry, trade groups such as the **British Institute of Innkeeping (BII)** and the **Association of Licensed Multiple Retailers (ALMR)** were identified as key organisations that could be involved in standards development.
- For brewers, the **Society of Independent Brewers (SIBA)** was a key organisation to involve in any standards development process. SIBA had eight regional coordinators, who were identified as the first point of contact for any organisation looking to develop standards or best practice for the industry.⁴³
- The Specialist Cheesemakers Association and the Society of Dairy Technology had produced standards for the dairy sector in the past.
- To further develop food standards for restaurants, the restaurant chain suggested that **chefs**, rather than business owners, be directly involved:

I think they could get experts or, you know, paid people from the industry; there [are] obviously chefs out there and I think they need them from all sectors. (Food SME 8)

17.12.2 Funding of new standards

- In keeping with other sectors, it was widely reported that SMEs would be unwilling to fund development of standards, other than through their subsequent purchase.

⁴³ According to CAMRA, the number of micro-breweries in the UK is currently at a 70-year high. See <http://www.theguardian.com/lifeandstyle/2014/mar/11/craft-beers-breweries>.

We are all under tight financial constraints; unless you can demonstrate a clear business advantage, I'm not going to pay for it. It depends on how much they cost. If it is sold as a publication, reasonably priced, maybe we would pay. (Food SME 6)

I think that realistically if there [are] going to be new policies put in place I don't think it should be passed on to the small businesses. (Food SME 8)

- Both brewery informants and the importer/broker thought that **government** should fund the development of new standards, as there were perceived to be few other potential funders.
- The sausage producer suggested that the source of funding ought to depend upon the purpose for which the standard(s) were being developed; if they were for food safety and hygiene, then they should be government funded:

If it's to help you sell more, then fair enough – we should be standing part of the cost – but if it's food safety and hygiene and better nutritional standards and things, then the government has got a role to play there. (Food SME 3)

17.12.3 Barriers to participation

One of the informants (SME 2, the broker for spices and seasonings) was very keen to be involved in developing new standards and best practice for their particular sub-sector of the food industry, and was already a very strong contributor to SSA meetings about this.

- Elsewhere, the lack of available resource to take part in standards development was a significant barrier to direct involvement, particularly among the smallest enterprises:

I think you'll probably find that the smaller business wouldn't have the time to dedicate to it. (Food SME 5)

It would be something nice to be involved in but we're so busy. I'm involved with the BPEX on pig marketing, I'm a school governor, I'm a treasurer of a

local agricultural show, and I'm involved with a local light opera group... (Food SME 3)

- The coated food manufacturer was also keen to emphasise that the company already faced challenges in having to manage a substantial number of audits and inspections, both from regulators and from individual multi-nationals. It was unlikely, therefore, to take part in developing further standards that led to additional audits.
- In the food service sub-sector, in particular, informants suggested that the number of individual entrepreneurs would give rise to a wide range of often idiosyncratic, personal opinions. This would make a consensus-driven process of standards development very difficult to mediate, and may discourage participation among SMEs.
- Some informants were also concerned that standards were often developed to drive sales among standards agencies, rather than with the input of the industries concerned. Consequently, there may be a need to convince SMEs that the purpose of developing new standards was to benefit the industry and the SMEs within it.
- Areas where standards were most likely to be directly useful were, it was said, already well-standardised:

It was important that British Standards for units of measure were well drafted [in the 1980s], but having been drafted they don't have to be drafted again too regularly. (Food SME 2)

- Brewery informants and the pub-restaurant chain reported that standards – and the certificates relating to these – were largely irrelevant for micro-breweries, where new products were produced regularly, and were more appropriate for large, multi-national breweries, where there was a requirement to brew a mass-market product to spec every time. The theme of 'standards' might therefore be interpreted as potentially reducing the diversity of product types in the market, which would be unlikely to appeal to micro-breweries.

17.12.4 Best way to access standards

As in other sectors, most respondents were happy to receive and use standards documents as PDFs. It would also be useful if subscribers were able to speak to standards organisations in order to clarify the meaning and relevance of particular standards. Environmental Health departments within local authorities were cited as offering this type of interaction.

We have our own farm and we started using our own eggs here [in the restaurant]... So I spoke to our local Environmental Health, [and] he gave me the standards that he expected, as in the eggs had to come in clean, we had to date them so we knew when they were in and out, and we had to show or have available to show that our hens were immunised once a year. (Food SME 8)

The manufacturer of coated food products noted that auditors from multi-national companies expected to find printed copies of required certificates and standards on-site; otherwise the business would fail its inspections. Having printed copies on hand therefore was important.

17.13 Key findings

17.13.1 Challenges facing Food SMEs

The main challenges identified by Food SMEs were:

- **The economic downturn**, which had affected Food SMEs and had constrained their growth. The restaurant and pub-restaurant chains had been particularly affected, especially those in regions of the country that had suffered most from the downturn. Some businesses were now taking steps to grow again.
- **Market-related challenges** included:
 - Remaining up to date with and reacting to rapidly-changing customer requirements, in chain restaurants and in brewing, as new products and types of product were requested, developed, introduced and subsequently

replaced. This could mean changing products every few months or annually, in the case of those supplying to branded fast-food outlets.

- Developing new markets, either geographical or among different types of retail outlet.
- **Supply chain management** could be challenging, particularly for breweries that had only a small number of suppliers for key ingredients, and whose production could quickly be halted if they were unable to pay suppliers (a potential knock-on effect when customers failed to pay breweries on time).
- **Competitive differentiation** was particularly challenging for breweries and was largely based upon the brand rather than the product.
- **Labour, skills and recruitment:** The restaurant informants reported difficulties in achieving a motivated workforce that could work on a casual basis; larger manufacturers noted challenges in staffing for short-term increases in demand.
- **Exporting:** Those companies that exported or wished to export food were required to have various accreditations in place – notably BRC, although individual customer company accreditations also applied.

17.13.2 Innovation

- There was relatively little technological innovation identified, although several SMEs were actively trying to create new products, and one of the breweries reported some innovative new brewing processes. Current Intellectual Property related mainly to trademarking of brands and of company and product names.

17.13.3 Key relationships

- Individual customer and supplier relationships were the most important relationships for Food SMEs.
- Most Food SMEs were members of trade associations, which offered a range of opportunities to network and to learn best practice within their particular sub-sectors.

17.13.4 Regulations

- Food safety and labelling were the main types of regulation that Food SMEs were required to meet; though rigorously enforced, there were no reported difficulties with meeting these regulations, although changes to labelling regulations appeared not to have been communicated very thoroughly to some of the smallest SMEs in the sample.
- There were, however, some differences of opinion about whether regulations were too onerous or not, but these differences did not 'map' onto the size of SMEs, or within particular sub-sectors.
- There were some concerns that major supermarkets could circumvent certain regulations, particularly around labelling.

17.13.5 Best practice

- In many cases, best practice stemmed directly from regulations, and the Food Standards Agency produced guidance packs – such as 'Safer Food, Better Business' for service environments – to help them meet food hygiene regulations. Trade associations such as SIBA also offered best practice guidance for SMEs.
- There was some development of company-level codes of practice among service providers, particularly the pub-restaurant and restaurant chains.
- There was little reported use of external consultants (apart from trade associations) to help drive business improvements, though one business had used Growth Accelerator.
- Where business improvements were sought, these tended to be 'tweaks', rather than significant overhauls.

17.13.6 Standards

Most of the SMEs reported that the external regulatory framework for their industry was the source of most of the audited practices and standards to which they adhered, and that BSI standards were not part of this.

Other than BRC and SALSA, which were required in order to operate in particular markets, externally-derived standards were not seen as necessary, and few of the SMEs saw value in adopting them.

- Those manufacturers operating in global food supply chains were required to use BRC standards; however, these were not relevant to the smaller producers selling predominantly in local or national markets.
- Often, the standards set by individual multi-national food manufacturers or chains (such as Pizza Hut) were individual to those companies and differed from BRC.
- The smallest SME manufacturers/producers were not using named standards other than SALSA, and generally saw little need to do so.
- There was very little reported use of British Standards, or of ISO.
- There was very little reported need for new standards, as SMEs were concerned with meeting day-to-day tasks and did not view standards as a route to business growth or as a way of addressing the challenges that they faced.
- The pub-restaurant and restaurant chain saw little need for standards of an ISO type, although there was some sense that customer service could, in certain respects, be more standardised.
- However, informants identified some potential areas where standards, or more effective regulation, could be useful:
 - Better policing of the BRC standards
 - Simplification and consistent application of labelling regulations
 - Simplified standards for Fair Trade accreditations, of which there were approximately 400 separate schemes

- A “wrapper” that could combine regulation and best practice in brewing into a single standard.

17.13.7 Developing and accessing standards

- SMEs widely reported that trade associations within their particular sub-sectors of the Food and Drink industry would be the most appropriate participants in new standards development.
- SMEs faced significant time barriers to individual participation. This was, however, a lesser barrier than was the perceived lack of benefit outlined above.
- PDF-based standards documents were acceptable for many SMEs in this sector, although some would still wish to print out copies.

17.14 Conclusions and recommendations

Food is likely to prove a challenging sector in which to develop new standards that target SMEs. Food safety standards are very well-established and embedded within the Food and Drink industry in the UK, and it is evident that many best practices have developed out of these.

There may also be challenges in persuading Food and Drink SMEs that BSI is the most appropriate vehicle through which to develop new standards.

To treat the Food and Drink sector as a single entity is, however, problematic, since the activities in which businesses are engaged are very different. In discussing standards, SMEs naturally focused upon the specific sub-sector to which they belonged – such as brewing or producing meat products – rather than on the sector as a whole, and tended to conclude that current regulatory frameworks, plus customer-derived requirements, were sufficient.

There were, however, some areas where additional standardisation was identified as potentially useful, though these were often expressed broadly – customer service in

restaurant environments, for example – and much further discussion would be required in order to clarify precisely what a standard should achieve.

Given the small size and local focus of many SMEs in the sector, trade bodies are likely to be central to any effort to engage with businesses for standards development. Perceptions about the representativeness of any consultation exercise will be important.

Major multi-national food companies will also need to be brought ‘on-board’, particularly as many are currently operating – and are imposing upon SMEs – their own standards outside of the remit of BRC.

18 Healthcare

18.1 Overview

This report details the findings from eight interviews with SMEs in the UK healthcare industry, addressing the following topics:

- The major challenges they faced
- Issues concerning innovation and Intellectual Property
- Key business relationships
- The regulatory environment in Healthcare and its impact on SMEs
- Best practice and business improvements that SMEs wished to implement
- Standards used in the industry and areas where new standards may be useful
- Ways in which SMEs may wish to become involved in standards development.

18.2 Healthcare industry: findings from Stage 1 report

The 92,965 companies within Healthcare account for 4.3% of the registered SMEs within the UK. Healthcare saw a 7.8% increase in the number of registered SMEs between 2011 and 2013. Only three of the 17 SIC classes represented in the sector have seen a fall in the number of SMEs over this period.

The healthcare sector in the UK consists of:

- **The social care economy:** The adult social care economy in the UK is valued at an estimated £43bn. More are employed in this specific sector than in either construction or food and drink. The social care sector is dominated by SMEs, located throughout the UK.

- **Medical technology:** This sub-sector contains over 3,000 companies, more than 80% of which are SMEs. Its combined annual turnover is £16bn and growing. There is strong clustering in the West Midlands, the East Midlands and the East of England. There is likely to be significant growth potential for the **global medical technology market** in the future because of an ageing world population, and a combination of growing populations and expanding health coverage in emerging markets (e.g. China; India; South America).
- **Pharmaceuticals:** Most SMEs operating in the UK pharmaceuticals industry are involved in small molecule drug development, followed by companies who are specialist suppliers and those involved in therapeutic proteins. While most UK regions host some pharmaceutical companies, the South East, East of England and London together have well-recognised clusters. Significant concentrations of activity can also be found in the North West, Yorkshire and the North East.
- **Medical biotechnology:** This grouping comprises 979 UK companies, employing close to 26,000 individuals, and generates a turnover of £3.7bn. 98% of all companies in this sub-sector are SMEs.

Barriers to successful innovation among medical technology SMEs include:

- The growing cost of R&D
- A regulatory environment designed to protect patients, leading to longer development compared to other sectors
- The conservative nature of patient care, limiting the adoption of new technologies
- The fragmented nature of procurement
- The pace of technology innovation outstripping the ability of users to adapt to the way healthcare is delivered.

Domestically, selling into the NHS is a major challenge faced by SMEs.

Government initiatives that aim to assist SMEs in the healthcare sector include:

- The Strategy for UK Life Sciences, which aspires for the UK to become the global hub for innovative life sciences in the future.

- NHS England’s overhaul of the 3millionlives programme (an initiative to develop telehealth and remote care services in England, and to deliver these to 3 million people by 2017) in order to secure greater input from SMEs.
- Changes to the objective of the **NHS Supply Chain**, which now aspires to improve SME engagement with the NHS.

18.3 Interviews

18.3.1 Organisations

BSI wished interviews to focus on the following types of ICT SME:

Table 10 Healthcare sub-sectors for interview focus

SIC Code	Title	Rationale	Type of standard
86210	General medical practice activities (GP & Medical group practice)	Benefit to wider society.	Process Behavioural/organisational potential
87300	Residential care activities for the elderly and disabled	Ageing population will present opportunities for standards.	Process Behavioural/organisational potential
21200	Manufacture of pharmaceutical preparations	% growth between 2011-13. Pharmaceuticals manufacturing is important UK industry – highest trade surplus of any industry in the UK.	Product Process Behavioural/organisational potential
21100	Manufacture of basic pharmaceutical products	Substantial % growth between 2011-13. Pharmaceuticals manufacturing is important UK industry – highest trade surplus of any industry in the UK.	Product Process Behavioural/organisational potential

Two SMEs were interviewed in each of the GP surgery and residential care activity sub-sectors. Four pharmaceuticals SMEs were also interviewed, although it proved difficult to

distinguish between those manufacturing preparations and those manufacturing basic products.

As the challenges faced by these different types of organisation were very different, the analysis of this chapter proceeds on a sub-sector by sub-sector basis, rather than drawing together challenges thematically as is the case in the other chapters.

SMEs interviewed were as follows:

Table 11 Healthcare SMEs interviewed

Healthcare SME	SIC Code Title	Employees	Job Roles
1	General medical practice activities (GPs & Medical group practice)	35	Practice Manager
2	General medical practice activities (GPs & Medical group practice)	14	Practice Manager
3	Residential care activities for the elderly and disabled.	c. 250	Managing Director
4	Residential care activities for the elderly and disabled.	c. 250	Directors
5	Manufacture of pharmaceutical preparations.	20	Quality Management
6	Manufacture of pharmaceutical preparations.	Not supplied	Quality and Regulatory Affairs Manager
7	Manufacture of basic pharmaceutical products.	70	ICM Facilities Manager
8	Manufacture of basic pharmaceutical products.	10	Head of Sales & Marketing

For a number of the informants, their job roles were more wide ranging than their specific title suggested. For example, the Managing Director of SME 3 was also responsible for the accounts in addition to having a more hands-on role in the day-to-day running of the

business. Further, the interviewees at SME 4 were both Directors of the business but were also Training & Development Managers.

18.4 SME activities

18.4.1 General medical practice

Both of the GP surgeries consulted were based in North-East England.

- **Healthcare SME 1** was a large surgery that was formed through the merger of three separate GP surgeries within an urban area. The current practice consisted of a partnership of GPs that had chosen to employ a specific practice manager. The practice reportedly had a £1.5m annual turnover.
- **Healthcare SME 2** was a partner-managed GP practice, established in June 2013. The surgery was also a training practice.

Neither GP surgery informant wished to be recorded. Notes were taken during these interviews, but it was not possible to use direct quotes in the report.

18.4.2 Residential care activities

The residential care providers were located in the South West and North West of England; both owned a number of care homes.

- **Healthcare SME 3** managed three nursing homes in South West England, with a fourth currently under construction. Historically, these were general nursing homes catering for elderly people with general nursing needs, as well as those who had been discharged from hospital and required long-term care. A significant proportion of residents were paying for care privately from the value of their own assets, although the company also provided some places for NHS and local authority-funded residents, including recently opened bespoke dementia care wings at two homes.
- **Healthcare SME 4** undertook various forms of residential care across its three sites, including residential dementia support and nursing, continuing healthcare,

and general nursing care. The SME received funding from both the local authority and the NHS. Because of its predominant focus on providing residential care for dementia patients, it had a much higher proportion of publicly funded residents than SME 3, with relatively few privately paying residents.

18.4.3 Manufacture of pharmaceutical preparations and products

- **Healthcare SME 5** was a contract manufacturing company that focused on the production of small organic chemicals and also the manufacture of fine and organic chemicals. Its clients tended to be small biotechnology companies, although it had also completed some work for major pharmaceuticals companies. The company was diversifying and was beginning to produce a small number of medical devices.
- **Healthcare SME 6** supplied a range of pharmaceutical products, from dermatological skin care aids to 'cancer products' and baby feeding powder. Although the SME undertook R&D work on site, it no longer manufactured any of its own products, choosing instead to outsource. The company also acquired 'old' pharmaceuticals from a multi-national that no longer wished to manufacture them and attempted to find new markets for these products. The firm usually sold products to wholesalers rather than directly to the NHS; its products were also retained by the government as stockpiles for use in vaccinations in the event of a UK-wide emergency.
- **Healthcare SME 7** manufactured equipment and reagents that were used in blood testing, for both the pharmaceuticals and medical devices sub-sectors; much of its work, however, was undertaken for multi-national pharmaceuticals companies. The company also produced other medical devices (IVDs) and instruments used in operating theatres and Accident & Emergency units.
- **Healthcare SME 8** manufactured ophthalmic pharmaceuticals, ranging from prescription products to pharmaceuticals. These products were supplied to pharmacies through wholesalers, and, unlike SME 7, this SME was not undertaking any contract manufacturing for multi-national pharmaceutical companies.

18.5 Challenges

While there were some similarities between SMEs in the challenges that they faced, those faced by the SMEs undertaking general medical practice and residential care activities were, perhaps not surprisingly, generally markedly different to those faced by the SMEs that manufactured pharmaceutical preparations and products.

18.5.1 Challenges facing GP surgeries

Some of the challenges faced by the GP surgeries concerned changes to the structure of the NHS and its relationship with individual GP practices. Others concerned operational challenges and an increasing demand both for and on GPs in general.

- **Disbanding of Primary Care Trusts:** Primary Care Trusts (PCTs), which had been responsible for commissioning healthcare services, were abolished on 31st March 2013, with commissioning power being handed over to GPs. In practice, PCTs had been replaced by Clinical Commissioning Groups (CCGs), which represented geographical clusters of GPs. The intention behind CCGs was to avoid individual GPs becoming overloaded by the need to commission healthcare for a multitude of different patients.

According to one GP surgery, CCGs were playing a role that was similar to the former PCTs. However, informants reported that in the case of CCGs, the distinction between a healthcare commissioner and a healthcare provider had become blurred, which had led to some “unregulated empire-building”. The CCGs were still emerging organisations and their final form and scope of responsibilities was therefore difficult to predict.

Dealing directly with a multitude of service providers was also very challenging for practices, where previously they would simply charge the PCT for the services provided. Different NHS organisations often had different timescales for payment and did not always itemise bills; this meant that it was difficult for GP surgeries to accurately audit costs, and that it could be difficult to know who to approach in supplier organisations regarding any cost queries.

- **Payment was further complicated by the** Quality Outcomes Framework⁴⁴, which had in 2004 introduced a range of points-based payments for different treatments. This was a complicated system; for example:

- If a practice had a patient list of 6,000, it would receive £120 per point
- If a practice had a patient list of 3,000, it would receive £60 per point.

In many cases, points were combined with the surgery size to determine payments, and the QOF also took social deprivation into account.

All of these payment schemes were constantly evolving, meaning that it could be difficult for GP surgeries to determine income. For example, payments for patients with hyperthyroid complaints were now awarded on the basis of telephone/SMS consultations rather than direct appointments.

- **Growing demand for GP services:** The government had attempted to increase the opening hours for GP practices, which had created a public perception that GPs could be seen in the evening and at weekends throughout the UK. Surgeries were, however, dependent on winning government funding for longer opening hours. According to one informant, those surgeries that had not won funding could not afford to remain open beyond the conventional hours.

Similarly, the government had recently promised older patients a named GP that would be dedicated to their needs. However, this had created the impression that named GPs were available to make outbound calls to elderly residents whenever required, and this was not realistic for most GP surgeries to manage.

- Surgeries were also increasingly expected to take on responsibilities that had previously been the preserve of PCTs or other regional or national bodies within the NHS:

⁴⁴ <http://www.hscic.gov.uk/qof>.

- In 2013, GP surgeries (which did not have significant marketing or communications budgets) had been made responsible for publicising the annual flu vaccine drive. This had previously been the responsibility of the Department of Health.
- In line with the Darzi review⁴⁵, more diagnostic equipment and procedures were being placed in GP surgeries, which imposed procurement and management challenges.
- For SME 1 these were leased or acquired through Clinical Commissioning Groups funding, and included ECG and ABPM machines, traditionally found in hospitals.
- SME 2 reported that not every GP surgery could introduce large-scale diagnostic machinery into surgeries as there were space restrictions (this surgery had no spare rooms or spaces where diagnostic machinery could easily be installed).
 - This surgery was therefore running limited clinics in some rooms with diagnostic equipment.
 - Some staff were also sharing offices to make room for new equipment.
- **Other challenges** reported by GP surgeries were as follows:
 - Both GP surgeries had a strong need for a substantial administrative team, as patient's records were held by GPs rather than hospitals, resulting in a considerable volume of paperwork. This meant that although the costs that GP surgeries had to meet were increasing in line with growing patient and government expectations, it was not possible to reduce numbers of office/administrative staff in order to make cost savings. One surgery reported that patient appointment numbers had increased by 15% in the last two years.
 - Patient confusion about the most appropriate NHS facility to use to report health concerns (e.g. whether to visit walk-in centres, hospitals

⁴⁵ <http://www.hospitaldr.co.uk/guidance/darzi-review-an-at-a-glance-guide>.

or GPs). In practice, informants reported an increase in numbers using GPs as a 'default' option for complaints that were more appropriately dealt with elsewhere.

- An increasing public perception of a right to be 'spoon-fed' healthcare, and to attend GP surgeries unannounced with an expectation of an immediate appointment – reportedly driven by ten years of a 'patient choice' agenda within government. There were, for example, reports of increasing cases of children being brought to GP surgeries with headaches and other conditions that could be managed with over-the-counter products available on a non-prescription basis from pharmacies.
- The increase in the number of non-English speaking patients using GP surgeries. In one case, this had led to the employment of an interpreter, though this had caused some concern about the accuracy of interpretation, and therefore potential misdiagnosis.
- Finally, GP surgeries tended to rely on a high number of 'attached staff', such as midwives, district nurses, and mental health workers who were not directly employed by surgeries, but who were often based within surgery environments for at least some of the time. It was extremely important for GP surgeries to maintain a very strong level of communication between surgery and attached staff in order to ensure that consistent records of patients' needs were kept fully up to date.

One informant also thought that there was a need for GP surgeries within particular local authority areas to work collaboratively to manage patient expectations more effectively than could be achieved through isolated work by individual surgeries.

18.5.2 Challenges facing residential care providers

Residential care providers faced challenges that were similar in some respects to those facing GP surgeries, particularly concerning the growing demand for services at a time when NHS funding for residential care was static. There were, however, some additional challenges particular to residential care.

- **Funding** was the most significant challenge faced. This manifested itself in a lack of funding generally, as well as in disparities between the amount of funding that patients in need of nursing care received from local authorities and the NHS.⁴⁶ The NHS, in particular, provided a set level of funding for residential care for the terminally ill that was regarded by both informants as being inadequate, and which could only be met by charging other, non-funded residents a higher fee for residential care:

- Care homes had to seek funding from a number of different sources, and this could make securing payment difficult:
 - For SME 4 in particular, different local authorities paid for different aspects of the care provision, and this varied depending on geographical area. This scenario had financial implications for care homes that provided publicly-funded services in different local authority areas:

In [one local authority area] we're paid the nursing element with our total fee, whereas in [another] we have to apply to the CCG to get the nursing element and the local authority will only give the local authority part... they all have different ways that [they] want it collected and you have to have different ways of operating in each local authority, even though they're all next to each other.
(Healthcare SME 4)

The level of payment from local authorities could also vary, especially as councils were under increasing financial pressure due to the current climate of public sector austerity. Whereas one local authority reportedly paid a premium to care homes that achieved a particular standard (devised and monitored by the council in question, rather than a national standard), others did not; in one case, the level of

⁴⁶ There are three categories of people in care. Those in the final weeks of life with complex nursing needs were (once discharged from hospital) funded by the NHS via Continuing Healthcare Funding, which paid for their entire nursing home fee. Those not in the final weeks of life, but with capital assets of less than £24,000, were funded to a significant extent by local authorities, although residents were also expected to contribute a portion of this via their pension; one informant reported that local authorities paid around two-thirds or three-quarters of costs in these cases. The third category of residents, who had capital assets over £24,000, were expected to self-fund their care through the sale of assets until these fell below the £24,000 level.

payment received from a local authority had not changed for several years despite the costs associated with providing care increasing over the same period.

- **Staffing** was another major challenge that informants regarded as seriously as the funding environment. The shortage of qualified nurses was referenced by SME 4 as a significant challenge, a result of care-home work being perceived by nurses as less preferable to work in other environments. In particular, the NHS offered nurses much higher salaries than residential care homes could, which were usually run on very tight profit margins and consequently offered the minimum wage to most staff.
 - Both informants had had to use some agency staff during periods of short staffing, but this was regarded as an unsatisfactory and expensive solution.
 - SME 4 had attempted to address staff shortages by employing ex-NHS nurses, though these staff were often close to retirement age and were not usually a long-term option. The company had also sought to establish stronger ties with local universities in order to offer places to nursing students during their course, with a hope that some of these would become attracted to a career in residential care.
 - Both informants reported that staffing costs were increasing with the increase in the minimum wage and also the automatic pension enrolment system. Both companies now had to contribute 1% of their employees' earnings to a workplace pension scheme set up by the government.⁴⁷ This had already increased payroll costs for both businesses and was expected to have a greater impact after the increase to 3% in October 2018. Both informants expected that these costs would be passed directly onto residents.
 - In addition to changes in legislation and requirements for payments and pensions, SME 4 reported that regulatory requirements had a significant impact on company finances:

⁴⁷ <http://www.bbc.co.uk/news/business-19589265>.

...you've got NICE [National Institute for Health and Care Excellence⁴⁸] working on something, you've got the local authority, you've got CQC [Care Quality Commission⁴⁹], you've got the NHS, you've got health and safety vetting, they're all working in tandem... but no one wants to resource the provider to actually meet all of these needs. (Healthcare SME 4)

- Unsurprisingly, both informants reported a need to deliver a very high quality of care, although both were confident that their care homes provided this. In particular, regular inspections by the CQC and other agencies drove both informants to aspire to a very high standard (see section 4.8.2).

18.5.3 Challenges facing pharmaceutical manufacturers

The manufacturers of pharmaceutical preparations and products encountered challenges that were very different from the GP surgeries and care providers:

- The price of raw materials (particularly for SME 7, which was manufacturing a combination of pharmaceuticals and medical devices) and long product chains greatly affected costs.

Some of our raw materials are actually quite expensive; that goes into the reagents. There [are] a few where that is actually the biggest cost. (Healthcare SME 7)

You've got everybody else in the chain – your wholesaler, your retailers – and by the time it comes back to you the [profit] margins in these [ophthalmic] products are not great. (Healthcare SME 8)

- Research and Development was also a major cost due to the large set-up cost for clinical trials, which were expensive, time consuming, and subject to very tight regulation by the MHRA (Medicines and Healthcare Products Regulatory Agency).

⁴⁸ <https://www.nice.org.uk/>.

⁴⁹ <http://www.cqc.org.uk/>.

- The cost of employing highly-skilled staff was also challenging, although one SME tried to balance this by taking on apprentices and students for placements.
- For SME 6, which had chosen to outsource much of its drug manufacturing, fluctuations in price and other factors affecting suppliers had a direct impact.

Factories have fires; things happen which are outside your control and suddenly you are faced with a stock issue. (Healthcare SME 6)

This SME had supplied a cancer drug to the UK that was manufactured in Canada; however, the manufacturing plant closed down which meant that this drug could no longer be supplied. The SME could not simply switch suppliers as any product not already being sold in the UK was required to undergo extensive trialling in order to be approved. This episode had impacted on the company's reputation, and communication with clients at difficult moments such as these was a key challenge for this company:

Informants had mixed views about the **current economic climate**.

- One SME had been hit hard by the recession and had had to reduce its staff count, although a significant element of this company's market was in biotechnology. Two others reported very strong current growth (in one case, sales had grown 30% in one year), and acknowledged that there was a need to manage this.
- The level of **competition** within the industry and market also presented significant challenges. This was especially so for the manufacturer of ophthalmic products (SME 8), which reported considerable competition in this particular market and the presence of a number of much larger companies with significantly higher marketing budgets.

This SME thought that growth would require a higher number of sales staff communicating directly with ophthalmologists in order to gain market traction, but the company currently lacked the resource to invest in this type of activity. It had previously outsourced to freelance sales professionals and other professional sales companies, but aspired to bring this activity in-house in the future.

- Three SMEs were actively exporting, or had aspirations to do so in the near future. However, these informants did not report any significant challenges with regard to exporting, as (much like Aerospace) the industry was heavily globalised and exporting was considered the norm, as long as appropriate regulatory accreditations were in place. However, one company (SME 7) was supplying products to the US market through a third party as it did not currently have full Federal Drugs Agency (FDA) registration.

Regulation and client expectations were also cited as challenging, given that production of pharmaceuticals was heavily regulated, and subject to rigorous Quality Management requirements on the part of major multi-national clients.

- Regulations were constantly updated (particularly regarding Good Manufacturing Practice) and were becoming tighter over time; this had had a significant impact on the smallest manufacturers (see section 4.8).
- For those who were shifting markets (particularly SME 7, which was completing an increasing volume of work for large multi-national pharmaceuticals companies), the regulatory and Quality Management standards required were much more complex; this was similar to views expressed by SMEs that were making a comparable shift in other sectors.

It is a big leap for the company in terms of regulatory requirements, going from the basic small IVD manufacturer to looking to supply places like the States and also to become a contract manufacturer for some bigger companies. There is a different requirement from their perspective in the level of control and the level of procedural control and abiding by standards. (Healthcare SME 7)

For SME 8, which marketed products directly to ophthalmologists, changes to the commissioning of healthcare in the NHS had a significant impact as there was also a need to establish relationships with CCGs.

18.6 Innovation

18.6.1 Manufacture of pharmaceutical preparations and products

As would be expected, product innovation was much more important to the SMEs that manufactured pharmaceuticals than to the GP surgeries or residential care providers.

- Innovation was important in order to compete in what was widely acknowledged to be a rapidly evolving market; SMEs, in particular, did not have substantial marketing budgets and therefore product innovation was the only way to build market share for those (such as SME 8) who were supplying directly into pharmacies.
- There could, however, be difficulties in bringing innovative products to market, especially due to the high cost of clinical trials. Three pharmaceutical SMEs also noted the cost of R&D as very high, but it was unavoidable if they were seeking to be innovative.

Three of the pharmaceutical manufacturers owned IP – particularly relating to the formulae for pharmaceutical products – which was closely guarded and highly confidential.⁵⁰

Intellectual Property was not a relevant concern for GP surgeries or residential care home providers.

18.6.2 General medical practice and residential care activities

- Whilst there was no direct technological innovation within GP surgery environments, there were some schemes that enabled innovation in how patients were diagnosed or treated:
 - The use of telehealth or remote reminder systems for patients to manage their own care at home, and reduce the number of appointments made to GP surgeries.

⁵⁰ Because of the confidential nature of pharmaceutical formulae, informants were unwilling to discuss in detail precisely what IP they owned.

- SME 2 was investigating how it could wider the use of telephone consultations for certain appointments in order to deal with increasing patient numbers.
- However, informants noted that not all GP surgeries were prepared to use telehealth systems, as they were not explicitly required by the NHS, or in any way standardised. Instead, one informant reported that many GP surgeries would simply follow NHS guidelines for patient care “to the letter”.
- Residential care providers had limited scope to innovate, although one noted the need to ensure that when dealing with dementia, residential environments could be designed to help mitigate some of the worst effects of the illness:

We do take on board ideas, for example, surrounding bright colours and helping stimulate people, providing lots of activity... (Healthcare SME 3)

This informant had also introduced a bespoke computer system for care planning and documenting the care needs of individual patients, rather than this being based on handwritten notes.

18.7 Key relationships

18.7.1 GP surgeries

Both informants discussed belonging to a regional network of practice managers, which had established online and offline communities to share knowledge of best practice in light of the structural changes within the NHS and the growing responsibilities that surgeries had. This need had arisen from a lack of government-issued guidelines for individual GP surgeries on how to manage the commissioning of healthcare.

Other key relationships that GP surgeries had were with:

- CCGs
- ‘Attached’ staff within the surgery environment, but who were employed by other organisations

- Local authorities
- Service providers.

18.7.2 Residential care providers

The most important relationships among residential care providers were with residents and their families.

- This was especially the case for SME 3, in which self-funding groups made up around 70% of residents, and whose families were especially keen to ensure that the standards of care received were appropriate.

They're obviously very concerned about whether their relative is looked after properly, and so we do develop very close relationships with families.
(Healthcare SME 3)

- Good relationships with the local authority, NHS and CCG were also key.

Whilst local authorities were not permitted to directly recommend specific care homes, one informant reported that, in practice, subtle forms of encouragement toward particular providers did sometimes happen.

Both residential care providers also belonged to sector associations that provided advice and information about best practice. These were:

- Care Focus South West (an informal organisation managed independently by a number of South West care homes).
- National Care Association (a national organisation that helped care homes to keep up with changes to legislation and which lobbied government on behalf of providers; membership of NCA was reported to be £9,000 per annum, and only one of the two providers was a member).

18.7.3 Pharmaceuticals

- **Close client relationships** were extremely important for the pharmaceuticals SMEs, and it was particularly important in this sector to keep clients fully up-to-date with the progress of product manufacture.

We prefer to hold their hands and explain to them what is going on at each stage and the reasons for delays and things like that so they are fully aware of what is going on. (Healthcare SME 5)

This SME ensured that all documentation generated by the manufacturing process was copied, stored and sent to the client in order to ensure full transparency.

- Two SMEs also had important collaborations with larger companies and universities to help develop new products and, in the case of universities, to commercialise R&D.

One SME reported, however, that there were sometimes difficulties managing what could amount to 'wish-lists' from clients, and that it was important to focus on developing products that would sell.

The pharmaceutical SMEs were not actively seeking a great deal of support to develop their businesses, although two reported some use of external help:

- SME 5 used an external consultant to help develop the new medical devices side of the business. This SME thought that it was too small and niche to join any industry associations.
- SME 7 had some involvement with general business associations in the regional area (not specific to pharmaceuticals) to help manage the company's growth, and to help the Managing Director move from an active project management role to an overall management role in which there would be considerable delegation of responsibilities.

18.8 Regulations

Regulations in Healthcare were varied, and there was a considerable difference between those that applied to the general medical practice and residential care activities sub-sectors, and those that applied to pharmaceutical manufacturing.

18.8.1 General medical practices

- GP surgeries were required to register with the Care Quality Commission (CQC), which undertook inspections every two years. These inspections currently focused on outcomes and on measurable factors of the GP environment, rather than directly on clinical outcomes. For example:
 - Whether patients were given access to a safe environment; this had led surgeries towards using such standards as PAT testing for all electronic devices within practice environments.
 - The quality of the management and leadership within GP surgeries.
- In order to gather feedback from service users, GP surgeries were required to run Patient Reference Groups – groups of patients who could offer critical feedback on their experiences of using individual GP surgeries – with the findings from these now relayed to CCGs as well.
- Healthwatch – an independent consumer champion created by the CQC – organised ‘mystery shopping’ in order to evaluate GP surgery environments ‘on spec’.

There were therefore a number of ways in which regulation impacted upon the management of GP surgeries, and one informant thought that any further administrative burdens of this nature would be very difficult to manage due to a lack of available resource.

GPs also had rigorous internal self-regulation procedures, with each General Practitioner subject to peer review by other GPs. If a GP was subjected to a patient complaint then this would automatically be reviewed by other GPs outside of the framework of the peer review process.

18.8.2 Residential care providers

Residential care providers were inspected on an annual basis (and, if necessary, on an 'on spec' basis too) by the Care Quality Commission (CQC) under the auspices of the Health and Social Care Act 2008.⁵¹

- Whilst the legislation in the Health and Social Care Act had been consistent for some years, the way in which it was enforced (i.e. through CQC inspections) had changed several times recently:
 - Currently, the CQC was a binary Pass/Fail system focused on care outcomes rather than on processes and procedures implemented within care home environments. This had reduced the level of paperwork that care homes had to provide compared with the previous practice of rating care homes on a four-point scale (Outstanding; Good; Requires improvement; Inadequate). This previous system had required care homes to provide extensive documentation of care management plans and Quality Assurance documents, which was now no longer required to the same extent; this had reportedly freed up management time within care homes.
 - Informants were, however, concerned that this system was about to change again in light of a small number of well-publicised care home failings in the national press, and revert to a process similar to the former system. SME 4 was about to be impacted by this change, as its care homes were in the North West where the new system was about to be trialled. The informant reported that there had been little consultation with care home providers, and that the 'paperwork-heavy' system – which was difficult for small care home companies to meet – seemed to have been designed with much larger care home providers in mind.
 - The CQC had, however, recently started providing more guidance about how to meet its standards, and this had been useful for the SMEs.

⁵¹ <http://www.legislation.gov.uk/ukpga/2012/7/introduction/enacted>.

- In addition to the CQC, residential care homes were also inspected and monitored separately by both local authorities and the NHS in cases where these organisations were funding or part-funding residential care. Inconsistent inspection requirements between these different organisations was a major issue among SMEs; for example, a local authority could give a care home a much higher rating than the CQC and vice versa, with little apparent communication between the two bodies.

Furthermore, different local authorities had different inspection regimes and practices. Where they were operating across different local authorities (as was the case with SME 4), this created difficulties for providers looking to standardise their own preparations across the company. This informant was also critical of the value of inspections, because of their 'snap-shot' nature.

- In the case of dementia care (where the widest range of agencies would be involved in different inspections), SME 4 suggested that a useful way of streamlining auditing and inspection would simply be for the NICE guidelines concerning dementia care to be written into contracts that providers signed with the NHS and/or local authorities. However, this was not currently the case, which meant that for dementia care in particular, the volume of paperwork required to meet the needs of inspectors was, they felt, excessive and unhelpful.
 - The lack of standard guidance for cases of 'Do Not Resuscitate' (DNR) orders was also a significant issue for the SME with a high volume of dementia patients. In this case, the informant reported that there were cases of ambulance crews attempting to resuscitate DNR patients because the residential care provider had used a local authority form that the Ambulance Trust refused to recognise as valid.
- Some attempts to make NHS contracts with care providers more consistent were reported; for example, it was cited that in the North West, all 22 CCGs had signed up to a single contract for the provision of NHS-funded care. This was welcomed, as it facilitated the use of a single set of contract terms for the care of terminally ill patients, though this still accounted for only a small proportion of care and there was little sign that local authorities within the region were seeking to follow suit.

- The informant that provided dementia care (SME 4) suggested that a change to the definition of the **Deprivation of Liberty Safeguards** was a significant challenge for care homes. This change was intended to ensure that people with severe dementia were not allowed to leave the care home environment and could be forcibly returned if necessary; however, this applied only to particular cases and was supported by safeguards to ensure that the process was managed in a legal and standard manner.
 - A 2014 high court ruling had declared, however, that anyone living in a residential care home could potentially have had their liberty deprived illegally, simply because care home bedrooms often had combination locks. This, it was reported, posed considerable challenges for residential care SMEs because each individual alleged deprivation of liberty had to be reviewed through a lengthy procedure in the courts. SMEs were ill-equipped to deal with a high volume of these types of case.
 - This ruling, it was reported, was also a major challenge for local authorities that were equally ill-equipped to manage potentially thousands of individual court cases; SME 4 offered residential care in three local authorities, and none had thus far been able to provide accurate guidance with regard to the new ruling and its potential implications.

More widely, there was some concern that whenever failings in individual care homes were exposed in the national media, there was often a clamour to over-react by radically changing inspection and auditing procedures. Consequently, both SMEs were having to adjust to changes in inspection regimes, and neither was confident that any new inspection or Quality Management system would last for a significant period of time.

18.8.3 Manufacture of pharmaceutical preparations and products

Manufacturers of pharmaceutical preparations were regulated by a number of different organisations, including:

- UK:
 - The Medicines and Healthcare Products Regulatory Agency (MHRA) – this organisation audited pharmaceutical manufacturers
 - The Association of British Healthcare Industries (ABHI) – ABHI regulated medical devices, which was relevant for two of the pharmaceutical SMEs
 - The Association of the British Pharmaceutical Industry (ABPI).

- EU:
 - The European Medicines Agency (EMA)
 - EudraLex (managed by the European Commission – one SME pinpointed Volume 4, Part 2, Section 19 as critical to the regulation of clinical trials in the EU)
 - The European Food Safety Authority (EFSA) – this was relevant only in the case of SME 8, which was manufacturing a small number of food supplements alongside its larger ophthalmic pharmaceutical range.

- USA:
 - The Federal Drugs Association (FDA) – FDA certification was required in order to export any pharmaceuticals to the US.

These industry regulations were based on three fundamental codes of practice that applied to all manufacturers. These were:

- Good Manufacturing Practices
- Good Distribution Practices
- Good Pharmacovigilance Practices.

The various regulatory frameworks (MHRA; EMA; FDA) were, however, not harmonious and there were some differences between territories:

- Two informants reported that the International Conference on Harmonisation of Technical Requirements for Registration of Pharmaceuticals for Human Use (ICH) was attempting to bring together the regulatory agencies of Europe, Japan and the US in order to better harmonise pharmaceutical regulation. However, this

harmonisation process was far from complete, and SMEs were still following different regulatory frameworks at different times.⁵²

Eudralex is not international, it is European. There is some overlap with the ICH. ICH haven't gone as far in producing as many supporting regulations. They have focused more on risk assessment and test method validations, and also the stability studies... If it's those areas I tend to focus [on] the ICH, and if it's anything else it's Eudralex. (Healthcare SME 5)

- SMEs also had to maintain Drug Safety Databases in line with MHRA regulations:

[We] maintain a database of all adverse events that are related to our products... if we hear that one of our products has caused adverse reactions in somebody we have to record and investigate to a certain degree, then report back to the authorities: the MHRA. (Healthcare SME 6)

There was also a connected set of regulations – Annexe 11 – to do with computer systems within a pharmaceutical setting. This applied to all forms of computerised systems used as part of GMP-regulated activities, and was compared directly to an ISO standard that manufacturers and suppliers were required to meet by clients.⁵³

Some of these regulations posed challenges to SMEs:

- Whilst submitting to voluntary MHRA audits was understood to be best practice in pharmaceuticals, SME 5 reported that client audits were more stringent than audits from the MHRA:

It just seems to be standards in other companies that I'm seeing that are really shocking... you expect that if a client has an MHRA certificate [they] would have a certain level of quality, and when you go and audit the site you're quite disappointed. (Healthcare SME 5)

⁵² <http://www.ich.org/>.

⁵³ http://ec.europa.eu/health/files/eudralex/vol-4/annex11_01-2011_en.pdf.

- One informant reported that the FDA regulations were stricter than those in the UK and EU, and required every manufacturing procedure to be recorded on paper, which would create a higher administrative burden for the company concerned:

The level of detail included in them, and included in the batch records for when we manufacture, is greater than we would currently have.
(Healthcare SME 7)

- SME 5 reported a lack of information about new risk management strategies such as the FMEA.⁵⁴
- The reported tightening of regulations presented some challenges with regard to resourcing Quality Assurance procedures:

It's tightening up things and having enough procedures in place and enough systems in place that you can meet the regulations without tying the company down [so] hard that they can't actually make a profit.
(Healthcare SME 7)

- There could be a disparity between the terminologies used by different regulatory agencies, especially at the international level, leading to some confusion about what exactly was being audited:
 - The MHRA audited 'non-conformities', whereas the FDA looked for 'deviations', which were defined differently.
 - There were also inconsistent definitions for CAPA (Corrective and Preventative Actions) in different regulations, including in GMP and in several ISO standards:

The old way of looking at preventative action was always that you did an investigation and it was something that stopped something wrong from happening again. The new way of looking at it is that it's

⁵⁴ The FMEA (Failure Mode and Effects Analysis) is an analytical methodology used to ensure that potential problems have been considered and addressed throughout the product and process development cycle. <http://quality-one.com/fmea/>.

something that stops it from happening in the first place.
(Healthcare SME 7)

SME 5 also reported some confusion regarding the terminology of CAPA in relation to the relevant ISO standard (see section 4.10.3).

One informant also noted that those selling pharmaceuticals – such as by visiting hospitals to promote particular drugs – were required to pass the ABPI code of practice to do so; this company therefore recruited only staff who had already passed the code prior to joining the company, as it could not afford to pay for training.

18.9 Best practice

18.9.1 General medical practice

According to one of the general medical practice providers (SME 1), codes of best practice were of less relevance to GP surgeries than were the terms and conditions in GPs' own individual contracts with the NHS.

However, both surgeries reported a need for additional advice about best practice, as the sources used at present were local:

- Practice managers in the geographical area in question regularly met to share their knowledge and experience. This was not a formal NHS requirement, and was undertaken out of a perceived need among practice managers across the area for sharing of best practice. There had been, through this network, some discussion concerning collective benchmarking between participating GP surgeries, although this was at an early stage of development and its final form was unclear.
- These networks organised both face-to-face meetings and email contact between practice managers to disseminate best practice and business advice. There was, therefore, an emerging series of behaviours that constituted best practice within particular CCG areas.

- It was reported, however, that it was very difficult to adopt these codes of best practice in other CCG areas – even neighbouring ones – as specific service provision varied from area to area.
- This informant also reported that it could be difficult for a practice manager who was new to an area to learn best practice, as it took time to learn how a localised NHS network “worked”.
- Because of the need for GP surgeries to communicate with other NHS agencies, such as hospitals, GP clinics often shared the same computer system, which facilitated secure electronic communication and document sharing between surgeries. This was reported as another channel by which best practice could be shared.

Other sources of best practice for GP surgeries included:

- BMA (British Medical Association)
- RCGP (Royal College of General Practitioners)
- NICE guidelines
- CQC.

The sources above consisted of written guidelines, rather than discussion forums, and were of less interest to GP surgeries than their local best practice learning networks. Some of these sources reportedly clashed with one another, and BMA advice could be much stricter than that supplied by NICE; it was therefore difficult to determine which source to use for best practice.

- **First Practice Management** was another potential source of advice, and had a library of protocols and procedures that could be adapted for use by individual clinics. Neither GP informant consulted for this research was actively using this tool, however.
- Practice managers could also receive **AMSPAR** (Association of Medical Secretaries, Practice Managers, Administrators and Receptionists) training.⁵⁵

⁵⁵ <http://www.amspar.com/>.

18.9.2 Residential care

Residential care providers discussed the regulatory environment of care to a much greater extent than best practice; for them, meeting the needs of regulators (particularly for SME 4, which was providing a high proportion of publicly funded care) took precedence in discussions about regulation, best practice and standards.

There were, however, some basic best practices that were regarded as common sense:

A lot of it is common sense. You know, beds to be made, things to be cleaned, hands to be washed; there [are] a variety of things which [are] just obvious.
(Healthcare SME 4)

There were a number of different sources of guidance and information pertaining to care homes.

- The care sector was very well-connected, with regular conferences and publications relating to best practice, but there were challenges with regard to managers having time to access these. In particular, managers often worked anti-social hours and were on call on a 24-hour basis, meaning that it could be impractical for them to attend conferences.
- SME 3 found that nursing publications (such as from the Nursery and Midwifery Council) were useful.
- NICE and the CQC had also begun to publish best practice guidelines for residential care activities. It was reported that previously the CQC had acted in a regulatory capacity alone, and had not actively provided guidance documents for care home management. According to one care provider (SME 4), NICE had recently piloted 'best practice' care plans targeted specifically at caring for those suffering from dementia.
- Informal associations, such as Care Focus South West, also functioned as a source of support and information for care home providers.
- SME 4 was a member of a number of groups in the area that provided advice and influenced local policy about care homes.

- The National Care Association provided HR advice and updates on changes in the legislation.

18.9.3 Manufacture of pharmaceuticals

Best practice in pharmaceutical manufacturing was derived largely from Quality Management guidelines within regulatory frameworks, and from Good Manufacturing Practice principles. None of the SMEs consulted had developed any independent best practice guidelines because clients expected manufacturers to possess relevant regulatory and Quality Management certificates.

- ICH guidelines, in particular, were an important source for best practice, and two informants commented that larger pharmaceutical companies required SME providers to adhere to these instead of ISO. Additionally, other countries such as New Zealand and Canada were moving towards using ICH guidelines.
- One informant, whose company produced a range of medical devices as well as pharmaceuticals, reported that ISO 13485: 2003 – pertaining to medical devices, quality management systems and requirements for regulatory purposes⁵⁶ – was the ‘driving force’ behind its best practice, although these ISO guidelines were becoming very similar to ICH:

Having absorbed the contents of ICH guidelines over the years, you can see it’s almost word-for-word... certain sections of it [ISO 13485: 2003] just come straight from there. (Healthcare SME 7)

- Eudralex had a regularly updated news page on European Commission Public Health legislation, specifically for pharmaceuticals.

[On] the manufacturing and testing side, we gain our knowledge from reading the guidelines or the supporting guidelines... We read forums as well... Talking to people, so we have regular client audits, we have our MHRA audits. (Healthcare SME 5)

⁵⁶ http://www.iso.org/iso/catalogue_detail?csnumber=36786.

- SME 6 managed its computer systems through an ITIL (IT Infrastructure Library) qualification, which was intended to ensure a high standard of practice for maintaining IT systems.

18.10 Standards

18.10.1 General medical practice activities

GP informants reported that much of the implementation of government policy within the NHS was largely left to individual surgeries, and that there was very little national standardisation of services. Hence, GP surgeries typically developed many protocols and procedures in house, although both informants thought it likely that these would be very similar in other GP surgeries due to the information-sharing practices discussed in section 4.9.

One informant suggested that standards in the GP surgery environment could be subdivided into three categories:

- **Professional standards** were basic procedures concerning the interaction between patients and surgery staff, and staff conduct within the surgery environment – covering, for example, standard letterheads, policies with regard to answering telephones and serving patients in waiting areas, and mobile phone usage in the building. These were developed internally as Standard Operating Procedures (SOPs).
- **Clinical standards** were the more important standards linked with treating patients, such as the correct vaccine schedules for babies and young children, and the safe storage of vaccine material. These were reportedly very well established, and monitored by the CQC.
- **Other standards**, such as to do with referrals. Clinical service provision was increasingly standardised by Clinical Commissioning Groups, although there was very little national standardisation. One informant commented that in their CCG area, GPs were able to commission two doses of IVF treatment, whereas in the neighbouring CCG area patients were entitled to three doses. These decisions were made locally, and were driven by cost and spending priorities.

Though there were moves among three CCGs in the region concerned to form a wider alliance, it was unclear if this would entail further standardisation of services at the regional level, or how any such alliance would be structured with regard to the implementation of wider policies.

- The Royal College of General Practitioners (RCGP) had some specific standards that could be adopted by GP surgeries.

There was no reported use of any ISO or British Standard in either GP surgery, and neither informant thought it likely that these would be relevant for surgery environments, believing this type of standard to be more relevant to manufacturing. One informant commented that ISO customer service standards would also be difficult to implement within a GP surgery context, as GP consultations – unlike the experience of buying goods in a supermarket – were extremely diverse in nature and would be difficult to standardise.

- In addition, because there was already a significant number of agencies with a regulatory or best practice role (e.g. NICE, BMA, RCGP, CQC, CCG), GP surgeries could be overloaded if another body tried to “muscle in” and produce even more standards.

18.10.2 Residential care providers

Both residential care providers commented that as their sector was already heavily regulated, there was little purpose to standards in excess of regulatory or contractual requirements. Both had significant resource limitations, and reported that managing the adherence to further standards would be very resource-consuming.

- There were some reported difficulties with resourcing the internal development of SOPs; SME 3 had purchased a care home policies and procedures pack from Mulberry House (an external training provider), although it would have preferred to develop its own in-house.
- SME 4, which faced the difficulty of different funding providers requiring different contractual terms and conditions for residential care, simply used the most

demanding of these contracts as a basis for the development of SOPs, on the basis that these would most likely ensure that it met the terms of the others.

It was reported that in Scotland there had, until recently, been a single contractual arrangement for the provision of publicly-funded residential care, though this had since broken down. Such an arrangement was preferable for SME 4 as it simplified the requirements they had to meet.

- NICE had reportedly set up a series of non-compulsory Quality Standards for Social Care through the Commissioning for Quality and Innovation (CQUIN) framework. Neither of the providers consulted was adhering to these standards, as it was thought to be too expensive to do so.
- There was little reported need for standards from either BSI or ISO. Both informants felt that, as service providers rather than manufacturers, and having to deal with extremely variable patient needs on a daily basis, a standard for customer service would be very difficult to create or abide by:

You have to respond to how people are and what they need day to day, and you can't always follow a manual to do that. (Healthcare SME 3)

18.10.3 Manufacture of pharmaceutical products and preparations

Standards such as **ISO 9001** were not relevant to pharmaceutical manufacturers, as GMP guidelines addressed Quality Management:

...[We] were interested in ISO 9001 and we talked internally about maybe implementing that as a standard here, but once [a pharmaceutical client] comes to audit us and sees the GMP system... they think 'that's fine; that suits our needs perfectly'. We don't need the ISO 9001. (Healthcare SME 5)

The ISO route is not entirely relevant to what we do... We already have to work to a quality standard, but that is driven by the regulations. (Healthcare SME 6)

- Two of the pharmaceutical products/preparations manufacturers (SMEs 5 and 7) had used ISO or BSI standards; importantly, both of these were for the medical devices elements of their business, rather than pharmaceuticals:
 - **ISO 13485** was highlighted by two of the SMEs (5 and 7) as being an extremely important standard for the manufacture of medical devices (which both companies manufactured as well as pharmaceutical products). Indeed, it was thought unlikely that these products would sell unless manufactured to ISO 13485 standard.
 - With regard to pharmaceutical manufacturing, one also reported use of **ISO/IEC 17025** for quality control (QC) procedures, as well as others (which the informant could not identify directly) for safe practice in clean rooms and other manufacturing environments.⁵⁷

Use of these standards was driven by client requirements, notably the need to adhere to specified Quality Management standards.

18.11 New standards development

18.11.1 General medical practice

Whilst GP surgeries felt that most of their services were already regulated or subject to best practice, there were some areas where new standardisation could be potentially useful. These were:

- Standards for the maintenance of an internal GP Intranet, and keeping the documentation stored on this completely up to date.
- Standards for managing the updating of procedures and protocols and the secure disposal of outdated versions of these.
- Staff training standards to address 'grey areas' in current frameworks; this informant noted that within the QOF, GPs and nurses were required to undertake

⁵⁷ These procedures were unspecified by the informant, who was unable to recall their precise names.

CPR training every 18 months, but that this was only required every 36 months for administrative staff. This created a risk in the case of a patient who may require immediate CPR in a waiting room or other administrative area of a surgery.

- Potentially, some scope to standardise items of equipment within GP practices (such as the type of scales used), although this informant thought that such a standard might be more appropriate for hospitals, which had a much wider range of equipment than GP surgeries.
- Standardised processes for patient registration within the NHS; currently, patients could end up with multiple NHS patient ID numbers if a patient name was misspelled when transferring to a new GP surgery. There were also some issues with patients being assigned the same NHS number if sharing a name. One of the surgeries consulted asked for identification whenever a new patient registered, but this was not a nationally standardised process and not all surgeries insisted on this.

However, one informant cautioned that any “straying” of a standard-setting body into areas currently regulated by other bodies (e.g. NICE) might simply create another tier of standards/regulation in addition to existing ones.

18.11.2 Residential care

In residential care, the most pressing need was for better harmonisation of contractual arrangements with different funding bodies (similar to the arrangements that were until recently in place in Scotland), and a consequent streamlining of inspection procedures, reducing the burden of procedures especially among those providing publicly funded care:

Nobody wants to say ‘This is the way we’d like it done and this is the paperwork we’d like you to use’. They will only go ‘That’s not good enough’ or ‘That needs improvement’. They don’t say ‘That’s not adequate, use that [instead]’. (Healthcare SME 4)

Beyond the core need for the harmonisation of contractual terms, informants did not identify any specific areas or aspects of care provision where a new standard would be useful.

18.11.3 Pharmaceuticals

As a heavily regulated sector with well-established GMP codes of practice, informants identified few areas where additional standards would be useful for the pharmaceutical industry.

- One informant suggested that there was a need to better ‘link’ existing standards across the pharmaceuticals, biotechnology and medical devices space. For example, existing standards did not appear to include a standard on cleanliness standards in clean rooms, which might be useful.
 - This SME observed that it would be helpful to have better access to the detail of a given standard prior to purchase; it had recently spent £109 on a BS standard that turned out to be the 2003 version, rather than the correct 2012 version.
- Another indicated a need for a more consistent international definition of Corrective and Preventative Actions. Regulators had different interpretations of these, and it could mean having to use different procedures to satisfy regulatory bodies in different territories:

Reconciling definitions can be difficult, and the only way round it is making sure that in your internal procedures you are quite clear how you have interpreted the definition, and that you can defend that. (Healthcare SME 7)

18.11.4 Best ways to access

Informants across all of the Healthcare sub-sectors preferred to access PDF copies of standards. While some did retain a need for hard copies, they acknowledged that PDFs were probably the best way to access, as long as these could then be printed off if desired.

18.12 Participating in standards development

18.12.1 General medical practice

GP surgeries thought it inappropriate to be directly involved in the development of new standards. Notably, there were major barriers with regard to freeing up GPs' and practice managers' time, and the informants felt that individual GPs and managers would not be in a position to understand the complexities of standards, or to have the time to attempt to do so.

More appropriate organisations identified for participation were:

- RCGP
- BMA
- Nursing Council
- CCGs
- NICE.

According to one of the surgeries (SME 1), BSI could become an advisor to those organisations regarding the development and implementation of relevant standards for GP clinics. However, these organisations would also need to be convinced that there was a need for BSI standards, given the already strict regulation and oversight of GP surgeries in England.

18.12.2 Residential care

Time was a major barrier for residential care providers with regard to involvement in the development of further standards. Informants regarded this as unfortunate, as both expressed a desire to be involved in the development of standards that could streamline inspection procedures and standardise contractual arrangements with the NHS and local authorities.

If you end up just talking to the big corporate organisations you'll get a very different view from the people like us who've got a handful. (Healthcare SME 3)

I think involvement from people that have worked in care homes, worked in local government and then in the private sector, their input is really relevant because

you're not trying to look at it purely from a business point of view. (Healthcare SME 4)

Sector organisations – including both informal, regional organisations such as Care Focus South West, and national organisations such as the National Care Association – were highlighted as possible important organisations in standards development.

SME 4 also suggested that BSI consult with the following, all of which would need to be involved in reaching a common standard contract for care provision:

- CCGs
- Local authorities
- NICE
- Individual residential care providers.

18.12.3 Pharmaceuticals

Pharmaceutical manufacturers thought that both large and small companies would need to be involved in any further process of standard or best practice development within the industry. Whilst there were some concerns that multi-national companies could write Quality Management standards that had a poor understanding of the resource pressures faced by SMEs, any process that involved SMEs alone would face difficulties with securing legitimacy within the sector (a finding comparable to that in Aerospace).

However, the time that developing new standards would take was highlighted as a key barrier to the involvement of pharmaceutical SMEs:

It's always time. You're always up against it. (Healthcare SME 5)

I think in big companies it's easier to free people up, and other people will cover in their absence. You tend to find in small companies that you have one person covering a lot of different things and if they're not there it doesn't happen. (Healthcare SME 7)

Two manufacturers also commented that smaller companies with narrow focal points might not be best placed to be involved in standards development. The specificity of their

products would mean that it was difficult to comment in a wider sense about the pharmaceuticals sector as a whole.

One SME (SME 5) talked at some length about potential ways of overcoming barriers to participation:

- Organisations such as BSI visiting SMEs directly to collect and understand their views, rather than expecting SMEs to be able to commit to London-based committees
- Alongside this, running an online forum for pharmaceutical SMEs to use, although the informant did acknowledge that this could result in people “dipping into” the process without committing themselves fully to it
- To make future standards free of charge to access and use, and to charge only for audits (it was reported that this was how MHRA audits currently functioned); in this way, SMEs would be able to read standards documents for free and understand if they were applicable, something that was not currently possible to do in the case of BS/ISO standards.

I don't know how it works with ISO and why we have to pay for the ISO standards, but to me it makes more sense to make those free and then make money the same way as the [MHRA] does. (Healthcare SME 5)

18.13 Key findings

18.13.1 Challenges facing Health SMEs

The challenges that were identified differed markedly according to the business activities in which the various SMEs were engaged.

Key issues among GP surgeries:

- The dissolution of PCTs and shift to GP commissioning had led to the creation of Clinical Commissioning Groups (CCGs) at regional level, rather than to commissioning directly by GP surgeries. CCGs did not have regulated structures or responsibilities in the same manner as the previous PCTs, and different priorities were being adopted by CCGs in different geographical areas.

- Surgeries were having to take on more tasks than before (such as publicising the flu vaccine).
- There was a growing demand for GP services, and a growing sense of patient entitlement to see GPs on demand; however, surgeries lacked the resources to fully meet these demands (e.g. by opening surgeries later or by providing 'on-call' GPs for the elderly).
- The complex pricing structures for services meant that it was difficult to predict income, whilst the proliferation of service providers in the wake of NHS restructuring meant that it could be difficult to manage invoicing.
- There was a need for much more collaboration between individual GP surgeries to meet these challenges systematically, and to be able to share information about best practices in light of ongoing NHS changes (although efforts were underway to share best practice in this regard).

For residential care providers, the challenges were often similar to those facing GP surgeries, but there were some important differences:

- **Funding** was a major challenge, particularly as central government (health) or local authority (social care) funding for residents did not always cover the full cost of care; consequently, fees for self-funded residents had risen to cover the shortfall.
- Different local authorities paid for different aspects of the care provision, and this varied depending on geographical area. This had financial implications for care homes that provided publicly-funded services in different local authority areas.
- **Staffing** was also a major challenge, with many care home staff being paid the minimum wage; the low profit margins associated with residential care meant that it was very difficult to recruit permanent staff, particularly as the NHS offered better pay and benefits.

- The inspection regime associated with the CQC had become less procedure-driven in recent years, but there were moves to restore inspection processes that would require much more paperwork on the part of care homes.

In pharmaceuticals, the challenges were those associated with a highly regulated, high-value, manufacturing environment:

- Costs – e.g. raw materials, and also salaries in what was a highly-skilled sector.
- Competition – especially when manufacturing directly for patient use (e.g. ophthalmic products); SMEs generally had low marketing budgets and this was an issue for this that needed to sell their products directly to hospitals and GPs, rather than manufacturing for a multi-national pharmaceutical company.
- Regulation and client expectations – GMP standards and regulations were tightly defined, and required meticulous recordkeeping and extensive auditing, especially when manufacturing for larger companies, which usually required adherence to recognised GMP standards.

18.13.2 Innovation

- Pharmaceuticals manufacturers needed to innovate constantly; the costs associated with innovation were high, with extensive clinical trialling required for new products, and regulatory approval required to sell in different territories.
- Whilst innovation was not necessarily seen as required within GP surgeries and residential care settings, there was scope to deliver services in an innovative manner. For example:
 - Delivery of telehealth services, or the use of SMS and online facilities in GP environment – however, this was not standardised and not all surgeries embraced it.
 - Aspects of dementia care were the focus for some innovation (e.g. using bright colours to stimulate residents).

18.13.3 Key relationships

For GP surgeries, networks of practice managers were increasingly important as a way of sharing best practice and information about developments within the sector. Other key relationships were with Clinical Commissioning Groups, the CQC and, of course, patients (such as via Patient Forums, which offered feedback about the standard of service within individual surgeries).

For residential care providers, important relationships were with the families of residents, with local trade associations and knowledge networks (e.g. the National Care Association), and with the various contracting agencies: local authorities and the NHS, and – increasingly important – the Clinical Commissioning Groups.

For pharmaceuticals SMEs, relationships with major pharmaceuticals companies tended to be of most importance, though not all SMEs were involved in these types of supply chains, and some (notably the ophthalmic manufacturer) sold directly into clinical settings. In some cases, universities were also key partners, for R&D.

18.13.4 Regulation

Healthcare is a strongly regulated sector, and this was reflected across the sample.

- **GP surgeries** were inspected regularly by the Care Quality Commission (CQC), were subject to Healthwatch ‘mystery shopping’ practices, and ran Patient Reference Groups. Individual GPs were subject to internal peer review practices.
- **Residential care** settings were subject to CQC inspections, although the nature of the evidence sought had changed over time. There was some concern that inspections were likely to revert to a form that required providers to document more procedures, and thus would increase the administrative burden. In addition, inspections by local authorities and the NHS, as funders of care, varied in intensity and procedure, creating heavy administrative burdens that could be challenging to meet (e.g. local authorities requiring the use of different forms to the NHS in order to record residents’ details).
- **Pharmaceuticals manufacturers** were regulated by a number of different organisations in different territories (e.g. MHRA; EMA; FDA). These industry

regulations included a requirement to adhere to recognised Good Manufacturing Practices, Good Distribution Practices and Good Pharmacovigilance Practices.

- The International Conference on Harmonisation of Technical Requirements for Registration of Pharmaceuticals for Human Use (ICH) is attempting to bring together the regulatory agencies of Europe, Japan and the US in order to better harmonise pharmaceutical regulation. However, this process is far from complete.
- Regulations posed a number of challenges for pharmaceutical SMEs:
 - Client audits were more stringent than audits from the MHRA
 - FDA (US) regulations were stricter than those in the UK and EU
 - The terminologies used by different regulatory agencies tended to differ, especially at the international level (e.g. regarding Corrective and Preventative Action).

18.13.5 Best practice

- The main sources of best practice for **GP surgeries** were local practice management networks that met to share their knowledge and experience. Those networks had, for example, discussed benchmarking between participating GP surgeries. However, it was difficult to adapt this benchmarking to other CCG areas – even neighbouring ones – as specific service provision varied.
 - Other sources of best practice for GP surgeries included the BMA (British Medical Association), RCGP (Royal College of General Practitioners), NICE guidelines, CQC and **First Practice Management**. Some of these sources reportedly clashed with one another, and BMA advice could be much stricter than that supplied by NICE.
- The **residential care** sector was very well-connected, with regular conferences and publications relating to best practice. Organisations such as CQC and NICE had also begun to publish best practice guidance, although providers were under no obligation to use these, and it could be difficult for managers to find time to access them.

- Nursing publications (e.g. from the Nursing and Midwifery Council) and informal associations such as Care Focus South West also functioned as a source of support and information for care home providers. The National Care Association also provided HR advice and updates on legislative changes.
- Best practice in **pharmaceutical manufacturing** was derived largely from Quality Management guidelines within regulatory frameworks, and from Good Manufacturing Practice. None of the SMEs consulted had developed any independent best practice guidelines because clients expected manufacturers to possess relevant regulatory and Quality Management certificates.

18.13.6 Standards

As a heavily regulated sector, healthcare SMEs did not use many standards; the main user was the pharmaceutical industry, driven by clients' requirements.

- **GP surgeries** reported that implementation of government policy within the NHS was largely left to individual surgeries and that there was very little national standardisation of services. Hence, GP surgeries typically developed many protocols and procedures in house.
- **Residential care providers** commented that as their sector was already heavily regulated, there appeared to be little purpose to standards that went beyond regulatory or contractual requirements. Both companies reported significant resource limitations, which would be further stretched by managing adherence to additional standards.
- There was no use of BSI/ISO standards among **GP surgeries** or **residential care providers**; informants were aware of these, but regarded them as more appropriate for manufacturing environments.
- Standards such as **ISO 9001** were not seen as relevant to **pharmaceutical manufacturers** as GMP guidelines already addressed Quality Management. Two of the pharmaceutical products/preparations manufacturers had used ISO or BSI

standards; however, one of those standards (ISO 13485) was for the medical devices elements of the business.

18.13.7 New standards development

- Potential areas where GP surgeries could benefit from new standards were:
 - Standards for the maintenance of an internal GP Intranet
 - Standards for managing the updating of internal protocols and procedures within individual surgeries (e.g. to prevent staff from using outdated procedures)
 - Staff training standards to address 'grey areas' left by current frameworks (e.g. CPR training for non-clinical staff)
 - Standardising items of equipment within GP practices (e.g. types of scales used).

- Residential care providers cited a need to better harmonise local authority and NHS contracts, and for much clearer guidance about how best to meet those contractual requirements. However, standards for interacting with residents were regarded as likely to be unhelpful.

- Among pharmaceutical manufacturers, suggested areas where new standards would be helpful were:
 - In better linking standards for companies involved in the pharmaceuticals, biotechnology and medical devices industries
 - Better and more consistent definitions of Corrective and Preventative Actions.

- As in the other sectors researched, there was a preference to access PDF versions of standards, with an option to print hard copies if desired.

18.13.8 Participating in standards development

Healthcare SMEs felt it important that large companies and other major stakeholders (such as NICE) take part in developing any new or revised standards for the sector. There

was, however, some concern that larger companies and organisations might dominate the standards development process.

- In **GP surgeries**, it is likely to be impractical for individual practice managers to participate; it is more appropriate for BMA, RCGP, NICE, CCGs and the Nursing and Midwifery Council to be involved. Whilst there is a need for better coordination of best practice and standards within GP surgery environments, any organisation seeking to do so will need to convince these organisations that it is an appropriate body, and has sufficient knowledge of the sector.
- For **residential care providers**, time is a major barrier to participation, although both informants were keen to ensure that the ‘voice’ of small care home providers was present. However, care home managers are often required to be on call, and it is very difficult to arrange to attend conferences or events such as standards committees. It may therefore be more appropriate for BSI to work with sector representative bodies (e.g. Care Focus South West) and funders (e.g. local authorities).
- For **pharmaceutical manufacturers**, possible ways to overcome time and resource barriers to participation identified by SMEs were to:
 - Visit SMEs directly to collect and understand their views, rather than expecting SMEs to be able to commit to London-based committees
 - Better advertise the BSI SME Forum, and to further online participation among the SME community (e.g. by creating sector-specific online forums)
 - Consider giving participating SMEs access to more detailed descriptions of standards (in order to make more informed purchase decisions) as an incentive for taking part.

18.14 Conclusions and recommendations

The areas of healthcare researched were very disparate, and there are clearly considerable differences in the use of, and potential need for, standards in pharmaceutical contexts compared to GP surgeries and residential care settings.

Healthcare is also a heavily-regulated sector and this influenced SMEs perspectives on the need for standards and how any new standards might be developed.

There is some scope to develop standards to support internal procedures and protocols in GP surgeries (e.g. maintaining internal intranets and addressing some training 'grey areas'). There was no suggestion that standards would be helpful in supporting the interactions between GPs and patients, though the movement of some clinician:patient interaction to online formats could perhaps give rise to new requirements.

There is also a perceived need for greater harmonisation of the residential care contracts that are used by different Local Authorities and the NHS, and for clearer guidance about how to meet specific requirements of these. Beyond the requirements put in place by the Care Quality Commission, standards for interacting with care home residents are unlikely to be seen as unhelpful because of the wide-ranging and often complex needs that residents may have, and the perceived need therefore to maintain flexibility.

Pharmaceutical manufacturers have identified a need to better link the standards that apply to companies involved in the pharmaceutical, biotechnology and medical devices industries, and for greater harmonising of international regulation. A more effective and clear definition of Corrective and Preventative Actions that applied internationally would also be helpful.

It appears unlikely that significant numbers of GP surgeries and residential care home businesses would wish to take part in standards committees, since their resources are already stretched. In the case of GP surgeries, Clinical Commissioning Groups have become key decision-makers and would be more appropriate participants, particularly if there is an intention to develop standards for the commissioning and provision of healthcare rather than administrative procedures alone. Key stakeholders at national level would include the BMA, RCGP and NICE.

Among the pharmaceutical manufacturing SMEs, time and resource pressures are also likely to present some barriers to participation. The businesses interviewed were already well established and appeared to be operating to Good Manufacturing Practice without any significant difficulty. There did not therefore seem to be a role for standards in helping those businesses to work to GMP requirements. In addition, in pharmaceuticals, as in other sectors that featured a high proportion of contracted work for multi-national

companies, securing the involvement of these larger companies is likely to be important if any new standards are to gain legitimacy.

19 ICT

19.1 Overview

This report details the findings from eight interviews with SMEs in the UK ICT industry, addressing the following topics:

- The major challenges that those SMEs face as businesses
- Issues concerning innovation and Intellectual Property
- Key business relationships
- The regulatory environment in ICT and its impact on SMEs
- Best practice and business improvements that SMEs wish to implement
- Standards used in the industry, and areas where new standards may be useful
- Ways in which SMEs may wish to become involved in standards development.

19.2 ICT Industry: findings from Stage 1 report

As of 2013, the 165,170 registered SMEs in ICT account for 7.7% of the UK total. However, recent research from the National Institute of Economic and Social NIESR Research has suggested that there could be as many as **270,000** ICT companies in the UK.

ICT has seen more than 18,000 net SMEs (an increase of 12.2%) added between 2011 and 2013. Notably, what is now the second most important SIC class in terms of number of ICT SMEs – 6201, covering ‘Ready-made interactive leisure and entertainment software development’ and ‘Business and domestic software development’ – grew by 57.0% to add more than 10,000 enterprises over the period.

- Around 80% of ICT companies are located in urban areas (i.e. a city of at least 125,000 people).

- London has by far the highest concentration of ICT companies in the UK, and the highest concentration of such companies in the whole of Europe.
- The UK digital economy is also concentrated in areas to the west of London, such as Basingstoke, Newbury and Milton Keynes. Selected areas elsewhere – like Aberdeen and Middlesbrough – also show high concentrations of digital economy activity.

Barriers to innovation in ICT are lower than in other sectors; core challenges are:

- An inability of software developers to “keep up” with rapid advances in hardware
- Concerns about the data security of the ‘cloud’
- Maintaining quality of output across the sector, given the variety of potential developers that can participate
- A lack of skills in the UK in programming in general, with specific weaknesses in multi-core and low-powered environments.

Government initiatives for ICT include:

- The £10mn **Connected Digital Economy Catapult**, which aims to commercialise innovation among SMEs
- The **Technology Strategy Board Enabling Technologies Strategy**, which contains a number of proposed actions for the SME ICT economy
- The Government’s forthcoming digital communications infrastructure strategy.

19.3 Interviews

19.3.1 Organisations

BSI wished interviews to focus on the following types of ICT SME:

Table 12 ICT sub-sectors for interview focus

SIC Code	Title	Rationale	Type of standard
62011 & 62012	Ready-made interactive leisure and entertainment software development & Business and domestic software development.	Substantial % growth between 2011-13. UK is Europe's leading market for software and IT services.	Process Behavioural/organisational potential
61100	Wired telecommunications activities.	Substantial % growth. Standards relevance. £45 billion UK telecoms market.	Product Process Behavioural/organisational potential
61200	Wireless telecommunications activities.	Substantial % growth. Standards relevance. £45 billion UK telecoms market.	Product Process Behavioural/organisational potential
63110	Data processing, hosting and related activities.	% growth between 2011-13. UK cloud computing and data centre market estimated to be second largest in the world.	Process Behavioural/organisational potential

Two SMEs were interviewed per sub-sector. SMEs interviewed were as follows:

Table 13 ICT SMEs interviewed

ICT SME	SIC Code Title	Employees	Job Roles
1	Ready-made interactive leisure and entertainment software development & Business and domestic software development.	2	Founder/Co-owner
2	Ready-made interactive leisure and entertainment software development & Business and domestic software development.	12	Founder/Co-owner
3	Wired telecommunications activities	c.40	Operations Manager
4	Wired telecommunications activities	12	Operations Manager
5	Wireless telecommunications activities.	4	Business Development
6	Wireless telecommunications activities.	c.46	HR
7	Data processing, hosting and related activities.	c.80	Managing Director
8	Data processing, hosting and related activities.	4	Director

The job roles performed by these informants were often wider-ranging than the specific title may suggest; for example, the Director of SME 8 was also one of the main providers of IT support. Furthermore, the job roles in SMEs 1 and 2 (the more creative software-developing companies) were almost entirely undefined, with the interviewees undertaking a wide range of work within their companies.

19.4 SME activities

19.4.1 Ready-made interactive leisure and entertainment software development and business and domestic software development

ICT SME 1 was a recently-established software company that developed game apps for mobile phones and tablets. The company wished, over time, to become involved in games development for consoles. The company had also undertaken some development work for websites for major retailers and had offered some consultancy for a major multinational bank regarding the development of a mobile banking app (although it did not directly produce this app itself). The company had only two staff and a turnover of less than £1m, but reported rapid growth and was seeking to expand its staff numbers in the next 12 months.

ICT SME 2 was a business software developer, founded in 2009, that had initially focused on producing websites but was now developing bespoke software to assist with company audits and archiving systems (as well as other aspects of project management) for use on tablet computers and mobile phones. These were often a response to the need for delivery drivers and other “on-site staff” to be able to create electronic records of their work in order to eliminate the need to carry paper record files with them. The company had grown rapidly over the five years of its existence.

19.4.2 Wired telecommunications activities

ICT SME 3 was founded in 1984 and was one of the first private telecoms companies in the region concerned. For much of its history, it had focused on installing and managing bespoke telephone systems for business customers (mainly in the North of England), but was moving toward offering full IT services in recognition of the blurring of telecommunications and IT (e.g. the growing use of telephone systems with email and SMS facilities, and the growing market for touchscreen office telephone systems).

ICT SME 4 installed telephone systems, data networks and fibre optics for public sector clients, mostly in the area in which they were based (South Wales). The company had also more recently begun installing Wi-Fi networks in schools and hospitals, reflecting the blurring of the boundary between wired and wireless telecommunications.

19.4.3 Wireless telecommunications activities

ICT SME 5 was originally a spin-off from a larger IT consultancy company and had been formed specifically to offer remote CISCO system network configuration services (i.e. providing IT support via remote access to CISCO-certified companies). This was an innovative service that was offered on a pay-as-you-go basis (rather than via fixed contracts), and the company had a small client base that was located outside the UK (including some clients in Sri Lanka and Australia).

ICT SME 6 specialised in the installation of telecoms for major mobile operators. It was currently working on installing and upgrading 4G networks for these providers across the UK, which involved engineers working at height. It had also previously undertaken some work installing Wi-Fi systems in schools and colleges in Qatar.

19.4.4 Data processing, hosting and related activities

ICT SME 7 specialised in building and storing customer databases for a number of large corporations/organisations (e.g. Royal Mail; Dell; Peugeot) to help develop tailored marketing strategies. It also retained data from Oystercard users and analysed this to help feed into marketing strategies for Transport for London. The company also ran some e-mail based direct marketing campaigns for clients (and had begun life as a direct marketing organisation using postal mailshots).

ICT SME 8 was a small provider of ICT support and services for both consumers and businesses, including recovering lost data from hard drives and memory sticks, and providing virtual servers and cloud-based data storage. The SME offered a wide range of IT services, which included data hosting, but also server support and hardware maintenance (e.g. clearing hard drives of viruses). Its commercial clients varied considerably in size, and had previously included O2 as well as a number of more local SMEs.

19.5 Challenges

19.5.1 Meeting client demands

A number of ICT SMEs felt that their biggest challenge lay with **meeting client demands**, particularly when working with large organisations:

- Two SMEs (both in the wired telecoms sub-sector) reported that **public sector clients** were increasingly cost-conscious when awarding tenders for work in a post-recessionary environment, particularly for telecoms:

When we tender for [public sector] work, everybody is looking at the last penny now; it's probably always been the same but it seems a bit more of a focus these last four or five years. (ICT SME 4)

- SME 1, which was a very young company, reported challenges with regard to **working within supplier framework guidelines** set by large multi-national organisations, particularly in terms of following required procedure (which did not come naturally to the creative staff of SME 1). This was regarded by the informant as a 'teething' issue; neither member of staff had had much experience of working with large organisations on a client basis and thought that with more experience of such frameworks, the company would find these processes easier in the future.
- The telecoms company working with mobile operators (ICT SME 6) reported that large companies could sometimes impose unreasonable demands on SMEs:

I think sometimes they need to be more mindful that in this industry there's a finite level of resource, and that resource can't go from Scotland to London the next day, or London to Cornwall the day after. And that's always a challenge with them, saying, "no, hang on a minute, we've got to consider travel time here and rest time." (ICT SME 6)

- One software developer (SME 2) reported that there was a need to ensure that dialogue with clients was sufficiently strong to create a full and complete spec, and to be able to amend this as a project progressed, so that clients ended up with a product that accurately reflected their needs and did not require considerable follow-up.

- For one of the data storage companies (SME 7), the key challenge was to **retain the confidence of long-term clients**. In particular, this meant being able to use the latest technology to store data reliably (e.g. being able to use the Cloud securely to store data). This SME was therefore required to keep abreast of new technologies, especially the potential of the Cloud as a data-storage medium (though the firm felt confident that it could meet this challenge).
- One of the data storage providers (SME 8) reported that residential customers (which had provided its core market to date) could demand high-input and high-cost work for little financial reward (for example, residential customers presenting damaged laptops often did not back-up their data, which could mean the SME undertaking an extensive – and not very profitable – data recovery management role). This SME was attempting to shift markets to deal with more commercial clients, where longer-term contracts delivered better returns.

19.5.2 Achieving further growth

Achieving further growth was a challenge for many of the SMEs. As service providers, there was little scope to produce innovative new technology that could lead to rapid growth, and future strategies (particularly in telecoms) appeared to depend on increasing sales of existing services:

- For **wired telecommunications companies**, growth often meant simply growing market share of telecoms systems (and, increasingly, Wi-Fi and IT support packages). Both informants therefore relied heavily on direct sales activity and previous reputation to drive growth (both reported having strong reputations; the challenge was to manage these).
- For the smaller companies, growth strategies focused on a need to secure contracts with large clients, rather than with other SMEs. SME 2 had achieved growth by working with major clients such as Rentokil, and its staffing numbers had increased from two to 12 staff in five years. However, it was difficult to envisage a similar rate of growth in the future unless the company was restructured and won external investment.

- SME 1, working in games development, intended to enter the more lucrative console and PC games market in time, but acknowledged that this depended upon growing sales of app services for large multi-national companies. The informant thought that the prospects of producing a renowned commercial 'hit', such as *Angry Birds*, were slim, and dependent upon an element of 'luck', as there were no established models for very small companies to market apps in a way to drive sales.
- **Attracting investment** was a further challenge. The two smallest SMEs (1 and 5) reported that the most direct source of potential investment was currently **venture capitalists**, although there were differences of opinion with regard to how attractive this was.
 - SME 1 had chosen to avoid venture capitalist funding (despite having been approached) in order to retain full independent control.
 - However, SME 5 (the provider of remote CISCO support) had attracted venture capital and was using this to develop an extensive marketing plan to target companies internationally. In this case, there was a need to fund an extensive marketing campaign to convince potential customers of the value of a very novel service.

19.5.3 Technical challenges

Technology in the IT sector – and particularly, currently, hardware – had evolved rapidly over recent years with the growth of tablets and smartphones, as well as more sophisticated Wi-Fi infrastructure. This had had significant implications for SMEs in this sector, especially those providing hardware products and services.

- **Wired telecommunications SMEs** found that clients increasingly demanded an increasing diversity of telecoms solutions, including VoIP (Voice-over-Internet Protocol) systems and products such as Skype. This led to challenges regarding client communication, notably where clients did not understand that such a solution could require the complete re-installation of their telephone infrastructure:

...in a lot of situations, [clients] ask you to connect an Internet Protocol [IP] system and their line is kind of held together by string. So if you put a voice solution on or something like that, it's going to fail isn't it? (ICT SME 3)

- The software developers (SMEs 1 and 2) discussed the implications of the growth of **new platforms** for software, such as smart watches, with one noting that businesses were increasingly using tablets in place of paper to record deliveries, invoices and purchasing. This meant that developers were required to keep up to date with hardware developments and to ensure that they were able to develop products for new platforms as they arose.
 - For one data storage company (ICT SME 8), there were challenges associated with **taking over IT service contracts from other providers**, particularly if there was evidence of 'corner-cutting' – such as mixing different technologies and systems – from those previous providers.

The difficult thing for us sometimes is trying to pick up the pieces because someone hasn't really kept to the rulebook, and then you're trying to unravel the spaghetti to a certain extent to try and get it back up and working. (ICT SME 8)

The informant was particularly critical of those providers who used the Oracle software Virtual Box, which left machines appearing as though they were administered by Windows 7, with users unable to administer the system if it developed flaws or faults. This could mean having to reconstruct IT servers entirely from the ground up.

19.5.4 Skills and recruitment

Some challenges were reported with regard to skills and recruitment, as follows:

- For software developers, locating staff with technical skills was less of an issue than finding the “right” people to fit into particular organisational cultures:

As a software developer, yes, they can do their job... but once they're in your environment they have to get used to the team... it does take time for them to get up to speed... (ICT SME 2)

In this case, the SME exercised care over who was recruited, and over induction processes. It was anticipated that any new addition to the team at entry level was unlikely to generate income for the business for two to three years after being hired.

- SME 8 (a very small company) was a little concerned that expansion would entail having to employ staff on salaries of between £30,000 and £40,000 per annum, and that a significant number of long-term commercial contracts would need to be secured before this could take place.
- Telecoms providers had extensive training budgets; especially the SME installing mobile infrastructure, whose staff had to work at height and who had to be re-certified every 12 months:

My guys all climb, but every year they've got to go on a training course to teach them how to climb again, and they find that really annoying. What other industry can you work in where you're told how to do your job every year? Last year alone we trained for 170 days. So when you consider we've only got 46 people, that's a massive level of training for a company of our size. Last year we probably spent close to £30,000 on training. (ICT SME 6)

This training had to be sourced from providers certified by Arqiva (the owner of around 90% of all mobile masts and towers in the UK); an example of such a provider was Total Access in Stafford.

- For **SME 3**, which was moving into the market for wider IT services, creating a team of IT support staff meant that Microsoft-certified engineers had had to be recruited at additional cost. This company had considered partnering with an existing IT provider to offer these services, but had decided to retain its offer in-house.

19.5.5 Costs and other financial challenges

The **recession** had not affected the ICT sector as much as some of the others researched (notably Construction). However, some financial challenges remained, as follows:

- **Salaries** were, unsurprisingly, a major cost for most of the SMEs, with several relying on a workforce of highly qualified and skilled labour. This was particularly so among the software developers, but also for SME 5 (which provided remote CISCO services) and the telecoms SMEs, all of which had skilled engineering staff:
 - Staff at SME 5 had accepted lower salaries in order to ensure that the newly-formed company was able to build markets in its first two years, though the firm hoped that growth would be sufficient that salaries could become “normalised” in the near future.

Several informants reported a need to ‘take care’ of staff; one (a wired telecommunications SME) reported an extreme reluctance to introducing redundancies, even though the market had become more competitive over time, as maintaining a motivated and positive workforce was considered critical to the ongoing success of the company.

- The cost of **travel** was high for telecoms informants, who were often required to install infrastructure or telecoms systems across a wide geographical area, maintain vehicle fleets, and sometimes have to resource overnight stays.
- **Difficulties in receiving payment** from large organisations could be disruptive for SMEs. Once SMEs began supplying larger clients, they had little leverage over payment terms, which could be over a much longer period than when supplying smaller companies.
- **Hardware** was also a factor that influenced costs in telecoms, particularly for companies that installed and maintained telecom systems:

When [manufacturers of telecoms hardware] fetch a new product out it's always more expensive, so you know you've got to match that with the tender offer at the front end. (ICT SME 4)

- **Pricing** of individual pieces of work could be challenging, particularly for smaller jobs (e.g. virus removal, which one of those offering data storage services offered):

We charge £36 to remove a virus; sometimes it probably costs us [more than that] in the time it's taken for two or three engineers to work on the same laptop... (ICT SME 8)

- A major cost for SME 5 (but not for any of the other ICT SMEs) was **marketing**. This company was trying to break into international markets with its CISCO remote access services and had a need to market what was an unusual offer:

It's a completely new way of thinking in IT so it's getting people to think that it's a good idea and [to] trust that it works... we spend all our money on marketing. (ICT SME 5)

19.5.6 Imports and exports

Three SMEs provided services in overseas markets, though only one maintained a physical presence outside the UK. The challenges posed by overseas working were as follows:

- The provider of remote CISCO services (SME 5) was attempting to build international markets from a very low base. The SME had faced barriers to entry in some countries – notably Chile – that it found difficult to comprehend or rationalise, despite having backing from UKTI to attempt to build markets in Chile. In contrast, CISCO users in other countries (notably Egypt) appeared to embrace the model. The key challenge was therefore to better understand the specificities of target markets.
- The mobile telecoms infrastructure installation company (SME 6) reported that there was a high volume of available work overseas, particularly as countries such as Qatar lacked the internal skill base to create 4G networks themselves. When working abroad, it was essential to gain safety accreditations before working in those environments:

Some telecoms operators specify [that] you've to go through their training course, which is very expensive, so when they've got a couple of companies round the world, who have paid for that training, then they're quite loyal to us[ing] them. It's not a case of you do the training and then we'll give the work to someone else. So we invest in our people to get them trained and then those companies use them for the commissioning works.
(ICT SME 6)

- SME 7 (the data storage and direct marketing SME) had some overseas clients; however, data storage services for these clients were identical to those for clients in the UK, so did not pose any specific challenges that the company did not already face.

19.6 Innovation and new technologies

19.6.1 Product innovation

Product innovation was very important to software developers, but less so to the telecoms or data storage providers.

- SME 1 reported that *"innovation is key"* in the gaming industry, although this was often about developing a simple but effective app (e.g. *Angry Birds*), rather than one that was technically innovative.
- SME 2 invested significantly in R&D, particularly on mobile and tablet devices, in order to be fully prepared to bid for work among large businesses that needed mobile- and tablet-based business software.
- SME 5 was developing a new cloud-based telecoms product, outside of its remote CISCO service, that it hoped to market in the near future:

The customer doesn't have a clunky telephone system on-site that can go wrong. Some of it is in the cloud, but all the information stays on [the] customer site; it's quite clever how it works. (ICT SME 5)

The SME thought that this type of service would become relatively common in two to three years, and was introducing it now in order to establish a market lead. The other telecoms informants installed other manufacturers' products, rather than developing any of their own.

19.6.2 Service innovation

The most innovative service among the ICT SMEs interviewed was the remote CISCO support service that had been developed by SME 5. Whilst the principle of remote management of computer systems was well-established, this was not usually the case with regard to CISCO, which had historically required on-site maintenance. Furthermore, the pricing structure for this service (by the hour, rather than on a per-day basis) was also distinctive.

For telecoms providers, it was more important to build a reputation for reliable installation and management of telecoms systems, rather than be innovative. This was a view shared by the data storage providers; SME 8 reported that there was a need for data storage providers to be seen as a "safe pair of hands" rather than innovative.

19.6.3 Emerging technologies

For the data processing and hosting companies, the **Cloud** had the potential to greatly affect the sector. This was especially important for those companies specialising in data storage, as it was likely to reduce the need for data storage providers to maintain on-site servers to store data.

...the Cloud will be the next big thing as far as we and our clients are concerned – the fact that they don't have to have their computers based anywhere; they can use organisations that have got [Cloud access]. (ICT SME 7)

There was, therefore, the potential for a significant market shift with regards to data storage, and less requirement for data back-up and recovery services as data was no longer tied to specific pieces of hardware or closed servers. However, one SME (SME 8) cautioned that some customers would be uncomfortable with having potentially confidential data hosted in the Cloud, and that there would continue to be a need for secure back-up services from specialist storage organisations.

Beyond the Cloud, one software developer (SME 1) discussed two new and emerging technologies relevant to mobile and games development:

- The iBeacon, a third-party-made, low-energy Bluetooth wireless transmitter designed to interact with Apple iOS to offer 'live' deals to passing customers as they passed retail outlets.⁵⁸
- The Oculus Rift, a 'next-generation' virtual reality headset currently in the second stage of development.⁵⁹ SME 1 regarded this as a very interesting technology, albeit one they would not exploit until they were in a position to develop games (or parts of games) for the console/PC market.

As emerging technologies, there were no standards or best practice guidelines currently available for these particular devices.

19.6.4 Intellectual Property and patents

Intellectual Property and patenting were not strong themes within the interviews with ICT SMEs, and were discussed by only three informants:

- The business software developer (SME 2) offered clients the opportunity to either own the IP of their bespoke system outright, or share it with the SME concerned. As these were bespoke systems designed for the companies in question, and which could contribute to their gaining competitive advantage, there was often a need to ensure that they were not immediately replicable.
- The provider of remote CISCO services had trademarked its name, but had not patented any of its specific services.
- The games and app developer had begun developing an innovative piece of hardware (a chip design for electronic devices) and was considering patenting this.

⁵⁸ <http://www.zdnet.com/what-is-apple-ibeacon-heres-what-you-need-to-know-7000030109/>.

⁵⁹ <http://www.oculusvr.com/dk2/>.

19.7 Key relationships

19.7.1 Client relationships

Given that all of the SMEs consulted were providing services for clients (rather than manufacturing products), client relationships were especially important. A high standard of customer service was essential, especially for the telecoms providers.

- For the providers of **wired telecommunications** services in particular, maintaining excellent customer relationships was pivotal to success in a competitive market in which changing provider was a relatively low-risk endeavour. Therefore, both SMEs invested considerable time and resource into the management of these relationships, and one claimed a much higher standard of service than would be available through a larger provider such as BT:

In your business if... one of your members of staff leaves and you want to reset your voicemail, you want to redirect the DDI [Direct Dial-In], we'll tell you how to do it or do it for you, and if you have your product from BT, you'll be on [the phone] for about four or five days trying to find out, because you'll ring the call centre and they will not have a clue. (ICT SME 3)

This informant did, however, report challenges with *communicating* the value of its customer service offer to potential new clients. BT was a recognised global brand, whereas SME telecoms providers could not afford to advertise and had to build client relationships through often painstaking and slow lead-building work.

- Other SMEs, working with large, multi-national organisations, reported some differences in the nature of these relationships:
 - SME 2 reported that relationships with major clients were ideally around five to ten years in length, and would pass through several iterations of software. The Agile Framework used by this SME to project manage software development meant that client relationships were very close (see section 5.9.1), although no other firm interviewed was using this approach.

- The data storage provider that worked with multi-nationals (SME 7) had a similarly close relationship with its clients, but was not using the Agile framework:

If you're dealing with an organisation like Transport for London or Apple or Peugeot, someone like that, then you need to understand the structure and the way that they work. It will take us many months to bed in and set ourselves up with them. (ICT SME 7)

- However, the SME that installed mobile telecoms technology (SME 6) had much more functional relationships with large multi-nationals (e.g. Vodafone); the SME installed infrastructure according to a spec, with little other contact, and the core need was simply to install this infrastructure reliably. Relationships with other types of clients, such as local authorities, were much closer, as the company was providing more bespoke services (i.e. installing library Wi-Fi).
- Those who tended to deal more with smaller companies reported that these were close relationships.

19.7.2 Relationships with suppliers

The importance of supplier relationships was less prominent within the ICT sector than among those sectors with a high volume of manufacturing (e.g. Aerospace; Automotive).

- One wired telecoms service providers had a particular relationship with NEC, which manufactured telephone systems. It was one of only three approved and certified suppliers of NEC telecoms systems in the UK.

They bring new products out, [and we are] one of the three companies they use, because we can be trusted from a technical point of view to put the equipment in, to monitor it and provide all the information they require, [and] trace information and logs that they need on a daily basis. (ICT SME 3)

19.7.3 Sources of strategic business advice

Sources of strategic business advice among ICT SMEs were mostly individual consultants known to the business directors.

- The business software developer (SME 2) used an independent consultant personally known to the company's founder for some years previously, and who was therefore a trusted confidant.
- The remote CISCO service provider (SME 5) reported that the venture capitalist that had part-funded the current financial year would be the natural first point of contact for strategic advice. Over the longer term, this SME wished to appoint a non-executive board member to fulfil this role.
- SME 8 relied predominantly on an accountant for business advice, but had also joined a regional networking organisation called Newwave, a low-cost business network that aimed to help SMEs, and whose senior members acted as business advisers. Nevertheless, the SME reported some difficulties in finding the time to use services such as this to the fullest potential.
- SME 4, in the telecoms sector, used staff development services that were available free of charge from the Welsh Assembly.

For the very well-established SMEs 3, 6 and 7 (in telecoms and data storage respectively), there was no reported need for strategic business advice or any external input. SME 3 had, however, considered sourcing management mentoring to help those transitioning from an engineering to a senior management role within the business, but had not actively sourced any of this.

19.8 Regulatory environment

19.8.1 Government legislation

In general, SMEs in ICT (including those in telecoms, but especially software developers) reported that their industry was very lightly regulated, particularly in comparison to some other sectors. Several informants, especially those in software development but also in

data storage/processing, thought that the sector **benefitted** from being under-regulated, as this bred creativity. The core regulations that ICT SMEs were required to follow were often simply 'statutory' government legislation, as follows:

- **Health and Safety** regulation was especially important for the **telecoms** providers, and had become much more stringent in recent years, particularly with regard to laying cabling:

You can't get away with not going on a construction site, for example, with a full range of personal protective equipment. You can't go onto the site using step ladders instead of podiums; years ago you could put a step ladder up to run some cabling, and you can't do that now. (ICT SME 4)

For SME 6, with telecoms engineers working at height, Health and Safety was critical, although the informant felt that the requirement to undertake repeat training every year was excessive. Similarly, SME 4 thought that some regulations added little value to the industry:

You have to have team meetings regularly; you have to have your method statements and risk assessments assessed every fortnight. It's just micro [management] now, like it's never been done before. (ICT SME 4)

One informant commented that Health and Safety regulations could be difficult for very small companies to meet, particularly where this involved desk work:

You're a small business so unless you actively go and look at the health and safety regulations and make sure that all your staff are... there's nobody that says to you "you've got staff working on a VDU, do you want to make sure the VDU [environment is assessed properly]?" (ICT SME 5)

- Two informants briefly mentioned the **Data Protection Act** as a regulation that they had to meet. However, there appeared to be some confusion about whether this was a legal regulation, and around its role, suggesting that it was not at the forefront of informants' perceptions of regulation.

We'll be holding customers' data and information; I don't know if that all comes under the Data Protection Act or whether... is it [managed by] Ofcom? Is that what I mean? (ICT SME 5)

I was going to say data protection [as a core regulation that we have to meet] but that's not a regulation, is it? I suppose we're all tied to data protection. (ICT SME 8)

One of the data storage providers (SME 7) reported that large multi-national clients expected the company to hold particular ISO standards (see section 5.10.1), but that otherwise there were no data protection regulations that the company had to meet.

- The **Disability Discrimination Act** was particularly relevant for software developers with regard to ensuring that software was accessible – especially for those with partial sight – though the business software developer was more concerned about this than the games developer.

The business software developer (SME 2) adhered to the World Wide Web Consortium (W3C), an international community of organisations that strove to create standards for the Internet. In particular, it subscribed to the Web Accessibility Initiative (WAI), which aimed to ensure that websites and programmes more accessible to people with disabilities. This was a voluntary scheme rather than a regulatory one.

- **Employment law** was briefly mentioned by two informants, although there appeared to be little that was specific to ICT and that would not also apply in other industries or sectors.
 - SME 6, which was often required to ask mobile telecoms engineers to work overtime hours to complete jobs, was concerned about the potential impact of a strengthened European Working Time Directive on the attractiveness of the industry to skilled engineers:

You would end up with a situation where people are doing a four-day week to reduce their hours, and then we'd end up with the situation

where people could leave the industry because they weren't earning; the guys who like their overtime, they like their extra ten hours a week, and we pay them travelling time... (ICT SME 6)

There were, however, no other strong views about employment law among the SMEs consulted.

19.8.2 Telecoms regulation

The telecoms sector was regulated by Ofcom, though the telecoms informant discussing this felt that, as a regulator, Ofcom was ineffective and had historically allowed providers to transgress its rules without sanction:

They're a government organisation and they always seem to have bigger fish to fry... when we had a few companies that were very unethical and going around just riding roughshod over people, [customers] were going to Ofcom [to complain] and getting nowhere. (ICT SME 3)

This informant was sceptical about the value of regulation and standardisation of the installation and management of telecoms services, and was aware of several companies that appeared to claim to be able to manage particular types of telephone system without, in fact, being able to do so. This was considered a question of the ethics of the companies involved, and the informant was unsure whether this could be regulated or standardised effectively.

19.8.3 Guidelines for app developers

SME 1 reported that:

- App store environments (e.g. iTunes) had next to no 'rules' other than those that barred any pornographic or offensive content
- There were variations between different app store platforms with regard to Quality Assurance procedures prior to apps being allowed into online stores. Whereas Apple tested all apps before they were allowed on sale, Google was much less rigorous in this regard, rendering it more straightforward to sell an app through Google Play than through iTunes.

The games software developer (SME 1) reported that the most relevant set of guidelines for app development were the UI (user interface) guidelines developed by app store providers. These guidelines provided information about what should and should not go into an app, but were reported as not being especially strict:

They can't be strict on UI guidelines because it's not possible. They also have accessibility traits built into their OS as well, but again nothing strict. If you want to implement it you can, but there's nothing to say you have to. (ICT SME 1)

Though largely unregulated at present, the informant expected that, in future, apps would be more closely regulated, with particular regard to:

- In-app purchases, particularly when made by children; this informant expected that those buying apps would be required to verify credit card details during any in-app purchase in future, with the hope that this would prevent children from inadvertently spending large sums of money.
- An age classification system for apps.

19.9 Best practice

19.9.1 Use of codes of best practice

ICT SMEs adhered to a number of different codes of best practice, though no particular code was used by more than one SME in the sample, and the smaller SMEs tended not to use codes of practice at all.

- Among the **software developers**, SME 2 subscribed to the Agile Software Development Methodology.⁶⁰ This divided projects into short 'sprints', and involved client liaison at the culmination of each of these to assess progress and to amend the project aims in light of the results achieved to date. This ensured that clients were continually involved in the evolution of projects, and therefore helped with client communication. This approach was reportedly very useful in enabling the SME to develop an adaptive and reactive approach to software, and the SME

⁶⁰ <http://agilemanifesto.org/>.

reported that several other software developers were using the Agile Framework as an industry standard code of practice.

It isn't a recognised standard like ISO but it is a standard that is recognised within the [software development] industry. (ICT SME 2)

By contrast, SME 1 saw little value in the Agile framework as it had undertaken few large-scale, multi-stage projects. This informant was not using any other codes of practice.⁶¹

- SME 5 used a code of practice known as 'Get Resilient', which focused on disaster planning for very small companies; this covered, for example, the articulation of contingency plans in the event of flooding or a key member of staff falling ill. The interviewee regarded this as a codified form of "common sense"; a Get Resilient qualification was available and could be gained through SFEDI (the Small Firms Enterprise Development Initiative).⁶² The SME was also using Get Resilient as an interim measure prior to gaining ISO 27001 accreditation, which it did not think likely for another two to three years (see section 1.10.1).
- The SMEs involved in **telecommunications** used codes of best practice that were either developed in-house, or else emerged because of Quality Management demands from clients. This was particularly so for the mobile telecoms informant, whose clients were multi-national companies such as Vodafone.
 - For SME 3, the most important aspect of their code was to ensure that field staff took accurate records of client requirements; the informant was concerned that some telecoms clients had in the past attempted to claim that the SME had not installed services they had asked for.
 - SME 6 had developed its own code of practice out of demands imposed by large commercial clients; if clients required a higher standard of practice

⁶¹ This informant reported that the British Computer Society code of conduct did not appear to have been updated to reflect app development, and that this type of guideline was rarely used by games development SMEs, which focused strongly on completing work rather than referring to best practice guidelines. See <http://www.bcs.org/category/6030>.

⁶² <http://www.climatenortheast.com/manageContent.aspx?object.id=10740¶m.1=16963>.

than the company's own, then it would incorporate these higher standards in its code of practice for all future work.⁶³

- Among the **data processing and storage** SMEs, there was little reported use of codes of practice, although SME 7 adhered strongly to ISO 9001 and 27001 due to its multi-national clients' requirements for these accreditations. SME 8 reported that there was no accepted code of practice with regard to managing data for small businesses, although larger companies such as Microsoft and Dell had their own codes for handling much higher volumes of data.

19.9.2 Desired business improvements

None of the ICT SMEs identified areas where they would like to make significant improvements to their businesses. However, as service providers (rather than manufacturers) there were always areas where they could improve their offer to customers. These were specific to the individual SMEs concerned; there was no clear trend with regard to improvements required, either throughout the sample or within the specific ICT sub-sectors researched:

- SME 1 identified a need to better plan and structure its work in order to avoid some of the issues that had arisen when working with a major multi-national client, but also noted that as a very small company, with only two employees, it was difficult to find the time and resource to do so.
- SME 3 reported a need for more effective management mentoring, particularly for those making a transition from engineering to management.
- SME 8 reported that gaining Silver or Gold Microsoft certification would help to make the business more attractive, particularly to larger companies that required external IT and data managers to have this accreditation. There were, however, some difficulties associated with gaining this level of accreditation (see section 5.10.5).

⁶³ This company regarded itself as industry-leading, and noted that whereas competitors were typically 'pulled up' on around 5-10% of all mobile telecoms installations, this SME was reported for less than 1% of its installations.

19.10 Standards

19.10.1 Relevance

The main ISO standards that ICT SMEs used (or intended to use in future) were:

- ISO 9001 (Quality Management)
- ISO 14001 (Environmental Management)
- ISO 27001 (Information Security Management)
- ISO 45001 (Occupational Health and Safety Management; the informant reporting this was aware that this had yet to be published and was intended to replace OHSAS 18001).

These standards were typically used by the larger SMEs serving multi-national (or at least nationally-significant) clients, and who required subscription to one or more of these standards in order to qualify for tender frameworks or other contracted work. The smaller SMEs tended not to use any standards at all.

There were also some industry-specific standards/accreditations overseen by Microsoft and CISCO. There was, however, very little reported use of any British Standards.

Those that were not currently subscribing to BS or ISO standards struggled to identify the relevance of such standards for their own businesses.

- The **software developers**, in particular, thought that standards were much more relevant for manufacturing organisations. Though one (SME 2) did subscribe to two ISO standards, this was client-driven and ultimately 'tick-box' in nature, and the company regarded the Agile Framework (see section 5.9.1) as having a more significant impact on working practices within software development:

You don't 'pass' [Agile]; you don't get recognised for it, but it is something that you follow because it is very much at the forefront of best practice for software development, just for simply how the framework works... (ICT SME 2)

The games developer had never been asked by clients to subscribe to any ISO standards and thought that there was little expectation among games developers

that such standards would be required. There was, instead, a focus on ensuring that the work produced met client expectations.

Right now I don't know why I'd want to be audited to say I'm ISO compliant. As a small company I don't know why I'd need that. (ICT SME 1)

Some of the smaller SMEs also cited as a barrier the time and money required to be invested in subscribing to, and subsequently managing adherence to, standards:

Time and money; it's just so expensive, I don't how small businesses are expected to do it. I think that's my biggest drawback on [subscribing to standards]. (ICT SME 5)

One of the smaller SMEs consulted also expressed some doubt about whether standards could be flexible enough to accommodate the fast pace of change in the ICT sector:

The problem with IT [is] if you stick to a plan you get left behind. Whether or not there are standards that are written that are flexible enough to include changes in technology, I'm not sure. (ICT SME 8)

19.10.2 ISO 9001

Five out of the eight SMEs were certified ISO 9001 compliant, with at least one SME from each of the four sub-sectors being certified (one SME had previously used BS 5750 until it was superseded by the ISO standard). Typically, the larger companies were ISO 9001-compliant, with those employing fewer than five people subscribing to no ISO standards.

Subscription to ISO 9001 was driven by a requirement among SMEs' clients, particularly multi-nationals, to have an accredited Quality Management system in place. Hence, subscription was particularly strong among the larger telecoms companies researched:

A lot of tenders that we go for – public sector tenders, NHS tenders – they do require ISO 9001. (ICT SME 2)

Virtually without exception all of our clients expect us to hold ISOs... They will not sign contracts with us unless they believe that we can hold their data safely. (ICT SME 7)

The smallest companies did not currently have ISO 9001 and did not think this was relevant (or manageable) for companies of a very small size.

19.10.3 ISO 27001 and 45001

SME 7 (a data storage company) subscribed to ISO 27001; again, this was client-driven:

They will not sign contracts with us unless they believe that we can hold their data safely. (ICT SME 7)

This informant had a very positive view of ISO standards in general, which they felt provided an independent benchmark of the standards that the company was meeting, though they were a little concerned that the management of these standards required the company to employ a full-time member of staff.

I think they're probably designed for companies that are larger than we are. But that's fine; by us adhering to them we are able to provide our clients with [knowledge that] we are exceeding what [they] should normally accept. (ICT SME 7)

- Two other SMEs (the business software development company and the remote CISCO service provider) intended to subscribe to ISO 27001 in the near future, as this was viewed as a valuable means of reassuring clients of the security of their data.

However, SME 5 (which had a very small staff) did not currently have the resource to subscribe to, and manage adherence to, ISO 27001. Get Resilient accreditation was viewed as a 'stepping stone' en route to eventual subscription to ISO 27001, which was thought to be two or three years away. This informant expected that ISO 27001 would replicate much of the detail of ISO 9001 and therefore saw little need to subscribe to both standards.

- SME 7 also subscribed to ISO 14001 (Environmental Management). As this company also produced paper-based direct marketing materials for clients, it was required to subscribe to ISO 14001 in order to demonstrate the sustainability of those materials.

SME 7 also expected to subscribe to ISO 45001 in the future; again, this was client-driven.

19.10.4 British Standards

Use of British Standards among the ICT SMEs was very infrequent:

- SME 4 was using BS 8555 for its environmental management system, rather than ISO 14001, but was unable to elaborate on reasons for choosing the BS standard instead of the ISO equivalent.
- SME 3 had once subscribed to BS 5750, but had more recently superseded its use with ISO 9001.
- Though not a standard as such, the mobile telecoms informant (SME 6) subscribed to BSI IOSH training for all office-based staff within the company, who received initial Health and Safety training via BSI; this training was not suitable for those working at height, however.

Beyond this, none of the ICT SMEs was currently using any British Standards, or was aware of relevant British Standards within their sub-sectors. None of the wired telecoms informants, for example, reported using BS 6701.

- One of the wired telecoms informants commented that it had once been the case that telecoms providers were required by law to register with BSI in order to maintain a telephone system; this, however, was no longer so. The informant felt that this former system had, in any event, been very ineffective, as the standards had referred to the technical installation of telecoms and did little to address the ethics of companies in the sector.

19.10.5 Cabling standards

In order to gain authorisation to work with particular types of cable (divided into different categories, e.g. 5E, 6, 6A and 7), those installing IT cables were required to adhere to standards established by cable manufacturers. These tests were set by cable manufacturers.

If we install their product we have to be certified and I mean we have to pass and have a certificate to show the client that we are authorised to do so. So that's from a technical point of view and a training point of view and from a testing point of view.
(ICT SME 4)

SME 8, which also installed IT cables, reported some evidence of 'corner-cutting' among competitors, such as installing (inferior) Category 5 cables when higher-performance cables had been requested. This SME was predominantly supplying residential and small-scale customers, which may indicate that certification is not as prevalent among companies supplying these markets as it is among those supplying much larger organisations. This informant thought that cabling installation ought to be better regulated, so that the correct type of cable was being installed at the residential or small scale.

19.10.6 Microsoft and CISCO certification

For IT engineers working with Microsoft-based systems, Microsoft certification was reported to be good practice.

You have to have certification from people like Microsoft and it will be good to verify [if among] the competitors engineers were properly certified. (ICT SME 3)

For this SME, which was in the process of launching its IT service provision, the cost of gaining Microsoft certification was high and the informant noted that it was having to compete against a number of sole traders for whom this cost had been much lower (due to those sole traders only having one member of staff to certify). However, gaining certification was perceived as essential to be able to enter IT service markets.

In particular, having Microsoft accreditation enabled:

- Access to a telephone support service at Microsoft to help to identify issues that a client may be experiencing with a machine
- Access to information about new products that might be coming available, and the opportunity to be trained in their use.

Microsoft operated a graded system of certification:

- Network Partner (the most basic accredited level)
- Silver Partner (an intermediate level)
- Gold Partner (the highest status).

Partner status was acquired through staff completion of MCSE (Microsoft Certified Solutions Expert) training.

For very small companies with small staff sizes (SME 8 employed only four people), advancing beyond Network Partner was very difficult, because companies were required to have a minimum number of Engineers in order to progress to Silver or Gold accreditation.

Similarly, SME 5 reported specific examination requirements that had to be met in order for SMEs be certified as **CISCO** partners:

- A completion time of 18 months for CCMA, the entry-level CISCO qualification
- CCMP, a higher-level qualification, took between three and four years to complete.

19.10.7 Health and Safety standards for mobile telecommunications

Health and Safety standards were very important for the mobile telecoms informant, whose staff were working at height for much of the time, and required particular industry accreditation in order to continue doing so:

- Contractors Health and Safety (CHAS) was intended to ensure a basic level of health and safety for contractors, and was often a requirement within large tender frameworks.

- Arqiva accreditation was a prerequisite for working on any Arqiva-owned mast. The informant thought that this was onerous, particularly as engineers had to be re-trained every 12 months, but there appeared to be little that the SME could do to alleviate this training burden.

19.11 New standards development

SMEs did not identify many areas of ICT where they thought new standards might be useful, either for their individual businesses or for the sector as a whole. Few were currently using standards, and there was a strong sense that standardisation would be difficult to justify in a sector that was acknowledged to be fast-moving, and where any standard could be rendered irrelevant in a short space of time by emerging new technologies.

- SME 8 thought that the wider industry could benefit from further standardisation of all build-parts for desktop and laptop computers:

One base unit built by HP will be completely different to Dell. There [are] still certain parts of systems where they'll use proprietary power supplies, for instance, for servers, for workstations and so on, and it just makes it a lot more difficult to get the parts. So if there was a standard as such that could be covered by that... (ICT SME 8)

- This SME also discussed the potential need for a standard for the handing over of IT contracts to new providers, particularly with regard to communicating sufficient information about a system to the new provider in advance of the handover.
- Two informants also discussed areas where **further regulation** would be useful:
 - The laying of IT cables in indoor environments, with one informant in particular sensing that this was an area needing to be addressed:

I don't think [the laying of computer and data cables in indoor environments] is regulated at all. I saw it in a data centre... an engineer

electrocuted himself because he behaved wrongly. He'd been taught how to behave, but he actually electrocuted himself. (ICT SME 5)

- Some form of regulation/standard for the secure storage of data, particularly as one informant was concerned about the possible emergence of “micro” storage services – in other words, individuals offering to back-up their neighbours’ personal data for a small fee, which would currently be completely unregulated – as a result of much faster fibre broadband connectivity:

I would think that encryption for the data that's going to be stored, that's going to have to be something that's regulated. Because this has become more popular, then having people who are going to be setting up data centres in their garage because they've got a 200MB fibre connection and they can charge their neighbours to store their data. (ICT SME 8)

- The smallest SMEs felt that the use of standards would impose unreasonable financial and time-based demands on businesses that could afford to spare neither, and that standards were more appropriate for blue-chip companies.
- The **telecoms** informants tended towards a view that there was little need for new ISO or BS standards outside the small number of standards that they already used.
 - SME 3 reported a need for more business mentoring, which would produce quantifiable impacts on business performance, rather than for formal standards. Mentoring would be particularly for those engineers progressing into senior management, but also for sales teams.

19.12 Participating in standards development

19.12.1 Stakeholders in standards development

The smallest SMEs in the sample thought that it would be important to ensure that a good mix of different-sized ICT companies were involved in any standards development, including very small companies.

If this were not the case, there was some concern that the types of standards produced would be lengthy, only suitable for large companies, and difficult for SMEs to implement.

It would need to be a broad mix of everyone. It's great having your industry experts but they tend to work in bigger companies... I think you need to have a lot of input from everybody, certainly if you want to get smaller companies on board. (ICT SME 1)

In an ideal world, small business would be involved, because they always get forgotten about. (ICT SME 5)

SME 1 was keen to be involved in the development of any standards for the mobile environment, noting that the existing British Computer Society codes of practice were "irrelevant" for mobile technology.

Telecoms SMEs thought that large telecoms providers (e.g. Vodafone; BT) would need to be involved in the development of any further standards in this sector, as standards developed by SMEs alone would not supersede existing best practice.

19.12.2 Funding the development of standards

Most of the smaller SMEs thought that the government should have a role in paying for the development of standards, to a greater or lesser degree. Most thought that while the government should be responsible for some standards, funding should also come from the larger companies that would benefit from the new standards.

I would think probably the government is going to have to be involved at some level, and I suppose larger companies, like Microsoft, because they will have a

benefit from it as well. So I suppose it's the people that are benefiting from it to some extent... (ICT SME 8)

I wouldn't say it has to be government, but then the government are trying to regulate messages in your apps.... I think it should be some kind of joint venture between industry agencies... like Apple, Google, the manufacturers of the OS should be involved. Anybody but me. (ICT SME 1)

However, one SME (in data storage) thought that it was unlikely that government would be involved in funding standards development, and that standards users would ultimately be required to fund it themselves.

...it would be easy for me to say well, yeah, the government should pay for it, shouldn't it? You know, at the end of the day if I want to use it then I should pay for it frankly. (ICT SME 7)

19.12.3 Barriers to SME participation

Although SMEs expressed some interest in being involved in the development of standards, time was a major barrier to their participation, especially for the smaller companies with fewer than ten staff:

Big companies have people in sales, in marketing, in invoicing, in whatever, and they specialise in that. In a small business, you have to be able to do several of those things and it's just the time constraint. (ICT SME 4)

...if I've got staff sitting on forums, why are they not selling? Why are they not delivering? ...unless I was going to create some [traffic] on my website, then what is the benefit to me? (ICT SME 5)

Having to travel to London for meetings was a significant barrier for those based well outside the capital:

I would like to help shape standards for mobile, because if they do exist I'm not aware of them... but it's all time and also travel as well; it's all based in London, and every meeting you would have to travel down [there]. (ICT SME 1)

Two informants (both in telecoms) were also sceptical about the committee format as a means of developing useful standards, instead regarding these as “talking shops” that were prone to inaction and stalemate:

We're not political animals and we haven't got the time for all this kind of debating... I just think meetings and committees and things are just kind of 'been there, done that' and I never get anything out of them. (ICT SME 3)

We do get invited to stuff like that, especially when they want to change a best practice within the [mobile telecoms] industry... but they've generally made the decision and you go to a meeting where you're told it's going to happen, and whether or not that has a financial burden on yourself, you just have to accept it... (ICT SME 6)

Any process by which industry standards and practices were further developed would therefore need to convince SMEs of its transparency and ‘bottom-up’ nature.

19.12.4 Overcoming barriers to SME participation

Several informants thought that webinars, or other short forms of online participation, would be a more effective means of involving SMEs in the development of standards than committee meetings, which were viewed as time-consuming, prone to domination by large companies, and difficult to attend for SMEs based well outside of London:

Webinars are good things, certainly, because [they're] a quick and easy and straightforward visual way to learn. Going to meetings and things is just so time-consuming now, isn't it? (ICT SME 3)

Two informants (in software development and the remote CISCO provider) thought that any new standards developed within IT needed to avoid generic names (e.g. ISO 9000) and have names that were clearly relevant to the ICT sector:

Calling them something other than ISO 9000 or whatever would help. People [come to me and] say 'we're ISO compliant' and I think, 'what does that mean?' I think giving more descriptive names... if they had more of a purpose... (ICT SME 1)

Similarly, the remote CISCO service provider suggested that membership of BSI needed to become more directly IT-relevant, rather than providing what ICT SMEs perceived to be fairly 'generic' standards (e.g. ISO 9001). A system similar to Microsoft certification, with its graded Partnership scheme (Network/Silver/Gold), would also be more appropriate for IT systems.

The informant from SME 1 also thought that a 'tiered' system of standards, in which standards specifically for SMEs were intended to be briefer and more flexible than ISO 9001, would also be useful as a means of attracting participation.

19.12.5 Best way to access standards

The majority of the ICT SMEs preferred to access standards documents online, either as a PDF or via an online portal. The facility to print the standards off was regarded as important for some, but (as was the case in the other sectors researched) this was mostly down to personal preference for a paper version, rather than being driven by any specific need within a particular sub-sector.

19.13 Key Findings

19.13.1 Challenges

The challenges that the ICT SMEs faced were often a function of their size and the sub-sector in which they worked, and there was little consistency across the sample.

Key challenges reported were:

- **Meeting client demands:** Telecoms companies were under pressure to reduce costs, especially when working for public sector clients and client relationships were largely cost-driven. For data storage and software development, client relationships were much more integrated; in the case of software development, these were less cost-driven than elsewhere in ICT.

For these latter types of SME, working closely to meet the needs of companies such as Rentokil, managing client relationships – and particularly expectations–

was a key challenge. For software developers, frameworks such as Agile appear to provide a means to manage this.

Small-scale suppliers working with residential customers faced challenges in costing work appropriately (e.g. virus removal).

- **Achieving further growth:** Among ICT service providers, there was relatively little scope to produce innovative new technology that could fuel rapid growth, and future strategies (particularly in telecoms) appeared to depend on increasing sales of existing services. Within software development, there was more scope to innovate (such as the case of the developer that produced business software for mobiles and tablets). For the smallest SMEs, growth strategies focused on efforts to work with larger clients, although there were significant barriers to doing so.
- **Technical challenges:** The diversity of telecoms solutions and the blurring of IT and telecoms with new technology meant that telecoms providers needed to manage the introduction of new technology and offer a growing range of services, notably in Wi-Fi and IT, although close relationships with manufacturers (e.g. NEC) helped with this.

Software developers were required to keep on top of the proliferation of hardware platforms that were continually emerging.

In data storage, the emergence of the Cloud may reduce the need for storage services in the future, although it is likely that major commercial clients will still require some access to secure, on-site servers.

- For those data storage companies working with larger multi-national clients, the main challenge was to ensure that they were responsive to clients' needs. It was unclear, however, how these needs would evolve, for example the proportion of the data that may shift into the Cloud.
- **Skills and recruitment:** For the software developers, which were very small companies, the challenge was to find people who could fit into company cultures; finding people with technical skills was less of a challenge.

Telecoms companies had extensive training requirements, especially for anyone working at height; these were costly to meet and could demotivate staff as engineers had to complete the same training every year.

- **Costs and other financial challenges:** In many cases, salaries were a high cost, especially for the smallest companies, as the work was highly skilled and specialist.

Cost of hardware was a challenge for telecoms companies, who reported more and more costs associated with each new hardware iteration.

Other costs were travel (particularly for the mobile telecoms informant) and marketing. Large organisations' payment schedules could also present challenges.

- **Imports and exports:** There was little international work among the SMEs consulted, although the remote Cisco engineer faced challenges in marketing this innovative service internationally, and was unsure why some markets appeared receptive (e.g. Egypt) when others (e.g. Chile) did not. One telecoms SME reported a need to gain extensive safety accreditations in order to work in the Middle East telecoms sector; they found that they had won repeat work as a consequence of already having these in place.

19.13.2 Innovation and key technologies

- Key technologies for software developers were the proliferating mobile devices that were used not only for games but also increasingly in business environments. For example, SME 2 was developing bespoke database and customer service software for major companies that would synch across a range of different devices.
- There was comparatively little innovation among the telecoms SMEs, which were installing and maintaining technology that was sourced from manufacturers rather than created internally. However, the smallest provider (which offered remote Cisco services) had developed a Cloud-based telephony system that was innovative, would eliminate the need for telecoms cabling and was expected to be used more widely in telecoms in two to three years' time.

- Other than the software developer working with businesses to develop software for mobiles and tablets, there was very little Intellectual Property activity in the ICT sector, beyond some limited trademarking of company names.

19.13.3 Key relationships

- Client relationships were especially important in ICT, particularly for those (in data storage and in software development) that needed to work closely with clients to understand needs and manage the evolution of projects.
- In telecoms, it was widely reported that clients could switch service providers relatively easily and that it was therefore important to maintain especially high standards of customer service. Standards for customer service, however, were usually developed in-house.
- Few of the SMEs were members of trade associations; there was, however, a moderate level of external consultancy used to help plan business improvements, particularly among the smaller companies. The larger telecoms providers did not source any external support.

19.13.4 Regulatory environment

ICT was subject to less regulation than were some other sectors, such as Aerospace or Healthcare.

- Beyond the normal regulatory environment to which SMEs are subject (e.g. in areas such as employment and Health and Safety) references were made to Data Protection and Disability Discrimination, which was particularly relevant to software development and to users with visual impairments.
- There were some guidelines for the development of mobile games and products, although these were relatively straightforward (relating to offensive content); otherwise, there were no regulatory restrictions.

- Also relevant were the Working at Height Regulations, for telecoms workers who had to access rooftops or tall structures.

There was a strong sense among interviewees that the ICT sector benefitted from being under-regulated, as this enabled more rapid technical development; excessive regulation could slow the pace of software development within the sector.

19.13.5 Best practice

ICT SMEs worked to a number of different codes of best practice, but no one code was used by more than one SME in the sample, and the smaller SMEs tended not to use codes of practice at all.

- The Agile Framework was used, in one case, for software development; this was relevant for the SME working on long-term contracts with large national or multinational companies.
- Telecoms informants used codes of practice that were developed in-house – through experience of working with successive types of client or derived from Quality Management principles that clients expected SMEs to have in place.
- Among the data storage SMEs, large multinational clients required particular ISO standards (notably ISO 27001) to be met; otherwise they were unlikely to work with those SMEs. However, ISO compliance was not necessary for the SME that worked with residential customers.

One SME referred also to the importance of business resilience planning/disaster management as a means to win the confidence of potential customers. That company had attended a local, SFEDI-accredited 'Get Resilient' training course to help develop its business resilience plan.

19.13.6 Standards

There was limited use of externally-derived standards among ICT SMEs; and a perception among the smaller SMEs that standards delivered few tangible benefits but required significant financial and management investment.

- The larger telecoms and data storage providers were using ISO 9001 standards, with one data storage SME also adhering to ISO 27001; adoption and use of these standards was client-driven.
- Microsoft and CISCO certifications were used by those SMEs providing relevant services; these were graded forms of accreditation that could be challenging for the smallest SMEs to achieve.
- Telecoms SMEs were required to meet generic Health and Safety requirements. However, in order to work at height on mobile telecommunications masts, engineers were required to have had training that was certified by Arqiva (the UK's largest independent Wi-Fi provider).

There was very little reported use of British Standards, nor any anticipated future use of standards beyond those already used. Best practice (e.g. the Agile Framework) appeared to address many SMEs' needs in this sector.

19.13.7 Participating in standards development

- SMEs in all sub-sectors thought that it would be important to include large IT and telecoms providers (e.g. Apple; Google; Vodafone; Microsoft) in the development of new standards, alongside SMEs, and that standards developed by small companies alone were unlikely to be accepted within the wider industry. Government funding was also identified as a need by two SMEs.
- Barriers to SMEs participating in standards development were:
 - The likely time commitment involved
 - Having to travel to London, which was difficult for many SMEs to justify
 - A sense among telecoms informants that existing best practice had been developed in a very 'top-down' way, and that committee structures were prone to domination by large companies.

- These barriers could, however, potentially be overcome by offering webinar-based participation rather than requiring SMEs to travel to London. One informant in software development also specified that it may be helpful to give new standards more ICT-relevant names, rather than a numbered system such as ISO 9001, in order to convince SMEs of their relevance.

19.14 Conclusions and recommendations

ICT is a diverse sector and businesses' requirements for standardisation differ markedly across the various sub-sectors researched (i.e. are very different in telecoms than in software development).

As in many other sectors, the smaller SMEs saw little value in adopting externally developed standards, whether new or already available. Awareness of standards and their potential relevance was very limited within this sector, particularly among software developers. There appears, therefore, relatively limited value in the development of new British Standards for ICT, with particular concerns about:

- The applicability of standards to SMEs that were undertaking very specific work – for whom standardisation might stymie their creativity, particularly in software development
- The costs versus benefits of standardisation, particularly the time and financial costs involved in adopting and then managing adherence to standards
- The limited benefit that standards beyond ISO 9001 bring in the telecoms sector, in which purchases are largely based on cost and reputation, rather than adherence to any standards.

ICT therefore appears to offer only limited opportunities for the development of new standards, and for SME participation in this process.

Nevertheless, many informants were conscious of a need for certain types of sector-specific standards – such as Microsoft certification – in order to grow their businesses. Amendments to this type of certification – enabling SMEs to better access Silver and Gold Partner status – would be welcomed. There are also areas in which some informants feel

there is a need for better regulation, particularly with regard to the safety regulations associated with installing IT cables.

If BSI does intend to develop standards that target ICT SMEs, then online, webinar-based participation routes will be important. Giving proposed new standards names that relate directly to ICT may also help to drive participation and adoption.

It would also be important also to include large IT and telecoms corporations, such as Apple and Vodafone, in the development of new standards, in order to promote wider acceptance of their value.

Part Three

Quantitative Research

20 Introduction

20.1 Background

BSI is conscious of changes in the shape of the UK economy and of the opportunities that SMEs may present for standards development and adoption.

In that context, BSI wished to develop a better understanding of the UK SME landscape, across all sectors and with specific reference to **Aerospace, Healthcare, Construction, Automotive, Food and ICT**.

Working with BSI, Marketwise Strategies developed a research project that comprised:

- Mapping of the SME landscape in the UK (a desk-based study, termed Stage 1)
- Qualitative and quantitative primary research among SMEs in the above sectors (sector-specific analyses – termed Stage 2).

This report presents the findings from the quantitative research, which took the form of a telephone survey among senior decision makers and others who had responsibility for standards and operating procedures in SMEs.

20.2 Objectives

The overall aim of the project was:

To better understand the UK SME landscape in order to identify ways in which BSI can better serve SMEs and help make them more profitable, innovative and competitive in both domestic and overseas markets.

Across the project as a whole (Stages 1 and 2), there were 13 objectives. The following objectives (7 to 13) were specific to the Stage 2 research, of which the quantitative survey was one part:

7. To understand the **main challenges** that SMEs in Aerospace, Healthcare, Construction, Automotive, Food and ICT face in their industries
 - a. To identify what the core challenges are perceived to be, as businesses develop, including with reference to impacts upon profitability, innovation and competitiveness in both domestic and overseas markets.
 - b. To understand the issues that pose the **greatest challenges** for SMEs.

8. To identify the types of and specific **standards that are currently used by or are perceived as relevant by SMEs** in each sector (including technical standards, codes of practice etc.).

9. To understand in each sector **the challenges that SMEs face in using standards**
 - a. To explore SMEs' **current and past experience** of using or attempting to use standards
 - i. The standards concerned
 - ii. Positive and negative aspects of the experience (costs, benefits, impacts upon the business)
 - iii. Perceptions that resulted – of standards and of standards bodies such as BSI
 - b. To identify any **barriers to adoption** of standards or particular types of standards in each of the sectors researched
 - c. To identify any **sectors** where SMEs face particularly significant challenges in the use of standards, and to understand the reasons for this.

10. To identify any **challenges that SMEs face in participating** in standards development
 - a. To understand the **issues that arise** for SMEs when considering whether to take part and when taking part in the development of standards
 - b. To clarify **perceptions of what involvement would mean** – and the impact that this has upon willingness to engage with BSI
 - c. To explore **past experiences** of involvement, including positive and negative aspects and the perceptions that have resulted.

11. To understand what SMEs in these sectors **require from BSI in the future** and how this may differ according to the characteristics of the SMEs (e.g. by sector). This might include, for example,:
 - a. Helping SMEs to understand the role of standards, how to work with standards or how to become involved in developing standards
 - b. Making standards more accessible by SMEs
 - c. Adapting processes for standards development and for communications in order to maximise SME involvement and buy-in.

12. To highlight the **implications that arise for standards development and use** by SMEs in each sector, including to differentiate between issues that are sector-specific and those that have cross-sector implications.

13. To provide **baseline quantitative data and an appropriate methodology that enables the research to be replicated** in the future and meaningful comparisons to be obtained; in particular to enable change and progress to be measured at sector level.

A key requirement of the quantitative survey was to address Objective 13 and therefore to set a benchmark against which findings from future research could be compared.

20.3 Methodology

20.3.1 Approach

The quantitative research was carried out by telephone and targeted 600 responses across the six sectors (Aerospace, Healthcare, Construction, Automotive, Food and ICT), with quotas of approximately 100 responses in each sector. The final sample of 600 was made up of between 95 and 105 interviews per sector.

20.3.2 Sample

The sample was developed using Experian data and was based upon 5 digit SIC codes, enabling specific business activities to be targeted. A full list of SIC Codes is included at Appendix 3.

Target interviewees were those with responsibility for managing, within their company, adherence to their sector or industry standards, or who were otherwise able to comment on how standards impacted on the business as a whole. Appropriate job titles therefore included Owner, Managing Director, Quality/standards Manager or Director, and Technical Manager or Director.

20.3.3 Questionnaire

The survey questionnaire comprised rating scales, multiple choice and open ended questions. A copy of the questionnaire is included at Appendix 4.

20.3.4 Interviews

The research involved CATI (Computer-Assisted Telephone Interviewing), carried out by Marketwise Strategies' fieldwork partner, Feedback Market Research, which operates a specialist CATI centre. Interviews were intended to last approximately 10 minutes and only one interview per organisation was permitted.

During interviews, data was recorded simultaneously in survey software Snap, to ensure that the data gathered was ready for analysis. Snap was also used as the main software tool for data analysis.

21 Sample Profile

21.1 Respondents' job roles

Among the 600 respondents, just over half held leading roles within their SME (such as Managing Director, Chief Executive, Owner/Proprietor, or Company Director). Given the nature of the target group (SMEs) it was not surprising that the most common job title was Managing Director, which made up 43% of the sample (Table 14). The next most common title was Manager (14%). In each sector, at least 40% of interviewees identified themselves as the Managing Director or Owner/Proprietor.

Some job titles were represented more strongly among respondents from particular sectors, e.g. Operations/Site Manager in Automotive and Quality Manager in Aerospace. Interviewees' job titles are tabulated, by sector, within Appendix 5.

Table 14 Job Title

Q2: What is your job title?		
Job Title		
Managing Director	260	43%
Manager	83	14%
Owner/Proprietor	48	8%
Quality Manager/Engineer	29	5%
Operational Director	21	4%
Company Director/Director	17	3%
Office Manager	20	3%
Other Job Titles	122	20%
<i>Total</i>	<i>600</i>	<i>100%</i>

21.2 Organisation size

21.2.1 Workforce

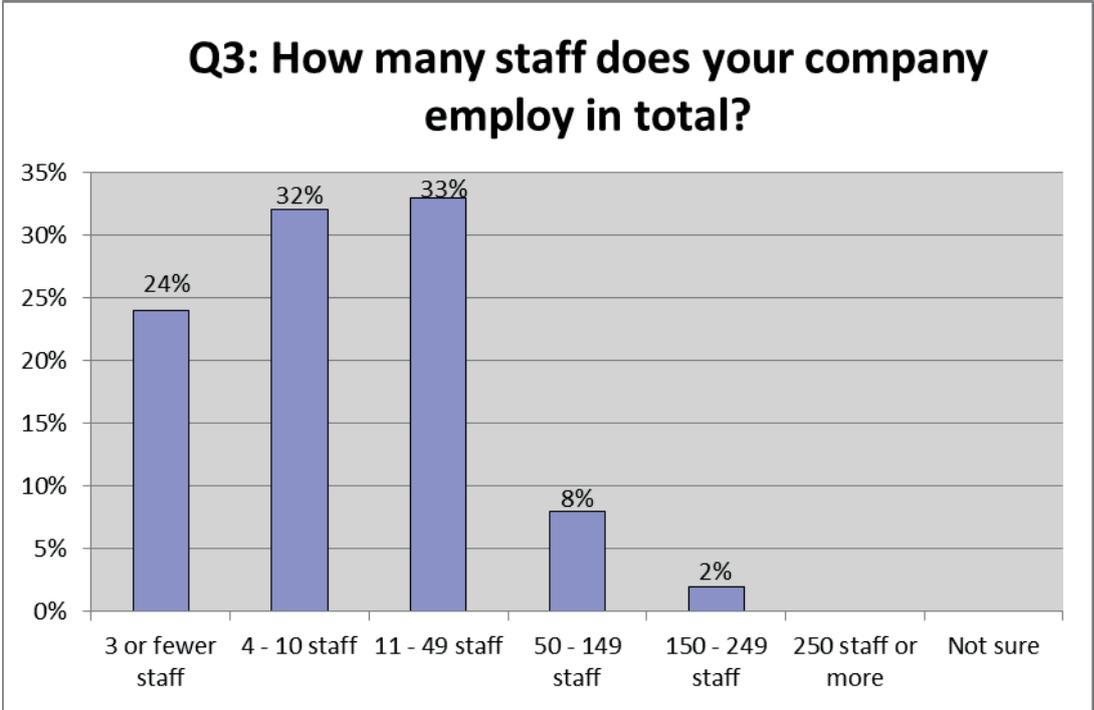
The vast majority of SMEs within the sample (89%) had fewer than 50 staff (Figure 1, overleaf). This included 24% that had 3 or fewer staff. Only 2% had 150 or more staff.

Analysis by sector shows variances in terms of the weighting of staff numbers across the size bands (Table 15).

The sectors with the greatest proportion of respondent companies employing 3 or fewer members of staff were ICT (48%) and Automotive (46%). Only 14% of Construction sector SMEs had 3 or fewer members of staff.

Within the Healthcare sector, 60% of respondents had between 11 and 49 staff – the sector reporting the largest percentage of SMEs within this employee size band. Healthcare was also the sector where the largest number of interviewees (15%) reported having 50 to 149 staff.

Figure 1 **Number of Staff**



Total: 600

Table 15 Number of Staff Employed, by Sector

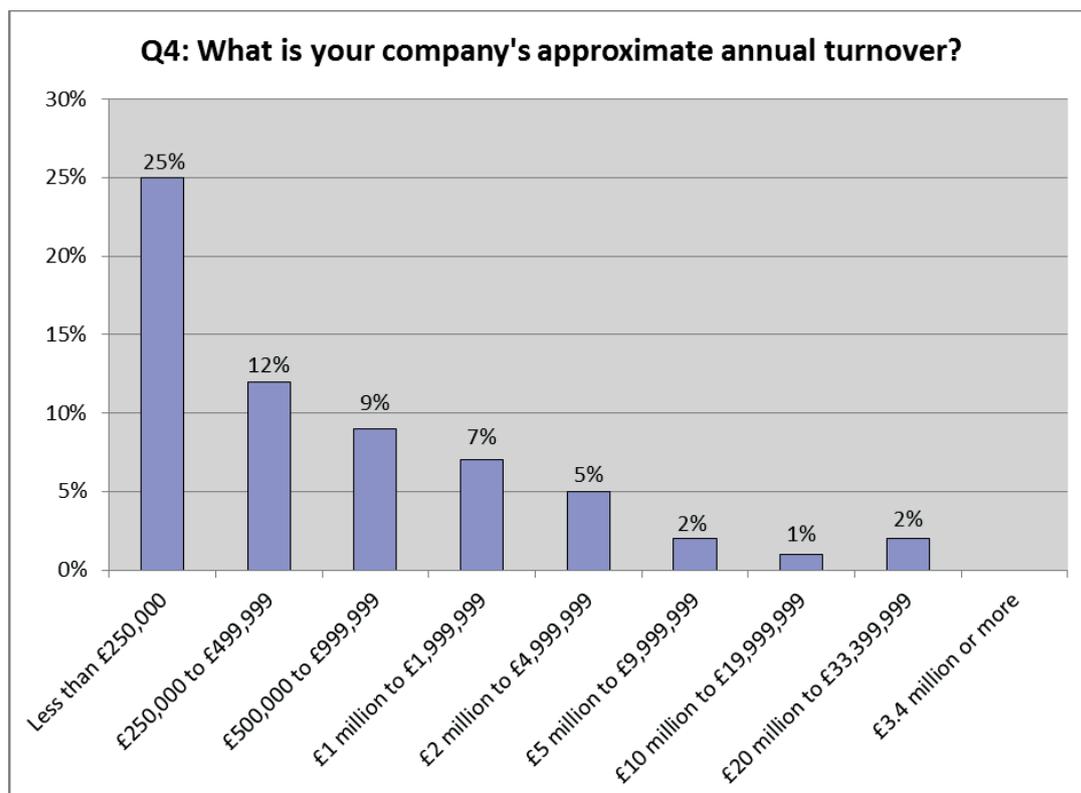
Company Size	Q3: How many staff does your company employ in total? By sector						
	Sector						
	Aerospace	Automotive	Construction	Healthcare	Food	ICT	
3 or fewer staff	27 27%	45 46%	14 14%	6 6%	7 7%	46 48%	
4 - 10 staff	37 37%	25 26%	39 39%	16 16%	52 50%	23 24%	
11 - 49 staff	26 26%	15 15%	34 34%	61 60%	43 41%	21 22%	
50 - 149 staff	9 9%	5 5%	10 10%	15 15%	3 3%	5 5%	
150 - 249 staff	2 2%	5 5%	4 4%	3 3%	-	-	
Not sure	-	2 2%	-	-	-	-	
Total: 600	101	97	101	101	105	95	

21.2.2 Annual turnover

SMEs in the smallest size band by revenue (annual turnover below £250,000) made up 25% of responses, while a further 12% had a turnover between £250,000 to £499,000 (Figure 2). A significant proportion of the sample, however, did not state their turnover (17% replying that they were not sure of the figure and 21% preferring not to say). Those who were unsure made up 54% of all respondents in Healthcare (Table 16).

The ICT and Food sectors had the highest proportions of businesses with a turnover below £250,000 (42% and 31% respectively). In other sectors, that proportion was below 30% (28% in Automotive, 24% in Aerospace and 22% in Construction (Table 16).

Figure 2 Approximate Company Turnover



Base: 600 ('Not sure' and 'prefer not to say' have not been displayed)

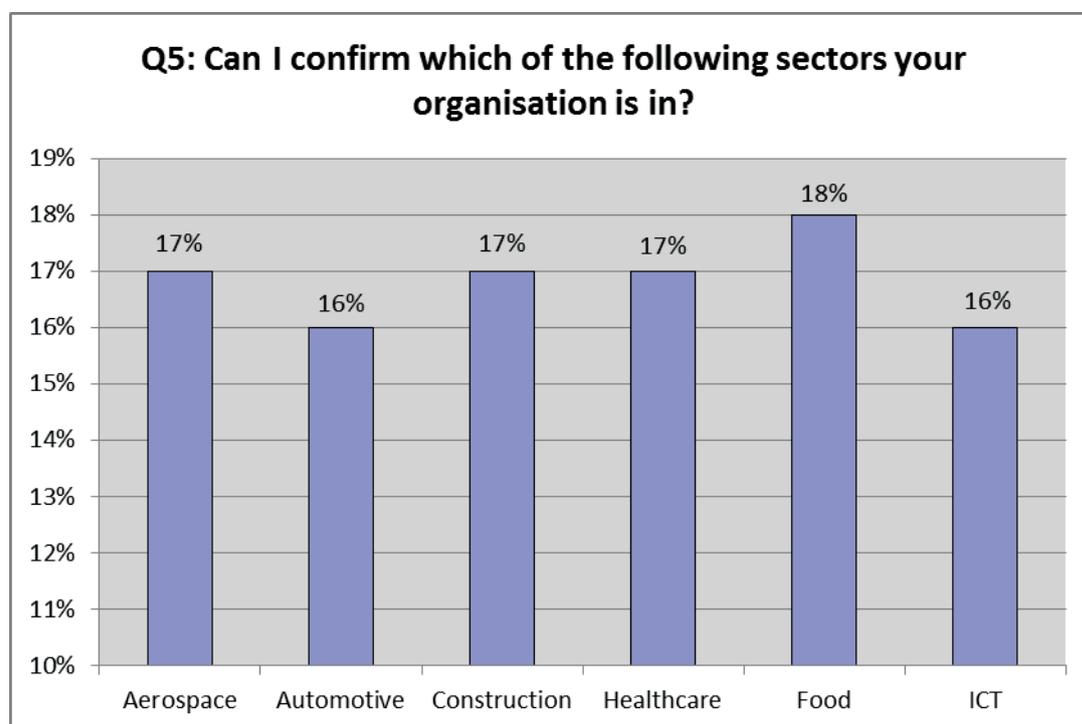
Table 16 Approximate Annual Turnover, by Sector

Approximate Annual Turnover	Q4: What is your company's approximate annual turnover? By sector						
	Sector						
	Aerospace	Automotive	Construction	Healthcare	Food	ICT	
Less than £250,000	24	27	22	4	33	40	
£250,000 to £499,999	24%	28%	22%	4%	31%	42%	
£500,000 to £999,999	19	9	10	2	23	7	
£1 million to £1,999,999	19%	9%	10%	2%	22%	7%	
£2 million to £4,999,999	10	4	14	4	13	11	
£5 million to £9,999,999	10%	4%	14%	4%	12%	12%	
£10 million to £19,999,999	11	5	7	6	6	5	
£20 million to £33,399,999	11%	5%	7%	6%	6%	5%	
£3.4 million or more	9	3	9	6	-	1	
Total: 600 ('Not sure' and 'prefer not to say' have not been displayed)	9%	3%	9%	6%	-	1%	
	4	2	3	3	-	2	
	4%	2%	3%	3%	-	2%	
	1	1	4	1	-	-	
	1%	1%	4%	1%	-	-	
	3	1	4	1	-	-	
	3%	1%	4%	1%	-	-	
	-	-	-	-	-	-	
	-	-	-	-	-	-	
	81	52	73	27	75	66	

21.3 Business activities

The survey achieved a relatively even number of responses per sector (**Error! Reference source not found.**), with each sector providing 95 to 105 responses (between 16% and 18% of the total). A detailed breakdown of the sample, by SIC Code, is included at Appendix 3.

Figure 3 Number of Respondents, by Sector



Base: 600

21.4 Locations

Across the sample as a whole, 20% of businesses were in the South East and a further 5% were in London (Table 17). The other regions contributing 10 or more of the sample were the East of England (11%), North West (11%) and the West Midlands (10%).

Data about location was gathered via a question that asked for the county in which companies were based, but has been analysed at regional level (Table 17 below).

A more detailed breakdown of the sample, showing sector as well as location, is provided at Appendix 6.

Table 17 Location of SMEs, by UK Regions

Q6: In which county is the company based?		
Location	All Sectors	
South East	119	20%
South West	97	16%
East of England	65	11%
North West	63	11%
West Midlands	60	10%
Yorkshire	45	8%
Scotland	38	6%
East Midlands	33	6%
London	31	5%
Wales	21	4%
North East	14	2%
Northern Ireland	13	2%
Channel Islands	1	0%
<i>Total</i>	<i>600</i>	<i>100%</i>

22 Findings

22.1 Use of standards

22.1.1 Current and recent use

Respondents were asked whether they used particular sources of codified standards or information (Figure 4). This included formal standards developed by BSI and others, trade association guidelines or specifications, and requirements that were laid down in contractual agreements with clients or suppliers. Provision was also made for respondents to record their use of internal, standard operating procedures (SOPs).

Only 37 respondents (less than 7% of the sample) said that they used no standards (external or internal).

Fifty percent used British, European or international standards and 54% used professional or industry standards, while 77% had in place SOPs. Other sources were each used by less than half of respondents.

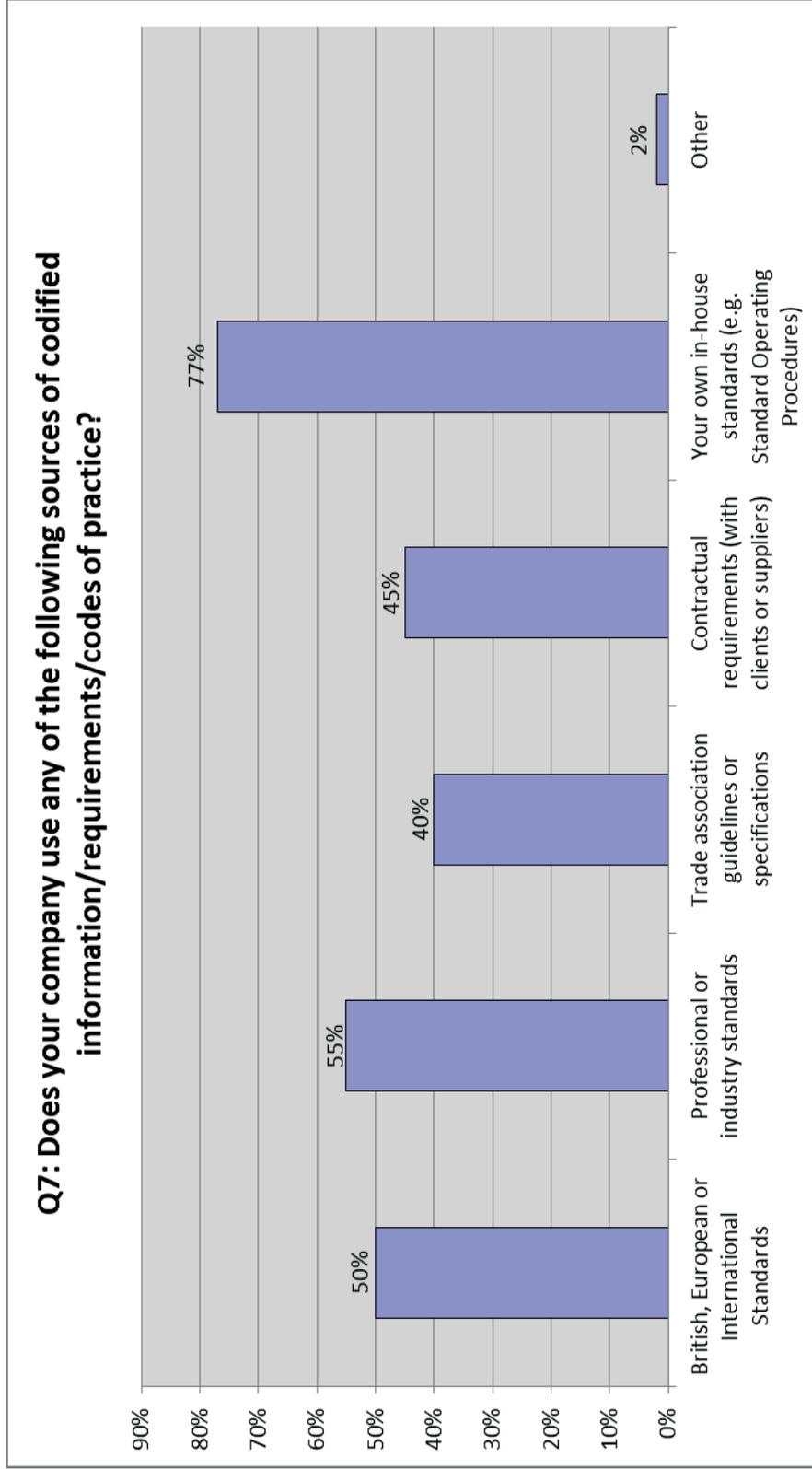
(NB: “British, European and international standards” refers to standards perceived by participants as being British, European or international in scope. This does not refer exclusively to BS, EN or ISO standards alone, as these standards were not automatically inferred by all SMEs participating in the telephone survey; e.g. in the case of Food, BRC standards, which lie outside the scope of BS, EN or ISO standards, were reported as an international standard)

The types of standards used differed markedly between the sectors (Table 18).

British, European or International standards were used by 72% of the Construction sector and 65% of the Food sector respondents.

The number of SMEs that used British, European or International standards increased in relation to company size (Table 19). This was also the case for the other four categories of standards sources. For example, 31% of SMEs with 3 or fewer staff used British, European and International standards, in comparison to 71% of SMEs with between 150 – 249 staff.

Figure 4 Sources of Best Practice Used



Base: 600 (Respondents were able to select more than one option)

Table 18 Sources of Best Practice, by Sector

Sources of Best Practice Used		Sector						
		Aerospace	Automobile	Construction	Food	Healthcare	ICT	
British, European or International Standards	52	43	73	66	38	27		
	51%	44%	72%	65%	36%	28%		
Professional or industry standards	61	33	62	76	54	39		
	60%	34%	61%	75%	51%	41%		
Trade association guidelines or specifications	32	26	55	56	51	18		
	32%	27%	54%	55%	49%	19%		
Contractual requirements (with clients or suppliers)	46	23	60	68	39	33		
	46%	24%	59%	67%	37%	35%		
Your own in-house standards (e.g. Standard Operating Procedures)	62	71	81	88	100	59		
	61%	73%	80%	87%	95%	62%		
Other	-	-	-	1	1	-		
	-	-	-	2%	4%	-		
<i>Base: 600 respondents (Could select more than one option)</i>	253	196	331	355	283	176		

Table 19 Sources of Best Practice, by Company Size

Sources of Best Practice Used	Company size (number of staff employed)				
	3 or fewer staff	4 to 10 staff	11 to 49 staff	50 to 149 staff	150 to 249 staff
British, European or International Standards	45	94	119	31	10
	31%	49%	60%	66%	71%
Professional or industry standards	54	104	121	34	12
	37%	54%	61%	72%	86%
Trade association guidelines or specifications	31	77	96	25	9
	21%	40%	48%	53%	64%
Contractual requirements (with clients or suppliers)	38	82	108	30	10
	26%	43%	54%	64%	71%
Your own in-house standards (e.g. Standard Operating Procedures)	81	153	174	39	14
	56%	80%	87%	83%	100%
Other	-	1	1	-	-
	-	5%	2%	-	-
<i>Base: 600 respondents (Could select more than one option)</i>	249	511	619	159	55

Table 20 'Other' Sources of Best Practice

Q7: Does your company use any of the following sources of codified information/ requirements/ codes of best practice? 'Other' Responses	
Sector	'Other' Sources
Food	Local Authority
Healthcare	Local clinical commissioning group (LCGs)
	Local medical committees

Count: 3 (From 2 respondents)

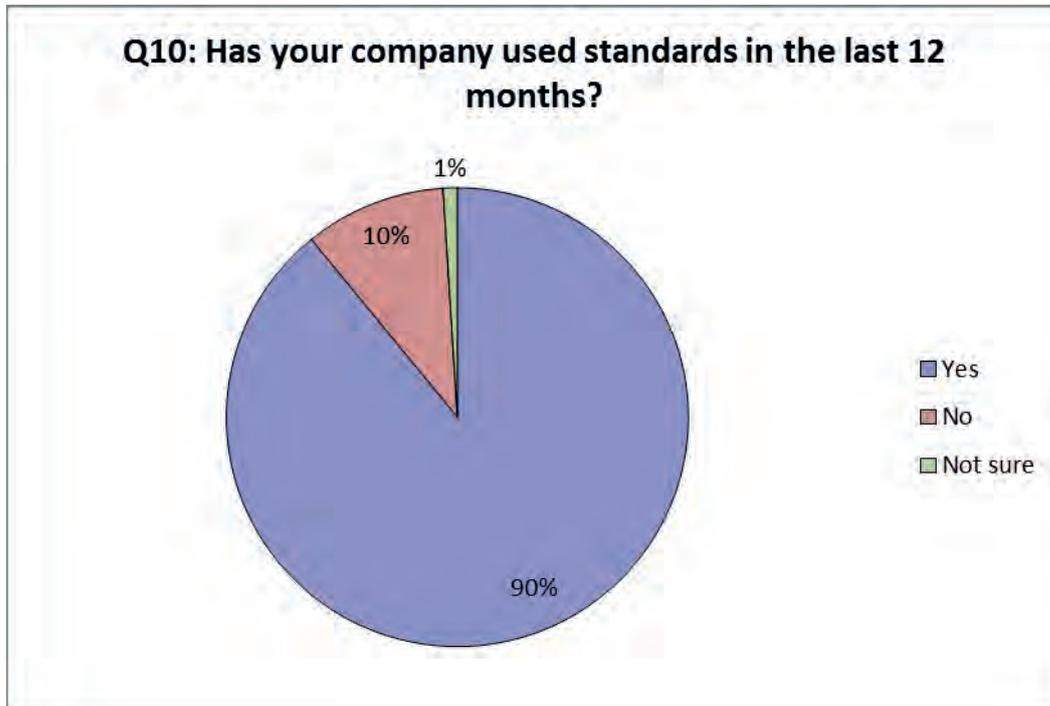
The reasons cited for using standards were largely framed positively and in terms of benefits to the business (Table 21). Only a small minority said that the standards used did not benefit their business, though 16% said that they were obliged to work to certain standards.

Table 21 Why Standards are Used (Benefits Derived)

Reasons	Q8: Please explain why you use [standards] in terms of benefit to the company							Count
	Sector							
	Aerospace	Automotive	Construction	Food	Healthcare	ICT		
<i>Using standards enables us to work compliantly/legally/ correctly and work to certain industry/expected standards and remain competitive</i>	21	13	51	47	20	20		172
<i>Our standards give our clients confidence / help generate repeat business / give our company a good reputation.</i>	19	18	31	8	4	27		107
<i>We are obliged to use standards / We can't operate without having certain standards</i>	32	8	17	7	25	9		98
<i>Standards help consistency within the business and/or to train staff up to a certain standard</i>	6	20	9	29	7	8		79
<i>No reason(s) given</i>	9	4	-	11	35	7		66
<i>Other reason</i>	12	10	2	7	5	7		43
<i>Standards help us to improve or work better / work to the highest possible standard</i>	4	8	9	4	10	4		39
<i>The standards we use do not benefit our business</i>	4	3	3	1	-	1		12
Count (Respondents were able to cite more than one reason)	107	84	122	114	106	83		616

Ninety percent (548) of the SMEs surveyed had used standards (defined as ‘an agreed, repeatable way of doing something’) within the last 12 months (Figure 5).

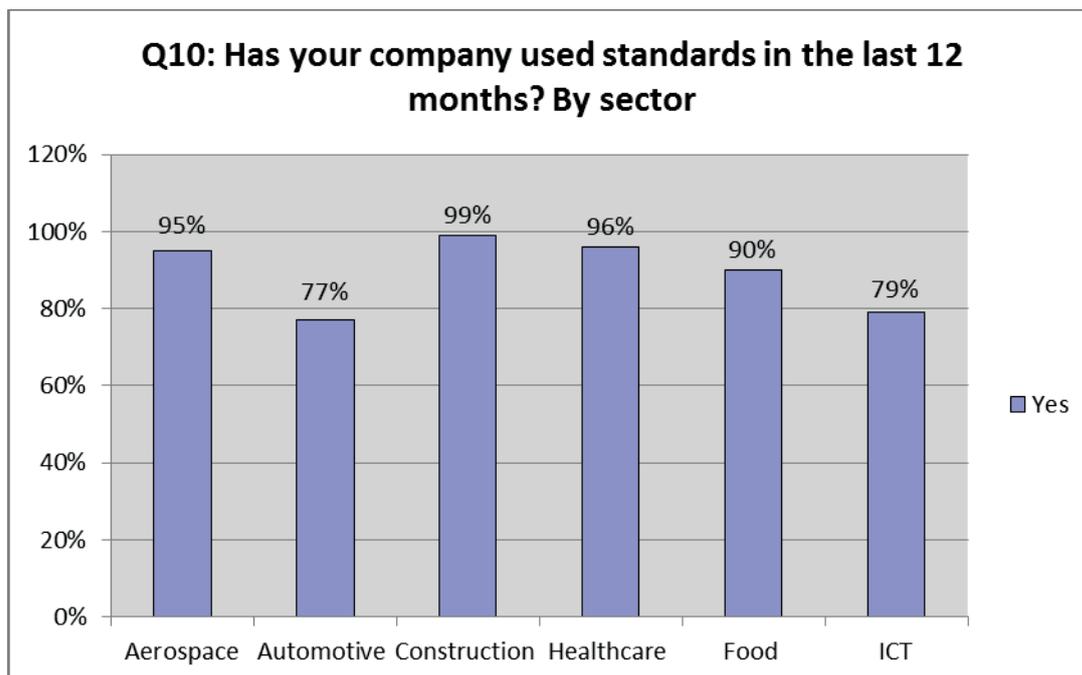
Figure 5 Use of Standards in the Past 12 months



Total: 600

Ninety percent or more of interviewees in Aerospace, Construction, Healthcare and Food had used standards in the past 12 months, compared with 77% in Automotive and 79% in ICT (Figure 6).

Figure 6 Use of Standards in the past 12 months, by Sector



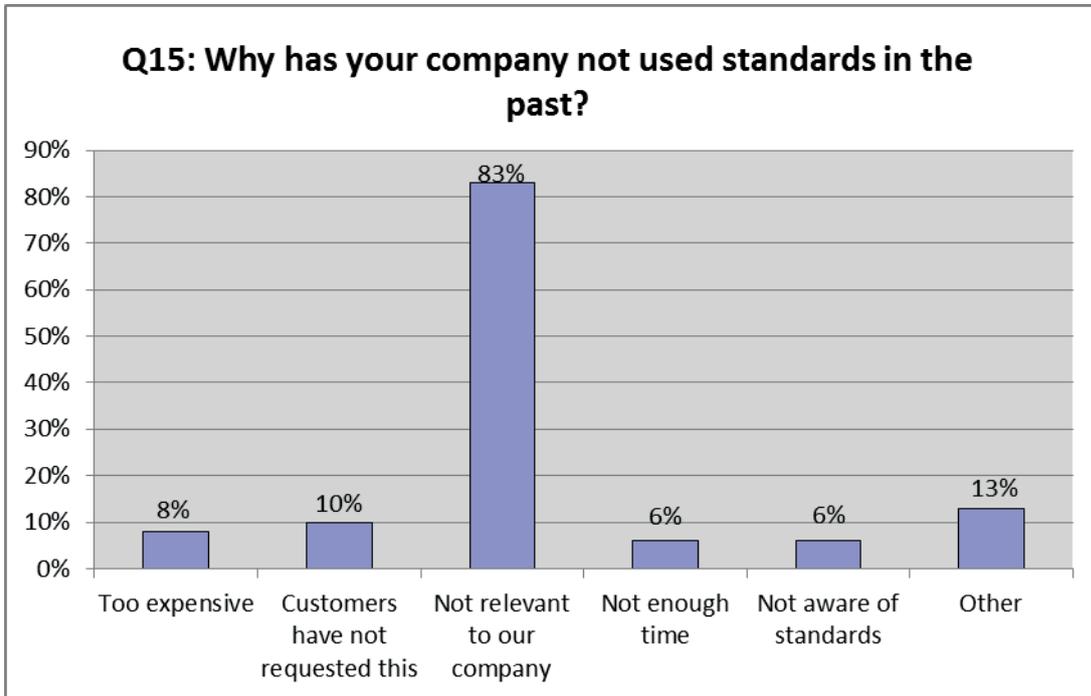
Base: 538 (Respondents who answered 'Yes' to using standards in the last 12 months)

Of the 10% of SMEs that had not used any standards in the past 12 months, 10 respondents (1.67% of the total sample) *had* used standards *prior* to the last 12 months.

22.1.2 Reasons for not using standards

The 48 respondents who had said that they had *not used* any standards during or before the last 12 months, were asked why this was (Figure 7). Forty of those (83%) said it was because standards were not relevant to their business. Far fewer said it was because of cost, time, awareness or customer demand.

Figure 7 Reasons for not Using Standards



Base: 48 (Companies that had not used standards in the past)

Five SMEs (13% of those that had not used standards) cited - also or instead – ‘other’ reasons why they had not done so (Table 22). Four of these ‘other’ reasons included ‘no need’ to use them.

Table 22 'Other' Reasons for not Using Standards

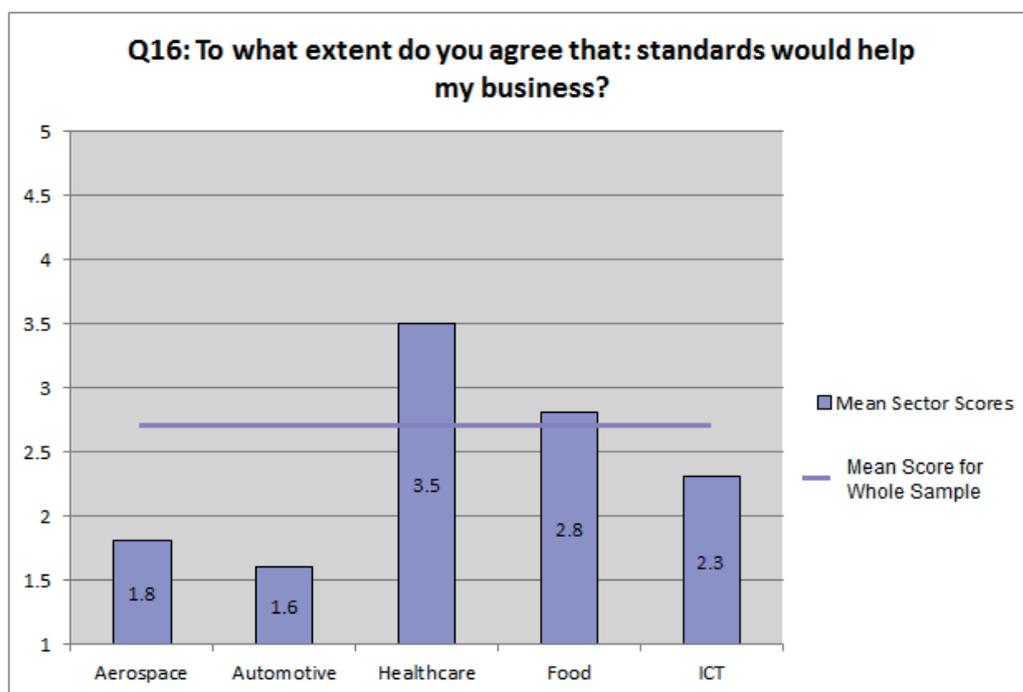
Q15a: 'Other' reasons for not using standards in the past	
Sector	Response
Automotive	<i>The manufacturers use standards so we don't need to.</i>
Food	<i>Not enough staff to need it.</i>
	<i>We have not had any need to yet.</i>
ICT	<i>We sell software as a service and we're a start-up business so there's very few things established for software.</i>
	<i>We're going through the process now.</i>

Count: 5 (From 5 respondents)

The 48 SMEs that had not used standards during or before the last 12 months, and 5 others who were unsure, were asked how far they agreed with the statement that standards would help their business (Figure 8). On a five point scale, 1 meant *strongly disagree* and 5 meant *strongly agree*.

The mean rating across the whole sample was 2.72. Healthcare respondents gave the highest mean ratings (3.5). In the Aerospace and Automotive sectors, the mean ratings were each below 2 (i.e. indicating that more disagreed than agreed).

Figure 8 Non Users: Would Standards Help your Business?

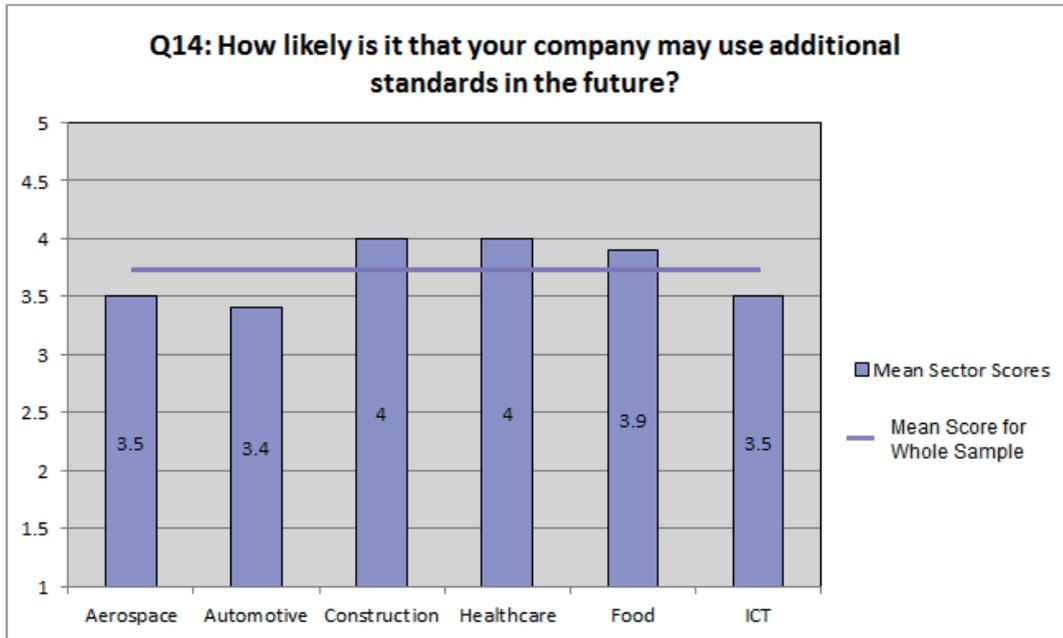


Base: 52 (Respondents who have not used standards before, or were unsure)

22.1.3 Future use

To measure the likely take-up of new standards among current users, those respondents who had used standards in the last 12 months were asked how likely they were to use additional standards in the future (Figure 9). The question used a five point scale in which 1 meant '*not at all likely*' and 5 meant '*very likely*'. The mean rating across the six sectors was 3.7 but there were significant variations in likelihood across the sectors, with Construction, Healthcare and Food the most likely to use additional standards.

Figure 9 Likelihood of Using Additional Standards in the Future

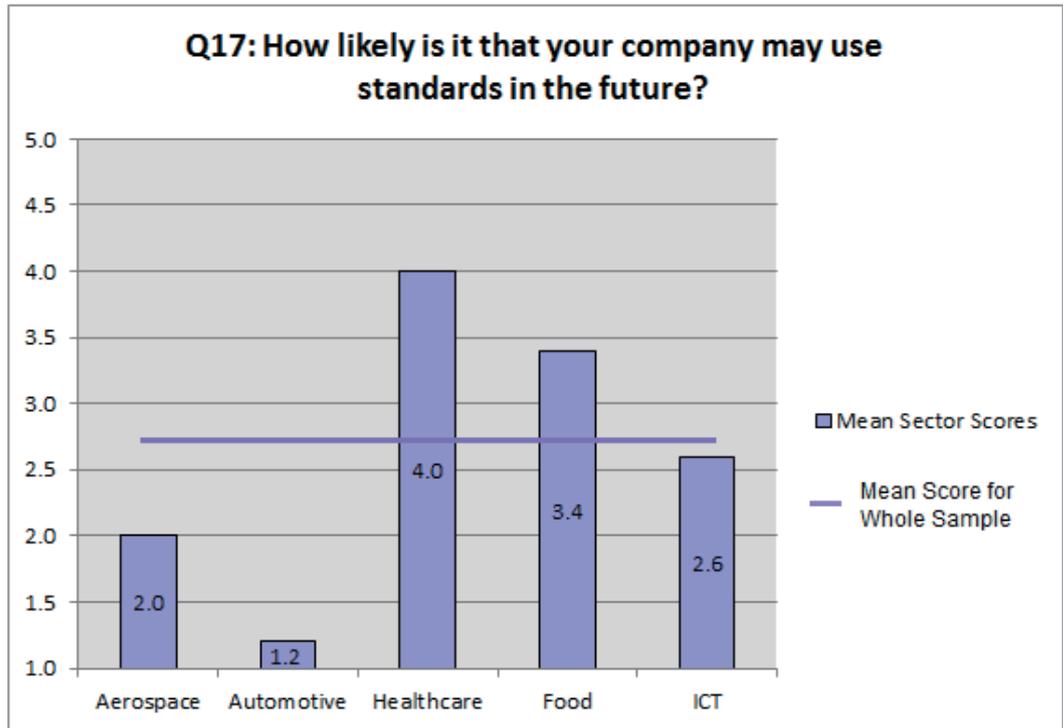


Base: 548 (Respondents who have used standards in the past)

Those respondents who did not use standards, or were unsure, were asked about the likelihood that they may use standards in the future (Figure 10). On a five point scale, 1 meant '*not at all likely*' and 5 meant '*very likely*'.

The mean rating was 2.72. The highest average rating (mean of 4.00) came from Healthcare, whilst the lowest (1.20) came from Automotive.

Figure 10 Likelihood that Standards May be Used in the Future



Base: 52 (Respondents who had not used standards before, or were unsure)

Non-users and those who were unsure were asked to explain the reasons behind their answers to the questions about (i) the extent to which standards would help their business; and (ii) the likelihood that the business would use standards in the future. A significant majority (34 of the 51 who responded to this question) cited lack of relevance or lack of need (Table 23).

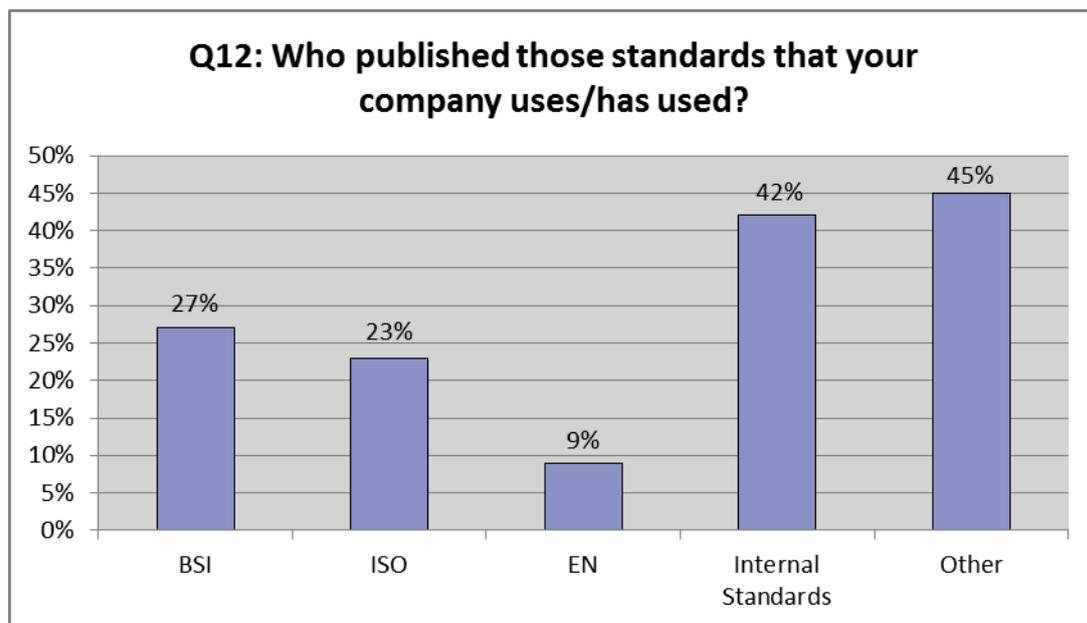
Table 23 Explaining 'Why Standards Would Help' and 'Likelihood of Future Use'

Response	Q18: In response to the statement 'standards would help my business' and the question 'how likely is it that your company would use standards in the future?' Please explain your answer.							Overall count
	Aerospace	Automotive	Construction	Food	Healthcare	ICT		
<i>Standards are not relevant for our company</i>	2	8	-	-	-	4		14
<i>The company is too small for standards to be relevant or needed</i>	1	3	-	-	-	6		10
<i>We do not perceive a current need for standards</i>	1	2	-	4	-	3		10
<i>We are considering introducing standards</i>	-	-	-	-	-	3		3
<i>We do not perceive any benefits from standards</i>	-	2	-	0	1	-		3
<i>We would consider standards if there was a change in circumstances</i>	-	-	-	-	-	2		2
<i>There are no industry requirements for standards</i>	-	1	-	-	-	1		2
<i>We don't have time to implement standards</i>	1	-	-	-	-	-		1
<i>The cost of standards is too high</i>	-	-	-	1	-	-		1
<i>Other</i>	-	1	-	2	1	1		5
Count (Non-users of standards and 'Not sures')	5	17	-	7	2	20		51

22.2 Sources of standards

Companies that had used standards (in the last 12 months or previously) were asked which organisation had published those standards (Figure 11). 148 of the total sample of 600 (27%) had used standards that were published by BSI.

Figure 11 Publishers of Standards Used

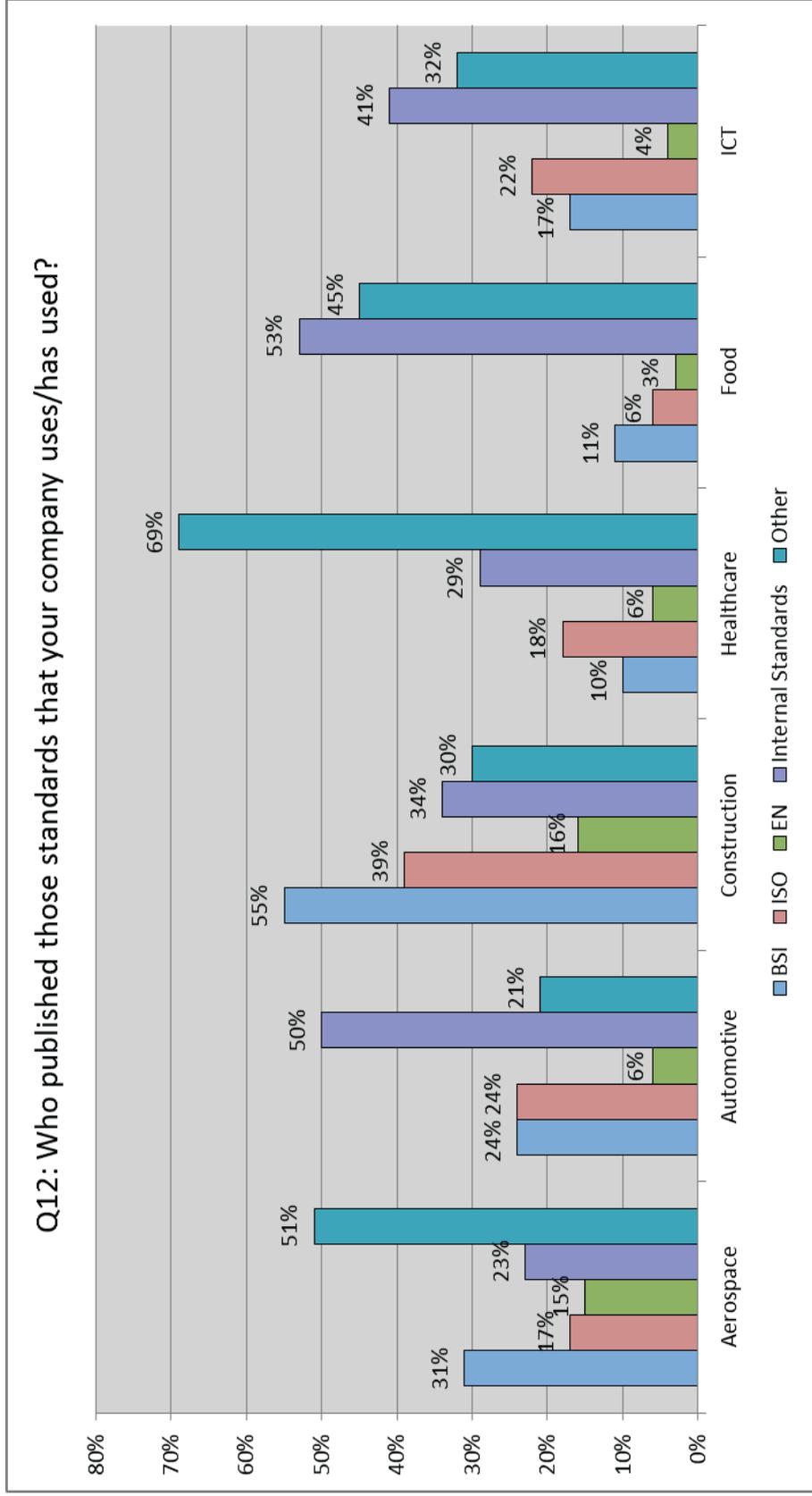


Base: 548 (SMEs who have used standards in the past)

% shown per publisher = % of the base

Among those in Construction, 55% had used BS standards, compared to 31% in Aerospace and 24% in Automotive. Use of BS standards was lower (below 20% in each sector) within Healthcare, Food and ICT (Figure 12). Among respondents in the Food, Automotive and ICT sectors, internal standards were the most commonly used.

Figure 12 Publishers of Standards Used in Past 12-24 months



When asked to name the standards that they had used, interviewees gave a diverse range of responses, though 'internal', BSI and ISO standards were, not surprisingly, the most common across the sample as a whole. In Healthcare, Food and Aerospace, sector-specific standards were most commonly cited. Table 24 lists those standards that were mentioned by the greatest number of interviewees, whilst Appendix 7 provides a full breakdown, by sector.

Table 24 Standards Used by SME Respondents, Sector

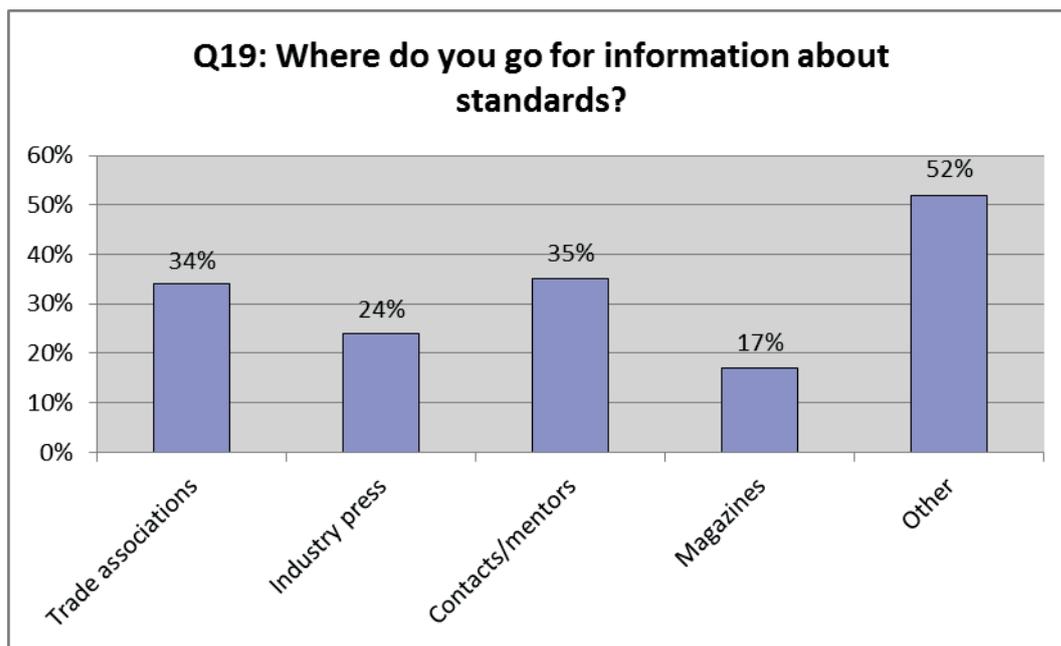
Standards	Q11: Which Standards has your company used? (Standards with more than 10 responses)							Overall Count
	Sector							
	Aerospace	Automotive	Construction	Food	Healthcare	ICT		
Internal/In-house	11	29	13	28	10	32		123
British Standards/BSI	19	21	30	6	4	7		87
ISO	14	18	25	-	12	12		81
Health & Safety	4	14	20	27	7	2		74
Food Standards	-	-	-	42	-	-		42
CQC	-	-	-	-	36	-		36
Aviation Standards	36	-	-	-	-	-		36
European Standards	4	1	8	-	-	1		14
Fire Safety	-	-	-	10	-	1		11
Dept. of Health	-	-	-	-	10	-		10
MHRA	-	-	-	-	10	-		10
Unspecified	11	15	19	6	14	18		83
Count	99	98	115	119	103	73		607

22.3 Sources of information about standards

Interviewees were asked where they went for information about standards (Figure 13). Presented with five options including ‘other’, 34% selected Trade Associations and 35% selected Contacts/mentors. The third most common information source was the internet – cited by 29% of the sample (176 respondents) (Table 25) and by the majority of those who selected ‘other’ as their response.

Some differences in information sources were evident across the sectors, with Trade associations (i.e. sector-specific sources) playing a major role in Construction and Healthcare (51% and 45% respectively), whilst in Aerospace and ICT, Contacts and mentors were the most used sources (49% and 41% respectively) (Figure 14).

Figure 13 Sources of Information about Standards



Total: 600

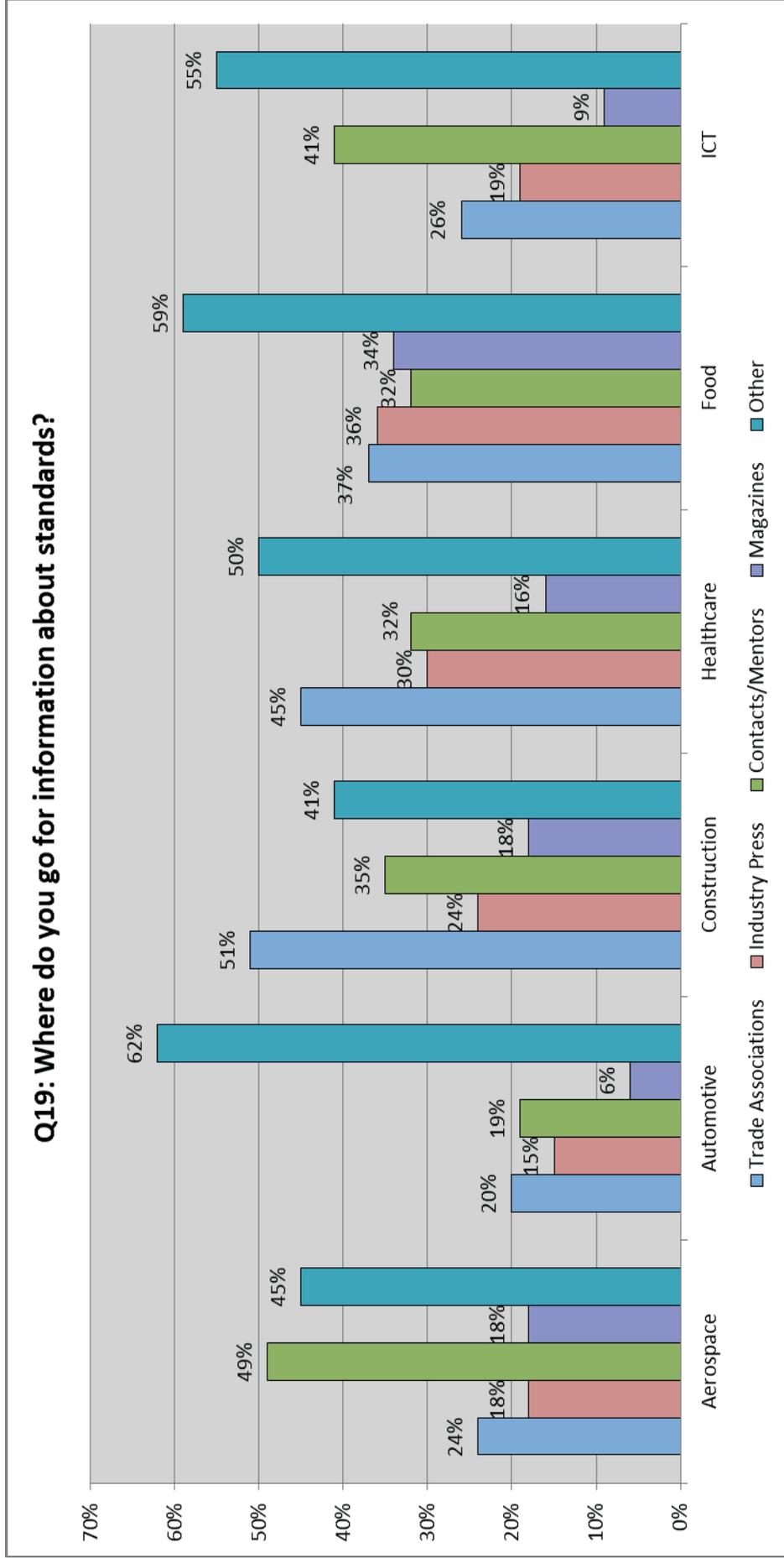
% shown per source of information = % of the total sample.

Table 25 'Other' Sources of Information about Standards

Response	Q19: Where do you go for information about standards? 'Other'							Total
	Sector							
	Aerospace	Automotive	Construction	Food	Healthcare	ICT		
Internet/Internet Search/Online	26	30	22	34	32		32	176
The Council/Local Authority/Government Websites/Environmental Health Agency	2	1	1	12	4		5	25
BSI	3	-	9		1		1	14
Sector specific organisations*	7	3	4	1	11		1	27
Manufacturers/Suppliers/Clients	4	8	4	4	-		5	25
We don't go anywhere for information	2	17	2	7	-		14	42
Other	7	3	9	8	4		2	33
Total 'other' sources of information	51	62	51	66	52		60	342
Base: 312 (Those SMEs who responded 'other')	45	62	41	59	50		55	312

*Sector specific organisations include: Civil Aviation Authority (CAA), the European Aviation Safety Authority (EASA), the Central Intelligence Agency (CIA), Institute for Gas, Engineers and Managers (IGEM), unnamed building safety groups, HAE UK, IHS, Institute of Molecular Bioscience (IMB), the Care and Quality Commission (CQC), Medicines and Healthcare products Regulatory Agency (MHRA), National Institute for Health and Care Excellence (NICE), medical journals, the Electrical Contractors' Association (ECA) and software providers.

Figure 14 Sourcing Information about Standards, by Sector

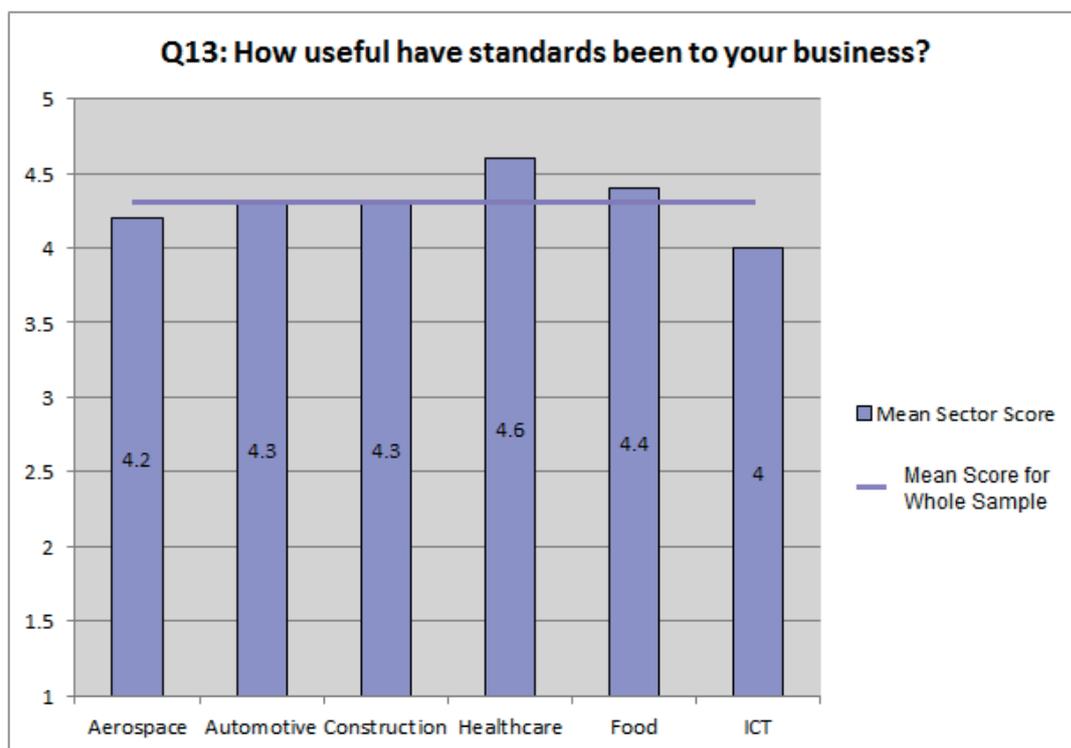


22.4 Perceived usefulness of standards

Respondents who had used standards in the past 12 months were asked how useful they felt standards had been to their business. The question used a 5 point rating scale, where 1 meant 'not at all useful' and 5 meant 'very useful'. The mean average rating across the six sectors was 4.3 (Figure 15).

The sector that rated standards as the *most useful* was Healthcare, with a mean average rating of 4.6. The lowest rating for usefulness came from ICT respondents, averaging 4 on the scale.

Figure 15 Perceived Usefulness of Standards



Base: 548 (Respondents who have used standards in the past)

Analysis by company size revealed few differences in perceptions of the usefulness of standards (Table 26 and Table 27).

Table 26 Perceived Usefulness of Standards, by Number of Employees

Cross Tabulation - Q13: How useful have standards been to your business? By Number of Employees						
SME by number of staff employed	Rating					
	1 (Not at all useful)	2	3	4	5 (Very useful)	Not sure/Not applicable
3 or fewer staff	5 4%	6 5%	16 14%	20 18%	67 59%	- -
4 to 10 staff	5 3%	8 4%	23 13%	45 25%	99 55%	1 1%
11 to 49 staff	2 1%	5 3%	19 10%	47 25%	116 61%	1 1%
50 to 149 staff	2 4%	0 0%	5 11%	9 19%	31 66%	- -
150 to 249 staff	-	1 7%	2 14%	4 29%	7 50%	- -
Not sure	-	-	-	2 100%	-	-
Base: 548 (Respondents who have used standards before)	14	20	65	127	320	2

Table 27 Perceived Usefulness of Standards, by Approximate Annual Turnover

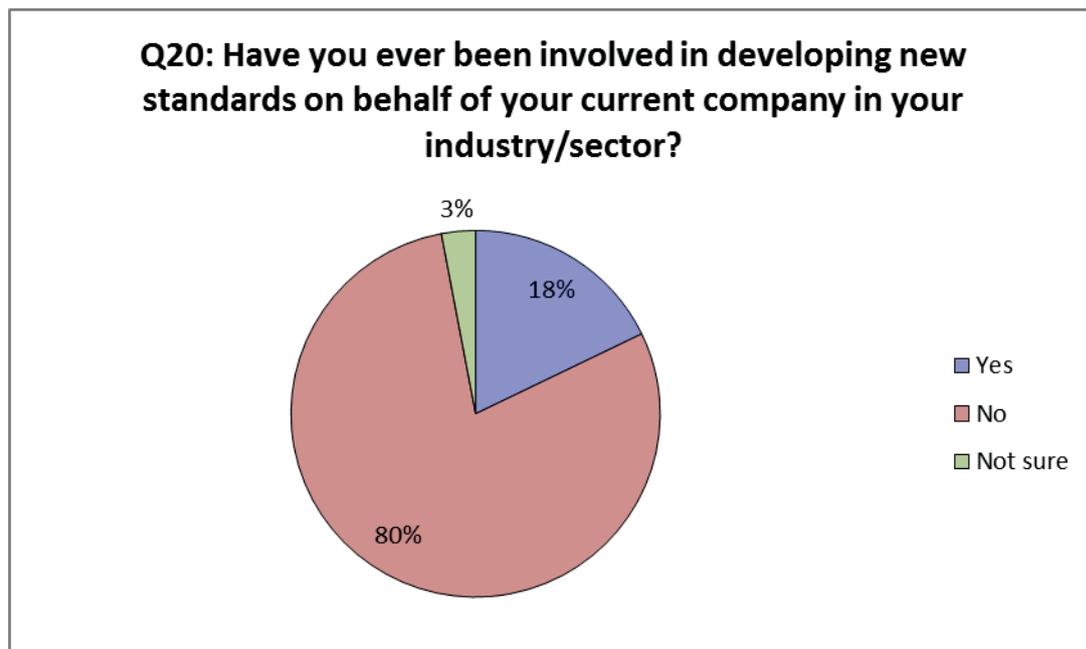
Cross Tabulation - Q13: How useful have standards been to your business?						
By Approximate Annual Turnover						
Approximate Annual Turnover	Rating					
	1 (Not at all useful)	2	3	4	5 (Very useful)	Not sure/ Not applicable
Less than £250,000	3	6	13	27	77	-
	2%	5%	10%	21%	61%	-
£250,000 to £499,999	3	6	11	9	36	-
	5%	9%	17%	14%	55%	-
£500,000 to £999,999	-	5	9	11	26	-
	-	10%	18%	22%	51%	-
£1 million to £1,999,999	2	1	7	8	18	-
	6%	3%	19%	22%	50%	-
£2 million to £4,999,999	1	-	5	6	16	-
	4%	-	18%	21%	57%	-
£5 million to £9,999,999	-	1	-	4	9	-
	-	7%	-	29%	64%	-
£10 million to £19,999,999	-	-	2	-	5	-
	-	-	29%	-	71%	-
£20 million to £34,399,999	1	-	3	1	4	-
	11%	-	33%	11%	44%	-
Not sure	1	1	7	25	64	1
	1%	1%	7%	25%	65%	1%
Prefer not to say	3	-	8	36	65	1
	3%	-	7%	32%	58%	1%
<i>Base: 548 (Respondents who have used standards before)</i>	14	20	65	127	320	2

22.5 Developing standards

22.5.1 Previous involvement

Almost a fifth of those interviewed (18%) said that they had been involved in developing new standards on behalf of their current employer (Figure 16).

Figure 16 Involvement in Developing New Standards



Total: 600

The 106 who had been involved in developing standards were asked in what capacity they had done this (Table 28). Most had been involved in developing standards or procedures for use within their own company (62).

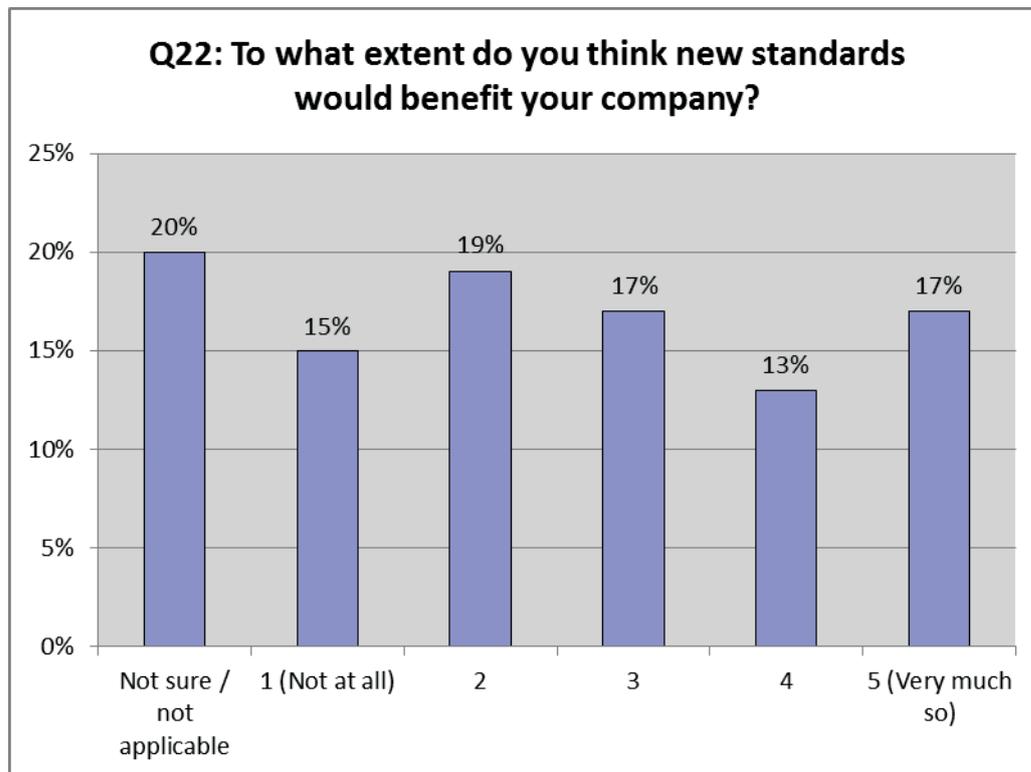
Table 28 Type of Involvement in Developing Standards

Response	Q21: In what capacity have you been involved in developing standards?							Overall count
	Sector							
	Aerospace	Automotive	Construction	Food	Healthcare	ICT		
<i>I have developed standards/procedures for use within my own company</i>	6	11	14	14	9	8		62
<i>In a managerial capacity</i>	1	-	-	1	12	-		14
<i>I have worked with bodies to develop industry standards</i>	5	-	1	-	2	1		9
<i>Implementing recognised industry standards</i>	3	-	-	-	-	1		4
<i>As a decision maker</i>	-	-	1	-	-	2		3
<i>I am a member of BSI</i>	1	-	-	-	-	-		1
<i>Other</i>	5	1	2	2	-	3		13
Count	21	12	18	17	23	15		106

22.5.2 New standards – the perceived benefits

When interviewees were asked to rate the extent to which new standards would benefit their company, their responses were quite evenly spread; within the five point scale, where 1 meant ‘*not at all*’ and 5 meant ‘*very much so*’, 30% of respondents gave ratings of 4 or 5 and 34% gave ratings of 1 or 2 (Figure 17). The mean average rating was 2.9.

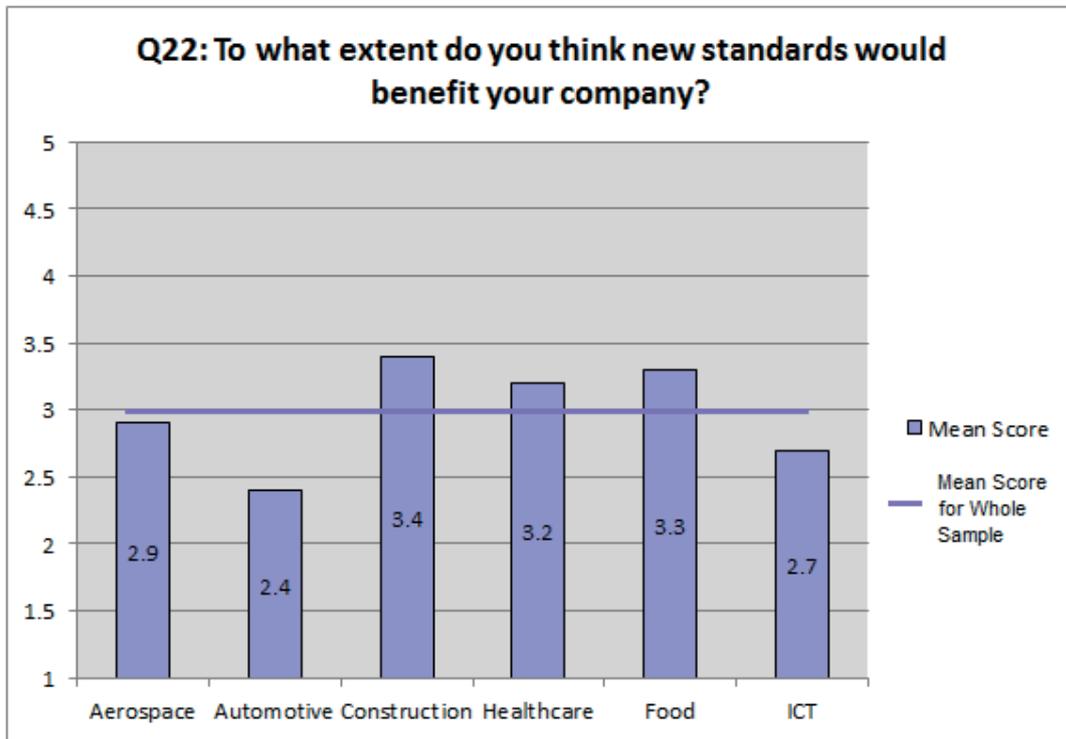
Figure 17 Extent to Which New Standards Would Be of Benefit



Base: 600

There were, however, some differences in response by sector, with SMEs in Construction, Healthcare and Food, on average, seeing new standards as more beneficial and those in Automotive seeing them as least beneficial (Figure 18).

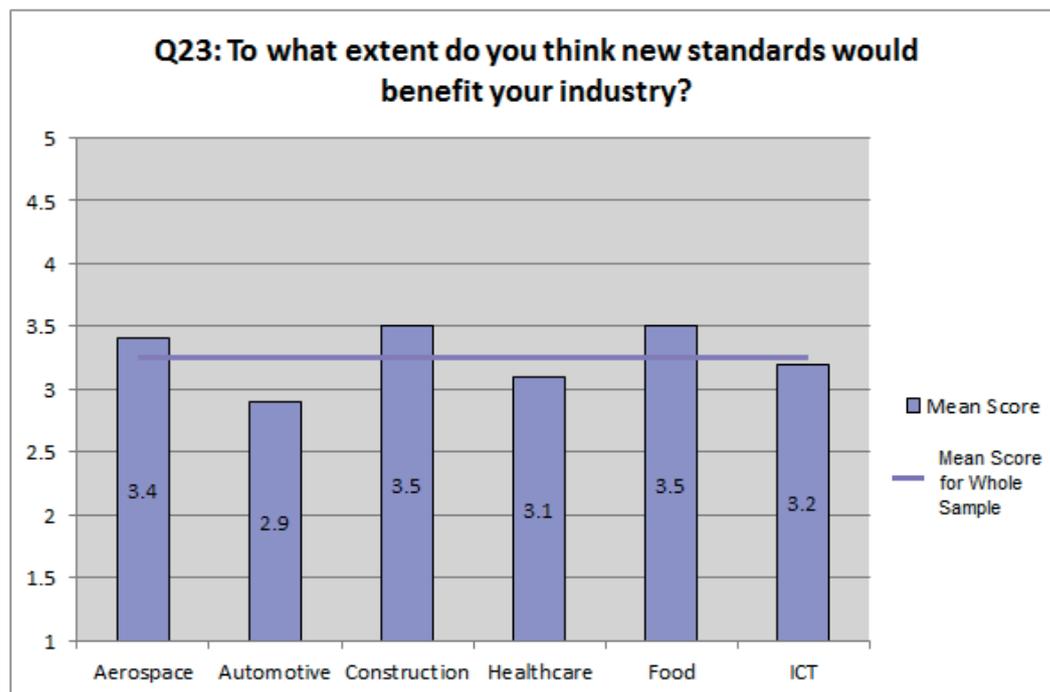
Figure 18 Extent to Which New Standards Would Be Beneficial, by Sector



Basel: 600

When rating, on the same scale, the extent to which new standards would benefit their industry, interviewees were slightly more positive, with a mean rating (across the sample) of 3.5. Again, respondents in Construction and Food perceived the greatest benefit and those in Automotive the least (Figure 19).

Figure 19 Perceived Benefits of New Standards to Industries



Base: 600

Respondents who had given a rating of 3, 4, or 5 when asked about the potential benefits of standards to their company or their industry (when answering the previous two questions) were asked what they would like new standards to do (Table 29). This question was posed to 322 respondents. Among those, 35 (11%) wanted new standards to standardise procedures, harmonise regulations or create consistency and 33 (10%) wanted them to improve company efficiency, productivity or profits. A substantial number of the responses to this question, however, focused upon improving, in some way, the quality or service delivered to customers.

Respondents who had indicated that new standards would not benefit their company or industry (i.e. they had answered either 1 or 2 to the previous two questions), were asked why this was. This question was posed to 128 respondents, the vast majority of whom (90 respondents, or 71%) indicated that the existing standards provided what they needed (Table 30).Table 30

A further 19 (15%) said that standards were unnecessary or irrelevant to their industry or organisation and 10 (8%) that there was too much paperwork or cost involved.

Table 29 What New Standards Should 'Do'

Response	Q24: What would you like standards to do?								Overall count
	Sector								
	Aerospace	Automotive	Construction	Food	Healthcare	ICT			
<i>Standardise procedures/harmonise regulations/ create consistency in standards</i>	7	1	4	3	15	6			36
<i>Improve company efficiency/ productivity/ profits</i>	2	4	12	3	5	7			33
<i>Improve quality</i>	2	5	2	7	5	4			25
<i>Eliminate sub-standard practices/ illegal practices</i>	5	2	1	4	-	6			18
<i>Provide greater clarity and/or ease of use</i>	4	2	2	1	7	1			17
<i>Improve the industry</i>	2	-	3	4	3	1			13
<i>Tighten up standards</i>	5	2	2	2	1	1			13
<i>Improve health and safety</i>	1	2	7	1	1	-			12
<i>Protect or reassure the customer/ improve service to customers</i>	-	-	1	3	4	3			11
<i>Provide training for staff</i>	1	3	-	3	3	-			10
<i>Cover advances in technology/industry changes</i>	-	-	4	-	3	2			9
<i>Update existing standards</i>	2	2	2	-	1	0			7
<i>Standardise pricing</i>	-	-	-	3	-	-			3
<i>Other</i>	16	1	3	9	9	6			44
<i>Not sure</i>	16	8	12	13	9	13			71
Count	63	32	55	55	66	50			322

Table 30 Reasons Why New Standards Would Not Be of Benefit

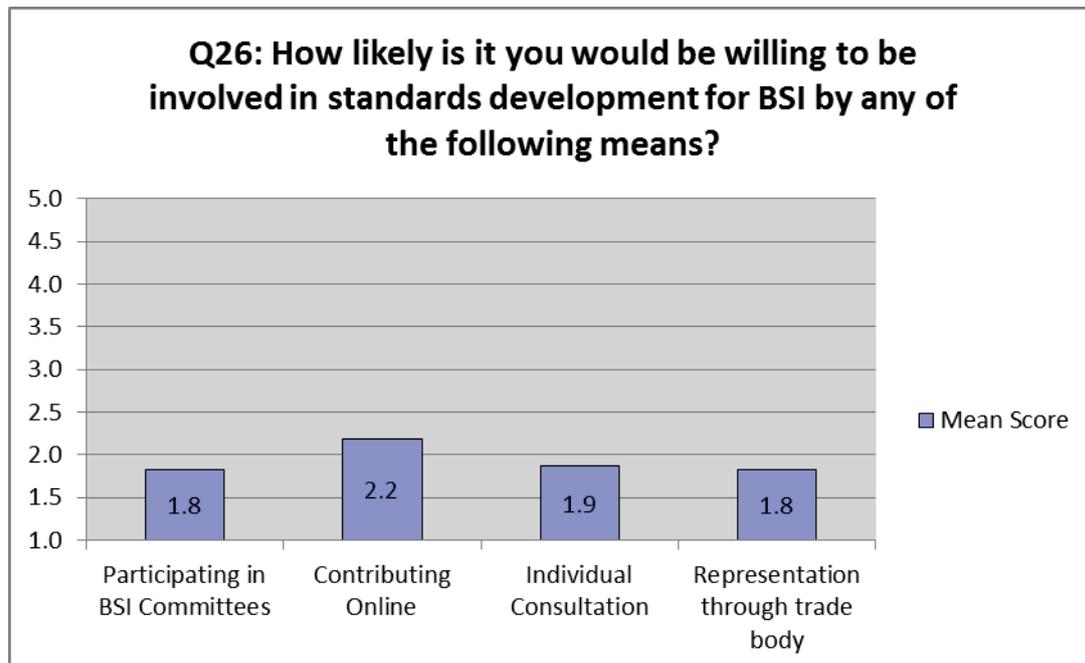
Response	Q25: Why would standards not benefit your company/industry?								Overall Count
	Aerospace	Automotive	Construction	Food	Healthcare	ICT			
<i>The existing standards provide what we need/ additional standards are not required</i>	15	15	12	18	20	10			90
<i>We don't need standards, they are irrelevant</i>	4	6	-	6	1	3			20
<i>There is too much paperwork and/or cost involved</i>	2	3	2	-	2	1			10
<i>There is too much existing regulation</i>	1	-	1	-	1	-			3
<i>Other</i>	-	-	2	-	1	2			5
Count	22	24	17	24	25	16			128

22.5.3 Willingness to become involved

Interviewees were asked about their willingness to become involved in standards development (for BSI), that took four possible forms: Participating in BSI committees; Contributing online; Individual consultation (at the company’s own site); or Representation through a trade body (Figure 20). An ‘Other’ option was also offered.

On a five point scale, where 1 meant *not at all likely* and 5 meant *very likely*, each option received a mean average response that was below 2.5; indicating relatively low levels of willingness to engage with BSI in each of those ways.

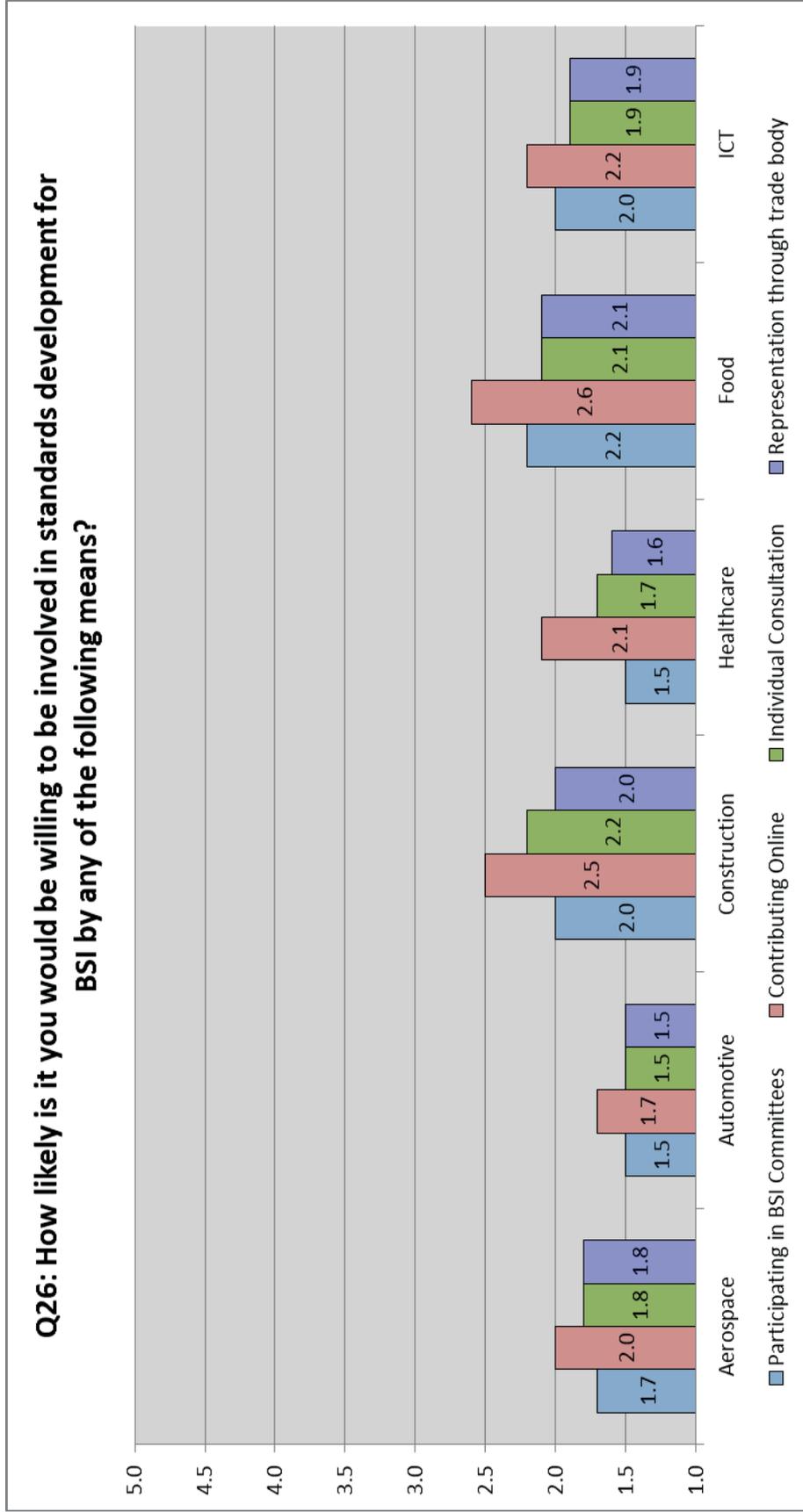
Figure 20 Willingness to be Involved via Specific Routes



Total: 600

Contributing online received the highest rating in each of the six sectors but this was not by a particularly wide margin. SMEs in Food (mean average rating of 2.6) Construction (mean average of 2.5) and ICT (mean average of 2.2) indicated the most willingness to be involved online (Figure 21). Overall, the Automotive sector showed the least willingness to be involved.

Figure 21 Willingness to Be Involved in Standards Development for BSI



All interviewees were asked what, if anything, would make it difficult for them to be involved in standards development for BSI (Table 31).

Across the sample, 403 respondents (67%) cited time constraints and 66 (11%) were not interested or could see no benefit to their business. 69 (11.5%), however could think of no reasons not to be involved.

Table 31 Barriers to Being Involved in Standards Development for BSI

Response	Sector							Total Count
	Aerospace	Automotive	Construction	Food	Healthcare	ICT		
<i>Lack of time or too busy</i>	72	64	63	79	77	48		403
<i>Can't think of anything / Nothing would stop me being involved</i>	11	10	17	10	4	17		69
<i>Not interested / Can't see the benefit to my business/ Don't feel it is relevant or applicable to my business</i>	7	10	9	8	6	10		50
<i>Don't feel I am the right person (due to experience and/or knowledge)</i>	9	7	7	5	5	8		41
<i>Other reason (including not sure)</i>	3	4	2	4	4	6		23
<i>Potential costs or financial implications</i>	-	2	4	1	-	3		10
<i>Location may be problematic</i>	-	2	2	2	1	1		8
<i>Don't think I am permitted to be involved</i>	-	1	-	-	5	1		7
<i>I am approaching retirement</i>	3	-	2	-	1	-		6
Count	105	100	124	109	103	94		617

When given an opportunity to make further comments at the end of the interview, 48 of the 600 respondents did so; Aerospace and ICT contributing the largest numbers of responses. Those comments were very varied, however, it was notable that comments from Automotive SMEs were largely negative (mostly discussing why standards were not relevant/helpful), whereas those from Construction SMEs tended to be much more positive and welcoming of standards (Responses to Open-Ended Questions – provided as a separate document).

23 Key Findings

23.1 Extent of using standards

- Across the sample (of 600 SMEs) as a whole:
 - **548 respondents (91%) had used standards (defined as ‘an agreed, repeatable way of doing something’).**
 - 538 (90% of the sample) had used standards in the past 12 months
 - a further 10 (2%) had done so in the previous 12 months
 - **50% had used British, European or international standards** (*NB: “British, European and international standards” refers to standards perceived by participants as being British, European or international in scope. This does not refer exclusively to BS, EN or ISO standards alone, as these standards were not automatically inferred by all SMEs participating in the telephone survey; e.g. in the case of Food, BRC standards, which lie outside the scope of BS, EN or ISO standards, were reported as an international standard*);
 - 54% had used professional or industry standards; 45% had used standards that were derived from contracts with their customers or suppliers; 40% had used trade association guidelines or specifications; and 77% had in place SOPs.
- Across the sectors, use of standards stood at:
 - Construction 99%; Healthcare 96%, Aerospace 95%, Food 90%; ICT 79%; Automotive 77%.
- The **types of standards** used, however, differed markedly between the sectors.
- Use of standards (of each type) also differed by size bands (**increasing with company size**).
- Only 48 respondents (8%) had used **no standards** or were unsure about this, and 37 respondents (less than 7% of the sample) said that they used no codified information/requirements/codes of best practice.

- Among the 48 SMEs that did not use any standards or were unsure, the vast majority (83%) said it was because they were **not relevant** to their company.
- Among current users of standards, those from **Construction, Healthcare and Food** were the most likely to use additional standards in the future.
- Among those who did not use standards, respondents in Healthcare indicated the greatest likelihood that they would do so in the future and those in **Automotive** indicated the least likelihood.

23.2 Reasons for using/not using standards

- Among those who had used them, standards were perceived to have been useful; in particular by those working in Healthcare – returning a mean score of 4.6 out of 5 (ICT less so – mean score of 4).
- The reasons cited for using standards were largely framed positively and in terms of benefits to the business. Only a small minority said that the standards used did not benefit their business, though 16% said that they were **obliged** to work to certain standards.
- Non-users and those who were unsure whether they used standards tended to cite **lack of relevance or lack of need** as reasons why standards would: (i) not help their businesses; and (ii) be unlikely to be used in the future. Other reasons were identified by far fewer respondents. Company size was noted by some as a reason why standards were not relevant (i.e. the business was too small).

23.3 Sources of standards

- 148 interviewees (27%) had used **BS standards** in their business and 126 (23%) had used ISO standards.
- Most common, however, were **internal standards** – used by 42% of the SMEs and used more than any other source of standards within Automotive and ICT.
- The sectors with the **highest usage levels of British, European or International** standards were:

- Construction (72%)
- Food (65%)
- Aerospace (51%)

(NB: “British, European and international standards” refers to standards perceived by participants as being British, European or international in scope. This does not refer exclusively to BS, EN or ISO standards alone, as these standards were not automatically inferred by all SMEs participating in the telephone survey; e.g. in the case of Food, BRC standards, which lie outside the scope of BS, EN or ISO standards, were reported as an international standard)

- Use of BS standards was highest by far in **Construction**, where 55% of SMEs that had used standards reported using these. In Aerospace and Automotive, less than a third of respondents had used BSI standards and in each of the other sectors usage was below 20%.
- A wide variety of specific standards was identified as having been used. Internal standards, BS and ISO were again prominent, but it was notable that in Healthcare, Aerospace and Food, **sector-specific standards** were the most common.
- Across the sample, the larger the business (by number of employees), the higher the likelihood that externally sourced standards were being used. This applied to each of the external-sources about which interviewees were asked (e.g. British/European/International; Professional/Industry; Trade Association; and Contractual (from supplier or customer).
- **Trade associations and contacts/mentors** were the most common sources of information about standards, followed by the Internet.
 - Construction and Healthcare respondents were most likely to cite trade associations as an information source
 - Respondents working in Aerospace and ICT were most likely to refer to contacts and mentors.

23.4 Standards development

23.4.1 Benefit of new standards

- **Opinion varied** with regard to the likely impact that new standards would have on **respondents’ companies** (mean score of 2.9 out of 5), with those

working in Construction, Healthcare and Food more likely to perceive a benefit.

- Respondents were more positive about the likely benefit of new standards on **their industry** (mean score of 3.5); in particular, Construction, Food and Aerospace respondents.
- **Automotive** respondents were **least likely** to perceive a benefit to their company or industry of new standards.
- Reasons for being interested in new standards included: to **improve standardisation and efficiency**, as well as to optimise customer service.
- By far the most common reason for believing that new standards would not be of benefit, was that **existing standards provided what was needed**.

23.4.2 Involvement in standards development

- Almost 20% of respondents had **been involved** in developing standards previously, mostly for use in their own organisations. Those working in Aerospace and ICT were most likely to have been involved in developing standards.
- There were relatively **low levels of interest** in becoming involved in standards development for BSI, especially among **Automotive** respondents. Those working in Construction and Food were the most willing to be involved, but interest was still quite low.
- **Contributing online** was the preferred means of involvement – across sectors. The overwhelming barrier to being involved in standards development with BSI was said to be a **lack of time**.
- Among the small number of final comments, Automotive SMEs continued to explain why standards were not helpful, whereas Construction respondents tended to be more positive and welcoming of standards.

Part Four

Conclusions and Implications

24 Conclusions

24.1 Challenges facing SMEs

Across the sectors, but particularly in Construction and Food and to a lesser extent Automotive and Healthcare, some businesses were continuing to experience impacts from the economic downturn (companies in Aerospace and ICT had suffered fewer impacts from this). This included difficulties in accessing finance, internal resource constraints that had resulted from public sector spending cuts and a greater emphasis upon having in place alternative markets. Where SMEs worked with large OEMs or other major corporations, for example in Aerospace, Automotive and in brewing, payment terms posed some challenges.

Where SMEs were required to work to different standards or to obtain different approvals in different geographical territories (for example the EU and the US), this led to higher costs and operated as a barrier to growing export trade.

The extent to which SMEs innovated or actively sought to innovate differed significantly between sectors and, to some extent, between different business activities within sectors. Among the Construction SMEs, for example, there was little scope to innovate except in niche areas, whereas in Automotive innovation was essential and was driven partly by the requirement to reduce the weight of vehicles (which in turn was related to the need to cut carbon emissions). Innovation was similarly a core aspect of pharmaceutical manufacturing. Within ICT there was evidence of innovation among software developers, but comparatively little among telecoms informants. This reflects important differences between sub-sectors within the industries researched.

24.2 Using and developing standards

Across the research as a whole, qualitative and quantitative, there was a relatively high reported use of internal standards or operating procedures by SMEs and some use of externally derived standards (e.g. BSI, ISO and customer-sourced standards). Where externally-derived standards were used, this was often in order to meet customer demands, to enable entry to supplier frameworks or to meet regulatory requirements that were specific to the industry concerned. Within Aerospace it was essential to adopt AS 9100 standards to enter OEM supply chains.

Externally-sourced standards were more commonly used by the larger SMEs, whilst some of the smaller businesses cited cost and staffing resource as significant barriers to adopting and implementing standards.

Interest in the development of new standards tended to exist in 'pockets' rather than being concentrated in particular sectors. This often reflected the specific areas of activity in which SMEs were engaged. In the quantitative research, respondents in Automotive were least convinced of the benefits that any new standards would bring to their companies and this was also reflected in their level of interest in being involved in standards development. Among Construction, Healthcare and Food SMEs, there was a more positive view of the potential impact that new standards could have, but the benefits to the industry tended to be seen as greater than the benefits to the company.

Interest in the creation of new standards sometimes stemmed from a perception that existing standards needed to be harmonised, that poor quality traders were competing unfairly – since they did not need to adhere to quality or operating standards – or that large customer organisations needed to be persuaded that a single standard was sufficient (rather than imposing their own internal standards upon suppliers in addition). There was also some interest expressed (for example within Aerospace and Construction) by SMEs that were diversifying or considering diversifying into new products and markets.

Some of the smallest businesses, for example in Construction, suggested that they had had difficulty in understanding which codes or standards applied to their areas of activity and asked that more be done to offer accurate and impartial advice

about standards. This was interesting in light of comments made in previous research completed for BSI by Marketwise Strategies, in which some SME interviewees felt that their businesses had received poor advice when working with standards consultants but had had better experiences when engaging directly with BSI.

Those whose businesses were providing a service (e.g. residential care; pub and restaurant chains), rather than manufacturing, expressed the greatest difficulties in understanding the relevance of standards to their businesses, since they were concerned to maintain flexibility within customer service interactions.

24.3 Taking part in standards development

Time constraints and the costs associated with releasing staff and with travel were important barriers to SMEs' involvement in developing standards. Within the quantitative survey, lack of time was by far the most common barrier highlighted. Those barriers should perhaps be viewed, however, in the context of the limited benefits that most SMEs associated with the development of new standards. Where SMEs perceive that new standards may help to reduce duplication (by streamlining the standards that are currently in operation), or could improve business efficiency in other ways, it is possible that the perceived barriers might be lessened.

Within the quantitative research, contributing online was favoured, across the sectors, rather than taking part in meetings in person. In depth interviews, however, where a wider range of options could be explored, the role of trade bodies in representing SMEs was prominent; given that the firms themselves were resource-constrained, their trade organisations were suggested as the most appropriate participants in developing standards. Those organisations could bring a breadth of understanding and, importantly, could make time available to do justice to the task.

Where SMEs perceived previous standards processes, or similar initiatives, to have been dominated by larger customer organisations there were suggestions that a more balanced approach was needed. It was widely recognised, however,

that the involvement of those large corporates – or public sector bodies – was crucial if new standards were to gain sector-wide acceptance.

SMEs, not surprisingly, suggested that government should be the main funder of standards development, particularly when standards were intended to benefit an industry or sector as a whole or to have wider benefits to the economy.

24.4 Requirements that SMEs have of BSI

In working with and in seeking to engage SMEs in standards development, BSI may wish to take into account the following preferences that have been expressed:

- For standards to be available in PDF format, with an option to print copies.
- For the time requirements associated with participation in standards development to be minimised and for the following methods to be part of a ‘menu’ of engagement options:
 - Online feedback routes, including online meetings
 - Participation via representative bodies, such as trade associations and industry groupings.
- For easy to understand information to be available, explaining which standards are relevant to particular business operations and sets of circumstances.
- Within a number of sectors (particularly Aerospace, Automotive, Construction and pharmaceuticals) to ensure that major OEMs are “on-board” with standards development.

25 Implications

This research has involved SMEs from six sectors and, within each of those, from multiple areas of business activity. Inevitably, therefore, only broad implications can be developed across the research as a whole.

- There is interest in standards among SMEs only in 'pockets' – where pockets have been identified (e.g. some types of Aerospace manufacturer) then an appropriate way forward may be for BSI to explore these further with the relevant trade/industry bodies.
- One possible issue raised is that of the lack of harmonisation of standards internationally (e.g. in the pharmaceutical sector); BSI might be able influence this.
- SMEs as a whole often have a relatively limited understanding of standards, and have tended to adopt only those standards required specifically by clients. There is, then, a need to work with trade bodies to communicate the potential value of new standards.
- Ultimately there may be a need to conduct research with industry bodies in order to clarify needs in particular areas.

Appendices

Appendix 1: Discussion Guide

SECTION A: INTRODUCTIONS

Interviewee details

1. Confirm name and form of address (e.g. Dr.)

- Job title and length of time in role
- Areas of responsibility and main focus
- Institutes that he/she is a member of.

Company

2. Confirm name

- Ownership
- Background (e.g. spin out – from where?; how developed)
- *(if this information is not already available to us)* How many sites does the company have?
- How many employees does the company have?

SECTION B – BUSINESS/ORGANISATION HISTORY, DIRECTION AND CHALLENGES

Note: for all sections of the discussion guide, interviewers will amend aspects of the script as required – e.g. questions about intellectual property are unlikely to be appropriate for a service provider such as a restaurant.

COMPANY FOCUS

3. What is the company's main focus?

- For manufacturers only – Technologies used – and in what ways
- For service providers – main types of customers and core services provided

4. What specific products or services do you currently offer?

- What products or services do you expect to be delivering in the next 1-2 years?

5. What role does the company play within its markets (e.g. subcontractor to OEMs)?

Probe:

- Main types of customer
 - Consumers or business?
 - If business – what sectors?
- Tier in the supply chain (for Aerospace and Automotive ONLY)
 - What market(s) are you in?
 - What markets do you expect to be serving in the future?
 - Are these the same markets as those at present?
 - Specific types of activity within its markets – ASK FOR CONCRETE EXAMPLES

6. What intellectual property, if any, does the company own?

- Is the company developing any other IP at present?
 - When developing innovative new products, does the company tend to register **patents for this**?
 - Why / why not?

HISTORY AND CHALLENGES

7. What would you say have been the biggest challenges that the business/organisation has encountered or is currently encountering?

- In relation to each one clarify: for challenges previously encountered, what most helped you to succeed?
- For challenges currently encountered, what do you expect will help you to meet those?

8. Do you anticipate any developments in the immediate future in terms of:

- Growth?
- Key partnerships and collaborations in place?
- Investment (are you seeking investment?)

9. How important is it to you that the work that takes place in this company as 'innovative'?

- *If they are innovative: Where, specifically, are you innovative?*

10. What new or coming technologies do you see as having the biggest impact on you?

11. Within this company, what are the biggest influences upon cost?

- What steps, if any, is the business taking to reduce or control costs?
- When you develop new products/services, what most influences the speed with which these can be taken to market?

12. (if appropriate to ask – e.g. unlikely to be appropriate for a restaurant business) Do you currently export or do you plan to?

- If not, why? What are the barriers?

SECTION C: KEY RELATIONSHIPS

13. To what extent does the company need to work closely (in effect consult or collaborate) with customers, suppliers or stakeholders when it is developing or selling its products/services?

- What form does this take?

14. Who do you trust to provide you with strategic business advice?

- Where do you seek this information?
 - Trade associations,
 - Professional bodies,
 - Journals
 - Mentors
 - Others (*ask to clarify*)?

SECTION D – BUSINESS IMPROVEMENTS AND BEST PRACTICE REGULATION

15. What are the main industry regulations that the company/organisation is required to meet?

- Who sets these (e.g. Food Standards Agency)?
- What regulations are they legal requirements, and which ones are closer to forms of voluntary self-regulation?
- Do you feel your industry/sector is too heavily or too lightly regulated?
 - Why / why not?
 - What would you prefer to see?

16. Thinking about regulation, how easy is it to ensure that the business/organisation meets all of its obligations? (clarify the systems, processes, standards that have been adopted)

- What resource implications are there? (e.g. dedicated staff, time, systems)
- Any particular challenges around this in the past? Currently?
- Is that likely to change at all in the future?

17. Are there any further regulations emerging?

- If so, how do you anticipate that you will meet those? Will this entail having to change the way that the business is organised?

BEST PRACTICE

18. How, if at all, does the company/organisation understand “best practice”?

19. Does the company/organisation use any established codes of best practice?

- *If so, what are they?*
 - *Are these the same as the regulations we have been discussing so far? Or are they different?*
 - *Are these codes VOLUNTARY codes?*
- What do they enable you to do?
- To what aspects of the business/organisation do they apply?
- When did you adopt them?
- Why?
- What benefits do they give you?

- What might the consequences be if you did not adhere to them?
 - To the best of your knowledge, do your competitors use them?
 - Why / why not?
- *If not, why not?*
 - What would incentivise their use?
 - Are there any codes that the company/organisation has used previously but now no longer uses?

20. Where do those codes of best practice come from?

Probe:

- Trade associations?
- Industry press?
- Contacts/mentors?
- Magazines?
 - Why these sources?

21. Are there other codes of best practice that could be used?

- What are they?
- Why do you choose not to use them?
- What do they cover?
- Do you intend to use these in the future?
- Why / why not?
- If so, when do you expect to start using these?

IMPROVING THE BUSINESS

22. Where do you get your knowledge from to improve your business processes/behaviours? (for example this could include with regard to governance).

- Trade associations?
- Industry press?
- Contacts / mentors?
- Others?
- Examples of this in practice?
 - Where do you get your knowledge from to improve the performance of **people** in your business?

23. In what areas, if any, would you most like to make improvements to the business?

- Governance
- Upskilling
- Sourcing suppliers
- Business processes
 - How would you intend to go about that?

SECTION E - STANDARDS

PERCEPTIONS OF STANDARDS

24. When I mention the word 'standards' what does that mean to you?

- Does this company have any formal standards in place?
 - *Probe for examples – particularly around both formal Standards and around Standard operating Procedures*

25. How relevant are standards to a company such as this?

- How would they benefit the wider industry (e.g. larger companies, or other parts of the supply chain)?
- At different stages in the development of the business?
- What would make standards relevant for you/your industry?
 - What standards, if any, do you require?
 - How quickly do you require them?

26. Are there any drawbacks to using standards?

- *Probe for details, any past experiences or stories*

27. Have you ever heard of BSI?(explain)

28. Have you had any contact with BSI

- What did that involve?
- When?
- Was it easy to find the information required?

29. Has the company ever bought or used standards in the past – either from BSI or from another source?

- ***Clarify which ones are used – whether British Standards or other types of standard***
- ***Whether formal standards or simply Standard Operating Procedures***
- What can you tell me about your own experiences of working with standards?
- What value do you see in using standards (British, European or International)?

DEVELOPING AND ACCESSING STANDARDS

30. In areas where standards would be helpful, who should be involved in creating them?

- Is this something that you think a small business such as yours should be involved in ?
- If not, why not, and who should be involved instead?

31. Some of the ways in which businesses often get involved in developing standards are through businesses joining committees within BSI to discuss and help to define standards that may be of benefit to particular industries as a whole – this can, however, require some time commitments.

- If you were to be involved, does that type of involvement would most appeal to you?
- How would you most like to be involved in developing standards for your industry, if at all?
- If one or more standards were to be developed that were relevant to your industry or technologies, how likely is it that you would actually be able to become involved in that?

32. Is there anything that might prevent or make it difficult for you to be involved?

- What might help to overcome this?

33. Standards development inevitably involves some costs. Who do you think should pay for this:

- Government funding
- Standards users (through sale of standards)
- Industry sponsorship (single company, consortia,
- Pay to play (i.e. all stakeholders pay to be involved in the process)

34. When a company like this one uses standards, what would be the best way or ways to access those standards? (hard copy, single copy PDF, online subscription to PDF docs, web based tools)

SECTION F: CONCLUSION

35. Is there anything else you'd like to raise in connection with what we have been discussing today?

When we produce our reports we list the names of contributors and their organisations in the appendices in order to illustrate the credibility of the data collected. As we work under the Market Research Society Code of Conduct your responses would not be linked to your name. Would you be happy to be listed as a contributor to this research?

- *Thank and request permission to contact again, if necessary, to clarify any details in their response*
- *Reassure anonymity regarding use of interview material*
- *Close*

Appendix 2: Research Ethics Protocol

Note: One copy of this document is to be retained by the interviewee. The second copy is to be signed by the interviewee and retained by the researcher.

Thank you for your willingness to participate in the above research. Your involvement is greatly appreciated by Marketwise Strategies and by our client BSI.

This research project is being led by:
Dr. John Gibson BA (Hons), MA, PhD

This interview is being conducted by
.....

Marketwise Strategies operates within the **Market Research Society Code of Conduct**. Before starting our discussion, I would like to clearly state the **rights which you have** within the interview:

1. Your participation and that of your company is voluntary.
2. You are free to refuse to answer any question, at any time.
3. You are free to withdraw from the interview at any time.
4. The content of this interview will be kept strictly confidential and all data deriving from the interview will be held securely.
5. Within our report to BSI, data and excerpts from this interview may be included, however, no data or comments that you have provided will be linked to you or to your company unless you have given written consent for this.

6. Within the project, several short case studies are expected to be prepared. Your company will not be used as a case study unless the company has consented to this. If such a case study is prepared, then you will be asked to approve its content. No case studies will be delivered to BSI without written approval having been received.
7. The audio recording and transcript from the interview will be destroyed when it is no longer required and in any case within 6 months of the interview being completed.

I would be grateful if you would sign this form to show that you have read its contents. Thank you.

SIGNED:.....
NAME(Printed):.....
DATE:.....

Appendix 3: SIC Codes Within the Sample

1 Number of Respondents, by SIC Code

Sector	SIC Code	Counts
Aerospace	3530	30
	6323	12
	28990	31
	30300	4
	52230	10
	26511 & 26513	14
Automotive	3161	9
	5030	19
	29100	27
	29320	33
	45320	9
Construction	2811	4
	3162	10
	4521	17
	4523	2
	4524	6
	4531	6
	23610	21
	42120	1
	71111	2
	74204	13
	74901	15
42220 & 42210	4	
Food	N/A	105
Healthcare	2442	23
	21100	18
	21200	1
	86210	20
	87300	39
ICT	6420	13
	7221	28
	7230	9
	7240	8
	61100	32
	63110	5
Base		600

2 Targeted SIC Codes

2.1 Aerospace sub-sectors focused upon when sampling:

SIC Code (2007)	SIC Code (2003)	Title
30300	3530	Manufacture of air and spacecraft and related machinery.
26511 & 26513		Manufacture of electronic and non-electronic measuring, testing etc. equipment, not for industrial process control.
28990		Manufacture of other special purpose machinery.
52230	6323	Service activities incidental to air transportation.

2.2 Automotive sub-sectors focused upon when sampling:

SIC Code (2007)	SIC Code (2003)	Title
29320		Manufacture of other parts and accessories for motor vehicles.
29100		Manufacture of motor vehicles.
29310	3161	Manufacture of electrical and electronic equipment for motor vehicles and their engines.
45320	5030	Retail trade of motor vehicle parts and accessories.

2.3 Construction sub-sectors focused upon when sampling:

Infrastructure

SIC Code (2007)	SIC Code (2003)	Title
42120	4523	Construction of railways and underground railways.
42220 & 42210	4521 4524 4531	Construction of utilities (electricity, telecoms and fluids).
74901		Environmental consulting activities.
74204		Civil or structural engineering focus.

Building

SIC Code (2007)	SIC Code (2003)	Title
71111		Architectural services.
23610	3162	Manufacture of concrete products for Construction purposes.
25110	2811	Manufacture of metal structures and parts of structures.

2.4 Food sub-sectors focused upon when sampling:

SIC Code (2007)	Title
N/A*	All those involved in the manufacture/production of Foods.
N/A*	Food retailers, independent restaurant/pub chains.

* BSI did not specify particular SIC Codes within the Food sector.

2.5 Healthcare sub-sectors focused upon when sampling:

SIC Code (2007)	SIC Code (2003)	Title
86210		General medical practice activities (GPs & Medical group practice).
87300		Residential care activities for the elderly and disabled.
21200	2442	Manufacture of pharmaceutical preparations.
21100		Manufacture of basic pharmaceutical products.

2.6 ICT sub-sectors focused upon when sampling:

SIC Code (2007)	SIC Code (2003)	Title
62011 & 62012	7220 7221 7222 7220 7221 7222	Ready-made interactive leisure and entertainment software development & Business and domestic software development.
61100		Wired telecommunications activities.
61200	6420	Wireless telecommunications activities.
63110	7230 7240	Data processing, hosting and related activities.

Appendix 4: Questionnaire

BSI Standards Survey

Q1 Prior to contacting the company **please ensure that their SIC code is listed below**, and select as appropriate - if not, this company is not eligible to take part:

- 21100
- 21200
- 23610
- 26511 & 26513
- 28990
- 29100
- 29310
- 29320
- 30300
- 42120
- 42220 & 42210
- 45320
- 52230
- 61100
- 61200
- 62011 & 62012
- 63110
- 71111
- 74204
- 74901
- 86210
- 87300
- N/A (Food sub-sectors only)
- 3530
- 4521
- 4524
- 4531
- 2442
- 7220
- 7221
- 7222
- 6420
- 7230
- 7240
- 7220
- 7221
- 7222
- 4523

- 2811
- 3161
- 5030
- 3162
- 6323

Good morning/afternoon.

I hope that you may be able to help me. I am trying to contact (job role listed in database e.g.Chief Executive / Managing Director) to invite (name of company) to be involved in a project that BSI (the British Standards Institution) is undertaking.

(If the person you are speaking to is unsure how best to direct your call you may need to say that), we would like to speak with a very senior member of staff able to comment on how standards impact on the company as a whole.

BSI is a business standards company that helps organisations all over the world to help embed excellence into the way people and products work.

The research we are carrying out is about understanding the value your company places upon standards - and to what extent standards might be able to be developed to help you meet these challenges.

The survey would take approximately **10 minutes to complete**.

Is now a good time for us to speak for 10 minutes?

If NO, then ask

“When would be best for you?” (proceed accordingly)

We work within the Market Research Society Code of Conduct - which means that anything that you do say to me will not be reported as having come from you or your company, and all of your responses will remain anonymous.

If you have any questions about this research, please contact John Gibson at Marketwise Strategies on 0191 261 4426 or at john@marketwisestrategies.com.

Q2 What is your job title?

- Managing Director
- Chief Executive
- Technical Director
- Operational Director
- Other

If 'Other' please specify below:

Q3 **How many staff** does your company employ in total? *(this is across all sites if they have more than one site)*

Please include **full-time and part-time staff** as well as **contract and agency staff**.

(If 'not sure' please ascertain whether number of staff is above or below 249 staff - if above this threshold, they will need to be routed out of the survey)

- 3 or fewer staff
- 4 to 10 staff
- 11 to 49 staff
- 50 to 149 staff
- 150 to 249 staff
- 250 staff or more (route out of survey as not classified as an SME)
- Not sure

Q4 What is your company's **approximate annual turnover**?

(If 'not sure' or 'prefer not to say' please ascertain whether turnover is above or below £34.4 million per annum - if above this threshold, they will need to be routed out of the survey)

- Less than £250,000
- £250,000 to £499,999
- £500,000 to £999,999
- £1 million to £1,999,999
- £2 million to £4,999,999
- £5 million to £9,999,999
- £10 million to £19,999,999
- £20 million to £34,399,999
- £34.4 million or more (route out of survey as not classified as an SME)
- Not sure
- Prefer not to say

Q5 Can I confirm **which of the following sectors** your organisation is in?

- Aerospace
- Automotive
- Construction
- Healthcare
- Food
- ICT

Q6 In **which county** is the company you work in based?

Q7 Thinking about where your company gets the information it needs on technical specifications of products and services, on business processes or on other good management practices - does **your company use any of the following sources of codified information/requirements/codes of best practice?**

	Yes	No	Not sure
British, European or International Standards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Professional or industry standards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Trade association guidelines or specifications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Contractual requirements (with clients or suppliers)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your own in-house standards (e.g. Standard Operating Procedures)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If 'Other' please specify below:

Q8 *(If yes to having used a source of best practice)* Please **explain which sources you use and why** you use them, in terms of benefits to the company?

Q9 *(If no to having used any sources of best practice)* Does your company use **any other information source** to help deliver your products and services and **to improve the performance of the company?**

(Probe on whether the company uses any of the following:

- *Informal sources, such as training courses, reference books or the internet*
- *Their staff*
- *Any other source)*



Q10 In essence a **standard is an agreed, repeatable way of doing something**, that businesses use to provide information about technical specifications or management systems, or values and principles, such as a code of good practice. Standards could relate to making a product, managing a process, delivering a service or improving the performance of your organisation.

Has your company **used standards**...

(If unsure to both - reiterate definition and if still unsure route to question 16)

	Yes	No	Not sure
In the past 12 months	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At any time prior to the last 12 months <i>(not asked of those who have used standards in the last 12 months)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q11 *(If yes to having used standards in Q10)* **Which standards** has your company used? *(List individually all those standards referred to)*

Q12 *(If yes to having used standards in Q10)* **Who published those standards** that your company uses / has used? *(Select all that apply)*

- BSI
- ISO
- EN
- Internal standards
- Other

If 'Other' please specify below:

Q13 *(If yes to having used standards in Q10)* Using a **scale of 1 to 5**, where 1 is **not at all useful** and 5 is **very useful** - **how useful** have standards been to **your business**? *(Ask interviewee to specify a number if this is not forthcoming)*

1 (Not at all useful)	2	3	4	5 (Very useful)	Not sure/Not applicable
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q14 *(If yes to having used standards)* Using a **scale of 1 to 5**, where 1 is **not at all likely** and 5 is **very likely** - **how likely** is it that your company may **use additional standards in the future**? *(Ask interviewee to specify a number if this is not forthcoming)*

1 (Not at all likely)	2	3	4	5 (Very likely)	Not sure/not applicable
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q15 (If 'no' to having used standards in Q10) **Why** has your **company not used standards in the past?** (Code answers as appropriate and select all that apply)

- Too expensive
- Customers have not requested this
- Not relevant to our company
- Not enough time
- Not aware of standards
- Other

If '**Other**' please specify below:

Q16 (If 'no' to or 'not sure' to having used standards in Q10) Using a **scale of 1 to 5**, where 1 is **strongly disagree** and 5 is **strongly agree** - to what extent do you agree or disagree with the following statement... (Ask interviewee to specify a number if this is not forthcoming)

	1	2	3	4	5	Not applicable / no opinion
	(Strongly disagree)				(Strongly agree)	
Standards would help my business	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q17 (If 'no' to or 'not sure' to having used standards in Q10) Using a **scale of 1 to 5**, where 1 is **not at all likely** and 5 is **very likely** - **how likely** is it that your company may **use standards in the future?** (Ask interviewee to specify a number if this is not forthcoming)

1 (Not at all likely)	2	3	4	5 (Very likely)	Not sure / not applicable
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q18 (If 'no' or 'not sure' to having used standards in Q10) Please **explain your answer** to the previous questions: (i.e. questions 16 and 17)

Q19 **Where** do you go for **information about standards?** (Select all that apply)

- Trade associations
- Industry press
- Contacts/mentors
- Magazines
- Other

If '**Other**' please specify below:

Q20 Have you ever been **involved in developing new standards** on behalf of your current company in your industry/sector?

- Yes
- No
- Not sure

Q21 *(If yes)* In what capacity have you been involved?

Q22 Using a **scale of 1 to 5**, where 1 is **not at all** and 5 is **very much so** - **to what extent** do you think **new standards would benefit your company?**

(Ask interviewee to specify a number if this is not forthcoming)

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---------------------------|
| 1 (Not at all) | 2 | 3 | 4 | 5 (Very much so) | Not sure / not applicable |
| <input type="checkbox"/> |

Q23 And using the same scale - **to what extent** do you think **new standards would benefit your industry?** *(Ask interviewee to specify a number if this is not forthcoming)*

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---------------------------|
| 1 (Not at all) | 2 | 3 | 4 | 5 (Very much so) | Not sure / not applicable |
| <input type="checkbox"/> |

Q24 *(If 3,4, or 5 to either questions 22 or 23)* What would you like these standards to do?

Q25 *(If 1, or 2 to both questions 22 and 23)* Why do you feel this is the case?

Q26 Using a **scale of 1 to 5**, where 1 is **not at all likely** and 5 is **very likely** - **how likely** is it that you would be **willing to be involved in standards development for BSI** by any of the following means... *(Ask interviewee to specify a number if this is not forthcoming)*

- | | | | | | | | |
|---------------------------------|------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------------------------|
| | 1 (Not at all likely) | 2 | 3 | 4 | 5 (Very likely) | Not sure | Not applicable / no opinion |
| Participating in BSI committees | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Contributing online	<input type="checkbox"/>						
Individual consultation (on company's site)	<input type="checkbox"/>						
Representation through trade body	<input type="checkbox"/>						
<i>Other</i>	<input type="checkbox"/>						

If '**Other**' please specify below:

Q27 Please **explain your answer** to the previous question.

What, if anything, would make it **difficult for you to be involved** in standards development for BSI?

Q28 That brings us to the end of the survey - **are there any other comments you would like to make** about the topics we have covered today?



Q29 Company name:

Q30 Respondent name:

Q31 Phone number:

Q32 Interviewer name:

Q33 Interview date:

Please click the 'Submit' button below to complete the survey.

Appendix 5: Job Titles, by Sector

Q2: What is your job title?		
Job Title	All Sectors	
Managing Director	260	43%
Manager	83	14%
Owner/Proprietor	48	8%
Quality Manager/Engineer	29	5%
Operational Director	21	4%
Company Director/Director	17	3%
Office Manager	20	3%
General Manager/Project Manager/Assistant Manager	14	2%
Operations/Site Manager	14	2%
Practice Manager	12	2%
Landlord/Landlady	11	2%
Company Secretary	10	2%
Partner	10	2%
Technical Director	9	2%
Licensee	9	2%
Technical/Engineering Manager	6	1%
Other	17	3%
Care/Care home Manager	3	1%
Chief Executive	4	1%
Operations Assistant	3	1%
Total	600	100%

Q2: What is your job title? By sector - Aerospace		
Job Title		
Managing Director	35	35%
Manager	15	15%
Owner/Proprietor	5	5%
Quality Manager/Engineer	11	11%
Operational Director	7	7%
Company Director/Director	5	5%
Office Manager	3	3%
General Manager/Project Manager/Assistant Manager	2	2%
Operations/Site Manager	3	3%
Company Secretary	5	5%
Technical Director	1	1%
Technical/ Engineering Manager	5	5%
Other	1	1%
Chief Executive	1	1%
Operations Assistant	2	2%
Base	101	100%

Q2: What is your job title? By sector - Automotive		
Job Title		
Managing Director	40	41%
Manager	18	19%
Owner/Proprietor	11	11%
Quality Manager/Engineer	3	3%
Company Director/Director	3	3%
Office Manager	2	2%
General Manager/Project Manager/Assistant Manager	2	2%
Operations/Site Manager	8	8%
Company Secretary	1	1%
Partner	4	4%
Technical Director	3	3%
Other	2	2%
Base	97	100%

Q2: What is your job title? By sector - Construction		
Job Title		
Managing Director	56	55%
Manager	9	9%
Owner/Proprietor	3	3%
Quality Manager/Engineer	3	3%
Operational Director	4	4%
Company Director/Director	4	4%
Office Manager	4	4%
General Manager/Project Manager/Assistant Manager	2	2%
Operations/Site Manager	2	2%
Company Secretary	4	4%
Partner	2	2%
Technical Director	3	3%
Technical/ Engineering Manager	1	1%
Other	1	1%
Chief Executive	3	3%
Base	101	100%

Q2: What is your job title? By sector - Food		
Job Title		
Managing Director	24	23%
Manager	26	25%
Owner/Proprietor	18	17%
Operational Director	5	5%
Company Director/Director	1	1%
Office Manager	1	1%
General Manager/Project Manager/Assistant Manager	7	7%
Landlord/Landlady	11	10%
Partner	1	1%
Licensee	9	9%
Other	2	2%
Base	105	100%

Q2: What is your job title? By sector - Healthcare		
Job Title		
Managing Director	51	50%
Manager	8	8%
Quality Manager/Engineer	10	10%
Operational Director	1	1%
Office Manager	5	5%
Operations/Site Manager	1	1%
Practice Manager	12	12%
Partner	1	1%
Technical Director	1	1%
Other	7	7%
Care/Care home Manager	3	3%
Operations Assistant	1	1%
Base	101	100%

Q2: What is your job title? By sector - ICT		
Job Title		
Managing Director	54	57%
Manager	7	7%
Owner/Proprietor	11	12%
Quality Manager/Engineer	2	2%
Operational Director	4	4%
Company Director/Director	4	4%
Office Manager	5	5%
General Manager/Project Manager/Assistant Manager	1	1%
Partner	2	2%
Technical Director	1	1%
Other	4	4%
Base	95	100%

Appendix 6: Location of SMEs, by Sector

Response Grouped by Region

Q6: In which county is the company based? By sector - Aerospace		
Location		
South East	25	25%
South West	14	14%
East of England	16	16%
North West	8	8%
West Midlands	8	8%
Yorkshire	4	4%
Scotland	11	11%
East Midlands	5	5%
London	2	2%
Wales	2	2%
North East	4	4%
Northern Ireland	2	2%
Channel Islands	0	0%
Base	101	101%

Q6: In which county is the company based? By sector - Automotive		
Location		
South East	14	14%
South West	20	21%
East of England	9	9%
North West	12	12%
West Midlands	11	11%
Yorkshire	3	3%
Scotland	2	2%
East Midlands	7	7%
London	7	7%
Wales	3	3%
North East	2	2%
Northern Ireland	6	6%
Channel Islands	1	1%
Base	97	98%

Q6: In which county is the company based? By sector - Construction		
Location		
South East	15	15%
South West	18	18%
East of England	9	9%
North West	13	13%
West Midlands	7	7%
Yorkshire	14	14%
Scotland	10	10%
East Midlands	6	6%
London	2	2%
Wales	4	4%
North East	2	2%
Northern Ireland	1	1%
Channel Islands	0	0%
Base	101	101%

Q6: In which county is the company based? By sector - Food		
Location		
South East	26	25%
South West	16	15%
East of England	13	12%
North West	10	10%
West Midlands	11	10%
Yorkshire	10	10%
Scotland	2	2%
East Midlands	4	4%
London	6	6%
Wales	6	6%
North East	1	1%
Northern Ireland	0	0%
Channel Islands	0	0%
Base	105	101%

Q6: In which county is the company based? By sector - Healthcare		
Location		
South East	23	23%
South West	16	16%
East of England	11	11%
North West	11	11%
West Midlands	8	8%
Yorkshire	8	8%
Scotland	7	7%
East Midlands	3	3%
London	7	7%
Wales	4	4%
North East	2	2%
Northern Ireland	1	1%
Channel Islands	0	0%
Base	101	101%

Q6: In which county is the company based? By sector - ICT		
Location		
South East	16	17%
South West	13	14%
East of England	7	7%
North West	9	9%
West Midlands	15	16%
Yorkshire	6	6%
Scotland	6	6%
East Midlands	8	8%
London	7	7%
Wales	2	2%
North East	3	3%
Northern Ireland	3	3%
Channel Islands	0	0%
Base	95	98%

Appendix 7: Standards Used

The appendix lists all of those standards that were cited by respondents.

Q11: Which Standards has your company used?

Q11: Which Standards has your company used?								Overall Count
Standards	Sector							
	Aerospace	Automotive	Construction	Food	Healthcare	ICT		
Internal/In-house	11	29	13	28	10	32		123
ISO	14	18	25	-	12	12		81
British Standards/BSI	19	21	30	6	4	7		87
Health & Safety	4	14	20	27	7	2		74
Food Standards	-	-	-	42	-	-		42
CQC	-	-	-	-	36	-		36
Aviation Standards	36	-	-	-	-	-		36
European Standards	4	1	8	-	-	1		14
Fire Safety	-	-	-	10	-	1		11
MHRA	-	-	-	-	10	-		10
Department of Health	-	-	-	-	10	-		10
COSHH	-	-	-	7	-	-		7
Data Protection	-	-	-	-	-	6		6
Local council	-	-	-	-	5	-		5
BII	-	-	-	4	-	-		4
GMP	-	-	-	-	3	-		3
NICE	-	-	-	-	3	-		3
MOD	1	-	1	-	-	-		2
Microsoft	-	-	-	-	-	2		2

Bureau Veritas	1	-	-	-	-	-	-	-	-	1
IEC	1	-	-	-	-	-	-	-	-	1
AS Standards	1	-	-	-	-	-	-	-	-	1
ISPO	1	-	-	-	-	-	-	-	-	1
Accounting standards	1	-	-	-	-	-	-	-	-	1
API	1	-	-	-	-	-	-	-	-	1
VDE Standards	1	-	-	-	-	-	-	-	-	1
Achilles	1	-	-	-	-	-	-	-	-	1
FATE	1	-	-	-	-	-	-	-	-	1
Federation of Automatic Transmission Engineers Standards	1	-	-	-	-	-	-	-	-	1
DVSA	-	1	-	-	-	-	-	-	-	1
HAE Standards	-	1	-	-	-	-	-	-	-	1
VOSA	-	1	-	-	-	-	-	-	-	1
OSHA	-	1	-	-	-	-	-	-	-	1
TS Standards	-	1	-	-	-	-	-	-	-	1
RMI	-	1	-	-	-	-	-	-	-	1
FSB	1	-	1	-	-	-	-	-	-	2
I.H.S	-	-	2	-	-	-	-	-	-	2
SSA (Seasoning and Spice Association)	-	-	-	2	-	-	-	-	-	2
Scottish Social Services	-	-	-	-	-	2	-	-	-	2
National Care Standards	-	-	-	-	-	2	-	-	-	2

DMA	-	-	-	-	-	-	-	-	2	2
Independent Garage Association	-	1	-	-	-	-	-	-	-	1
British Maritime Law	-	-	1	-	-	-	-	-	-	1
Cenelec Railway Standards	-	-	1	-	-	-	-	-	-	1
NHBC	-	-	1	-	-	-	-	-	-	1
Ofgem	-	-	1	-	-	-	-	-	-	1
Pool Water Treatment Advisory Group Standards	-	-	1	-	-	-	-	-	-	1
British Institute of non-destructive testing standards	-	-	1	-	-	-	-	-	-	1
LRQA	-	-	1	-	-	-	-	-	-	1
HCIMA	-	-	-	1	-	-	-	-	-	1
BMA	-	-	-	-	1	-	-	-	-	1
GMC	-	-	-	-	1	-	-	-	-	1
FDA	-	-	-	-	1	-	-	-	-	1
GPHC	-	-	-	-	1	-	-	-	-	1
W3C	-	-	-	-	-	-	-	1	-	1
Unspecified	11	15	19	6	14	18	83			
Count	111	105	126	133	122	84	681			



BSI Group
389 Chiswick High Road
London, W4 4AL
United Kingdom

T: +44 845 086 9001
E: cservices@bsigroup.com
bsigroup.com