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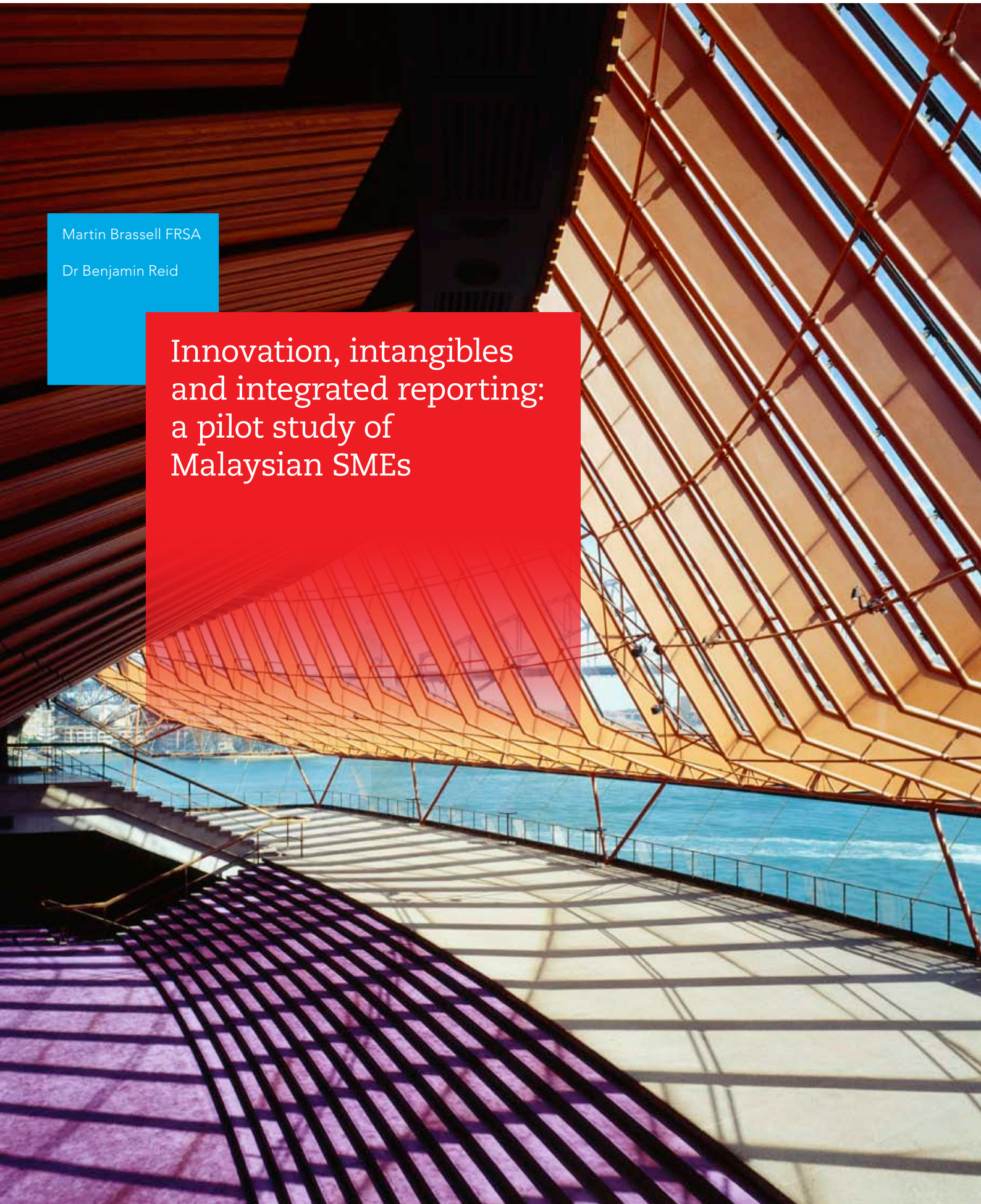
Innovation, intangibles and integrated reporting: a pilot study of Malaysian SMEs



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Agensi Inovasi Malaysia (AIM)

Agensi Inovasi Malaysia (AIM), a national innovation agency for Malaysia was set up as a statutory body by the Government through an Act of Parliament in 2010 with a mandate to stimulate and develop the innovation eco-system in Malaysia towards achieving Vision 2020.

NESTA

Nesta is an innovation charity with a mission to help people and organisations bring great ideas to life. We are dedicated to supporting ideas that can help improve all our lives, with activities ranging from early–stage investment to in–depth research and practical programmes.

This report presents the results of a pilot project, which tests the relevance of the Malaysian National Corporate Innovation Index to small and medium-sized enterprises.

Innovation, intangibles and integrated reporting: a pilot study of Malaysian SMEs

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ABOUT THE AUTHORS

Martin Brassell FRSA is an expert in the identification and valorisation of intellectual property (IP) and other intangible assets. He is co-founder and chief executive of Inngot, providers of online tools for identifying, valuing and managing IP targeted specifically at small and medium-sized enterprises. In 2013 Martin co-wrote the Banking on IP report for the UK Intellectual Property Office; he is currently contributing to a new work on the economics of IP for Oxford University Press.

Martin's IP knowledge was gained in senior roles in small, medium-sized and large multinational companies over a period of 15 years. From 2005 he was an Enterprise Hub Director, supporting a diverse range of high-potential companies. He has hands-on experience of the role IP plays in funding and investment, mergers and acquisitions, collaboration and licensing.

Inngot was established in 2007 to unlock the value in IP and intangibles. In addition to providing online tools, the company provides technology audit and evaluation services and specialises in research activities centred on intangibles measurement and management. This included engagement with Nesta to produce Phase II of the National Corporate Innovation Index (NCII) for the government of Malaysia (see below).

Dr Benjamin Reid is principal researcher in International Innovation at Nesta, the UK's innovation foundation. The team examine new global trends and practices in innovation, with an emphasis on emerging economies such as China, India, Brazil and Malaysia. The team aims to build resources and networks for innovation that will help the UK to flourish in a rapidly changing global economy. Benjamin's primary 2014 project was working with the Malaysian innovation agency, AIM, to develop a toolkit to help Malaysian businesses understand and improve their investments in innovation capacity and capabilities. He has just completed work scoping the leadership development needs of innovation policymakers in the Pacific Alliance countries.

Prior to Nesta, Benjamin was head of open innovation at the Big Innovation Centre, and a senior researcher at The Work Foundation. He worked on projects ranging from corporate and government open innovation, to youth employment, social media at work, the creative industries, the changing employment deal, and design innovation policy. He collaborated on the development of London Creative and Digital Fusion, an EU-funded programme supporting London-based creative and digital SMEs.

He also worked for nine years as a researcher and lecturer at Henley Business School, teaching people management, innovation and research methods on their global MBA and DBA programmes. His research clients at Henley included Ford Motor Company, Petroleum Nasional Berhad (PETRONAS), the Department for Education, the EU Commission, and the BBC. He holds a PhD from Henley Business School at the University of Reading, which focused on the evaluation of management and leadership development programmes.

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- **Stian Westlake** of Nesta, the UK foundation for innovation. Nesta commissioned the original UK Innovation Index in 2009 and was AIM's lead partner in the development of Phase II of NCII
- **Azim Pawanchik**, **Dr Suraya Sulaiman** and **Aina Zahari** of Alpha Catalyst Consulting (ACC), specialist innovation consultants based in Kuala Lumpur, responsible for Phase I of NCII and much of the research that preceded it
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inngot ADDING VALUE TO YOUR IP

Nesta

AIM Agensi Inovasi Malaysia

National Corporate Innovation Index™ Accelarating Growth Through Innovation

ALPHA CATALYST CONSULTING

Foreword

Innovation is fundamental to competitiveness, and this matters as much to SMEs as it does to big business. Our Global Economic Conditions Surveys show that the share of SMEs and corporates where our members saw opportunities in innovation has been on the rise since the latter half of 2011 – rising year on year, reaching an impressive 25% in the most recent quarterly survey. Malaysia is one of the markets that lead this trend. We believe this is a clear testament to the concerted efforts of the Malaysian government's 'SME Masterplan', which started in 2011 to create globally competitive SMEs, accelerating their growth through productivity gains and innovation.

In order for SMEs to meaningfully capitalise on these opportunities for innovation, it is essential that they are able to measure their return on innovation and demonstrate its value to their owners as well as finance providers. The success of the NCII (National Corporate Innovation Index) framework will be a valuable contribution to developing an eco-system which drives Malaysia to achieve its vision of a high-income and knowledge economy, and SMEs' ability to benefit from these developments will be a crucial success factor in fulfilling this potential.

ACCA is delighted that our members were able to be part of this exciting project, piloting how the NCII framework could work for SMEs. For us, the value of taking our members through such a process was not just important in terms of the benefits to them on a practical level, but the process itself allowed us to take stock of what SMEs know about their assets and processes; what they could measure and what they could not. That helps us understand where the expertise of finance professionals is most needed, and how we should prepare our own members and students for the challenge.

I would like to thank AIM (Agensi Inovasi Malaysia) for giving us the opportunity to work together in extending the benefits of NCII to small and medium businesses and to our project partners, Nesta (the UK foundation for innovation) and Inngot, for authoring the report. We look forward to continuing to support this initiative as the NCII develops beyond the pilot phase and starts to make a meaningful difference to business in capturing and measuring the benefits of innovation.

Alexandra Chin
ACCA Deputy President

Executive summary

This report presents the results of a pilot project, which tests the relevance of the Malaysian National Corporate Innovation Index (NCII) to small and medium-sized enterprises (SMEs).

By applying asset measurement techniques to a sample of SMEs, insights were obtained into the issues likely to be faced by the sector in identifying investment and return on innovation, taking into account the considerable overlap between the NCII framework and the areas that need to be quantified and understood for the purposes of Integrated Reporting.

The report identifies gaps in awareness levels of the extent and importance of knowledge-based assets among accounting professionals and their SME clients. It lends weight to the view that conventional management reporting systems are not ideally suited to knowledge-centred business models, nor to the information needs of sophisticated investors.

Intangible assets, particularly forms of intellectual property (IP), are created when companies innovate. These assets are widely acknowledged to be of substantial business value; international studies suggest that up to 80% of a listed company's share price is no longer supported by the presence of tangible assets on their balance sheets (Brookings Institution 1999). While small and medium-sized enterprises lack access to a market mechanism to realise this 'hidden' value, their crucial role in driving innovation suggests that they, too, have business-critical assets that are not represented in statutory accounts.

Developing firm-level understanding of intellectual capital is becoming increasingly important, for a number of reasons.

Expenditure on intangible assets is now known to outstrip that on tangible assets in a growing number of countries (for a general picture see OECD 2013). In both developed and developing nations, generous tax reliefs are available on certain categories of intangible asset investment (Köhler et al. 2012)[1]

New structures are emerging that enable companies to leverage the 'hidden' value of their intangibles, for example by obtaining debt finance[2] or by paying a lower rate of tax on incomes linked to certain forms of IP.[3]

New corporate reporting mechanisms, particularly integrated reporting, require firms to have a clear understanding of all their 'capitals' and the ability to track movements between them.

1 In 2011 26 OECD countries offered some form of tax incentive for R&D activity, along with many other countries including Brazil, China, India, Russia, Singapore and South Africa (Köhler et al. 2012). Malaysia offers an attractive 'double' R&D tax credit incentive.

2 Government-supported, IP-backed funding schemes are in place in a number of countries including China, South Korea, Malaysia and Singapore.

3 A 'patent box' or equivalent scheme is in place in many countries. Ireland was the first nation to develop a patent box in 1973, followed by eight nations (Belgium, China, Denmark, France, Luxembourg, Netherlands, Spain and Switzerland) in the mid to late 2000s (Brassell and King 2013).

In 2013, the Malaysian government decided to boost awareness of innovation investment returns by commissioning the development of a National Corporate Innovation Index. This was seen as a necessary measure to support the country's drive towards a knowledge-based economy, and the government's vision is to extend the methodology to businesses of all sizes, including SMEs.

Developed in 2014 by the UK's innovation foundation, Nesta, in conjunction with Alpha Catalyst Consulting and Inngot Limited, it was clear from the outset that NCII's measurement of inputs, outputs and outcomes would focus on intangible assets. This is an area of long-standing policy interest to ACCA; in this instance, ACCA's involvement enabled the pilot programme to be extended beyond the public listed company audience initially targeted, into the small and medium-sized company environment.

By applying intangible asset measurement techniques to a sample of eight SMEs and medium-sized private businesses, insights were obtained into the issues likely to be faced in identifying assets and expenditure among firms that are more typical of the majority of companies in Malaysia (and all other economies). This has implications not only for the design and roll-out of NCII, but also for the adoption of integrated reporting (IR).

The survey looked at two areas.

Inputs were measured as firms' investment in seven identified categories of activity known to be linked to innovation: research and development; software; design; organisational development and business process improvement; training and intellectual capital development; branding, marketing and reputation; and copyright materials.

Outputs and outcomes were measured using a combination of financial data on new products/services and efficiency savings, and numeric measurements of products and assets created.

Although intentionally modest in scale, the study revealed a number of interesting findings, which form a useful platform for further SME research.

There is considerable overlap between the areas of investment and return investigated for NCII and the areas that need to be quantified and understood for the purposes of IR. The discipline of using NCII would help companies of all sizes to adopt IR principles; by the same token, firms struggling to complete NCII would also face difficulties with IR. A few additions to NCII (for example, clearer distinctions between outputs and outcomes, and data on business activities) would make the overlap more complete and beneficial.

SMEs generally find it easier to identify financial inputs than financial outcomes, though they do better when quantifying non-financial output volumes. In fact, comparison of these three areas indicates that some financial inputs are missing, with firms finding it difficult (for example) to distinguish development from design.

Across the main NCII sample and the ACCA one, the balance of evidence suggests that the issue is less likely to arise from an absence of innovation, and more likely to relate to a lack of measurement.

SMEs find it more challenging than larger firms to create an inventory of intangible assets, though both large and small companies find the quantification of efficiency savings especially difficult, even though most strive to achieve them. This suggests that 'incremental' innovation may be harder to distinguish from everyday activities (defined for the purposes of this project as doing 'more of the same'). As might be anticipated, external costs are generally (though not always) easier to identify than internal ones.

Regardless of size, companies that are engaged in research and development generally find the survey questions easier to complete. Nonetheless, some find it difficult to distinguish between research and development (despite the different accounting treatments provided for these items under IAS 38). It appears that accounting professionals, including those serving the SME marketplace, and their clients would both benefit from greater awareness of the extent and importance of knowledge-based assets.

The study lends weight to the view that conventional management reporting systems are not ideally suited to knowledge-centred business models or to the types of information sophisticated investors increasingly require. It forms a basis for an extended pilot to be conducted, preferably in a different country, to understand the issues in more detail and propose solutions.

1. Introduction

The 2014 Global Innovation Index shows Malaysia ranking 33rd in the world.

1.1 MALAYSIA'S COMMITMENT TO INNOVATION

The 2014 Global Innovation Index[4] shows Malaysia ranking 33rd in the world: a strong showing, but some distance behind its international and regional competitors (particularly Singapore). Over a series of Malaysia Plans,[5] the country's government has set out its aspirations to join the world's leading economic nations by 2020, and recognises at the highest levels that the national innovation environment will need continued focus and investment in order to achieve this goal.

Malaysia's National Innovation Strategy, published in 2011, makes it clear that many different forms of innovation are important (Agensi Inovasi Malaysia 2011). In doing so, it anticipates the structure subsequently adopted for the National Corporate Innovation Index (NCII), the initiative that forms the starting point for this study.

To be effective, strategies to promote innovation must reflect the ways in which innovation takes place today. Innovation encompasses much more than R&D; it also includes other intangible attributes such as software, human capital and organisational structures, as well as product and process innovations, organisational and societal innovations and marketing. (Agensi Inovasi Malaysia 2011)

The National Innovation Strategy also proposed the establishment of Agensi Inovasi Malaysia (AIM), set up in 2011. This agency is responsible for implementing a number of key initiatives to support the development of the national economy as it transitions from the exploitation of natural resources, via one reliant on capital investment, to a country that more effectively and competitively exploits knowledge.

AIM is the sponsor and coordinator of the NCII project, the purpose of which was summarised by chief executive Mark Rozario in June 2014 as follows:

'It's…to get the corporate sector more aware of what they are doing in the space of innovation and gain an appreciation of the different elements that contribute to innovation. When they become more aware, they would also be looking at how they make these investments in innovation and how they would see what they are getting out of it'.

1.2 THE TWO PHASES OF NCII

NCII aims to guide and support innovation activities, initially in the publicly listed (PLC) and government-linked (GLC) sectors, but ultimately across business of all sizes. Its purpose is to help companies identify and quantify a broad range of innovation expenditure and to express the business benefits that are being obtained from it – the 'Return on Innovation'.

To date, there have been two phases in the development of NCII. Phase I (2012–13) was managed by innovation specialists Alpha Catalyst Consulting, who worked with 14 leading Malaysian PLCs to develop a range of key innovation performance indicators using qualitative analysis.

This assessed company performance by applying a 'scorecard' approach to eight different aspects of innovation. These can be summarised as:

- strategy (objectives, priorities and types of activity)
- leadership (focusing on the role of the board)
- investment (including its scale, timeframe and flexibility)
- ideas and experimentation (resources/ time to innovate, project management)
- external collaboration (academic, supplier, vendor, government)
- execution (evaluation, monitoring, risk and IP management)
- value creation (impact measurement)
- culture (extent of support for innovation, including attitude to failure).

4 The Global Innovation Index (2014) is an influential rating of countries across a broad set of economic measures, compiled annually by a consortium led by INSEAD Business School.

5 'Vision 2020' was first set out by former Malaysian prime minister, Mahathir bin Mohamad, in the Sixth Malaysia Plan in 1991. In 2009 the current prime minister, Najib Tun Razak, estimated that this required an annual average growth rate of 8%.

A key finding from this Phase I activity was that only one in five Malaysian companies (20%) involved in the pilot were able to quantify their investments in innovation at all.

Phase II of NCII (2014) was therefore commissioned to support the development of quantitative numerical and financial measures for Malaysian companies. The UK's innovation foundation, Nesta, was commissioned to lead this work in conjunction with IP identification and valuation experts Inngot and Alpha Catalyst Consulting.

Work to develop NCII Phase II began in November 2013. The first cohort of 10 companies were engaged in March 2014, and the results were evaluated during June and July 2014.

The additional work commissioned by ACCA and described in this study was conducted by Inngot with support from AIM, Nesta and Alpha Catalyst Consulting. It was designed to run concurrently with the latter stages of Phase II, extending the range of enterprises covered to include smaller and mid-market privately owned firms.

This enabled preliminary findings to be obtained before the formal launch of NCII by Malaysia's Prime Minister, Dato Sri' Mohd Najib bin Tun Abdul Razak, at the Innovating Malaysia 2014 conference in August. In launching NCII, the prime minister stated that:

'The National Corporate Innovation Index will institutionalise innovation and governance within corporations and help identify mechanisms for corporations to engage in innovation activities that will ensure their long-term sustainability'.[6]

A dedicated session at the conference on NCII was chaired by Azim Pawanchik of Alpha Catalyst Consulting and included participation from Chun Wee Chiew, ACCA's head of policy for Asia-Pacific, alongside Dr Benjamin Reid of Nesta and Martin Brassell of Inngot.

1.3 CONSTRUCTING NCII PHASE II

NCII Phase II was conceived from the outset as a quantitative approach to innovation measurement. One of the principal challenges in constructing an appropriate methodology is that much of the preceding research literature on innovation has focused on its relevance to national economic performance; by contrast, NCII seeks to provide results that are meaningful at the firm level. It is also important that NCII adopts a methodology that can connect individual company investments to their own personal returns, to create knowledge that is meaningful and actionable for board members.

An early conclusion (based on prior research by Nesta and others[7]) was that the assets most closely linked to innovation would be intangible (ie non-physical) in nature. The project therefore commenced with background work by Inngot to identify the different intangible asset reporting and analysis mechanisms that could provide a basis for building NCII, and to determine the types of asset that would need to be captured. The findings of this research are summarised in the next chapter.

The content of the NCII tool was ultimately 'triangulated' using three viewpoints.

Firstly, an inventory of substantially all potentially identifiable intangibles was reduced to a list of 34 assets considered most likely to have direct relevance to the innovative capacity and/or performance of individual firms.

Secondly, a set of questions designed to determine the existence of these assets, characterised as 'fruits of innovation', was formulated and then scrutinised. Owing to the nature of the intangible assets, it was found that the initial set of questions was primarily oriented towards outputs (ie indications that innovation may be occurring, but not necessarily the expenditure that was linked to it).

Thirdly, in order to balance the model, questions were added to ensure that the main investment categories, representing innovation inputs, were adequately covered, and to add financial outcomes to the output measures. This took as its main reference point the research that had formed the original basis of Nesta's Innovation Index, as summarised in Chapter 2 of this report and as subsequently refined over several years of use.

Importantly, as discussed in greater detail below, the investment that produces intangible assets is not limited to the 'conventional' types of research and development work most frequently associated with innovation.

1.4 INPUTS, OUTPUTS AND OUTCOMES

The areas of innovation investment that constitute the primary inputs were divided into six main categories suggested by previous research.

Research and development

To capture costs relating to the types of scientific and technological innovation most frequently associated with 'innovation'. In the commercial context this is, in general, less likely to relate to fundamental science and 'blue sky' thinking, and more likely to be done to examine the feasibility of addressing a pre-determined market opportunity and then to build a solution to exploit it. Costs of any patent protection were also requested.

Software

Defined in such a way as to exclude 'off the shelf' software purchases but to include all forms of custom software, whether developed internally or by a third party.

Design

Encompassing a broad range of design inputs such as product, service and process design, graphic, user-interface and Web design, but not branding (captured under 'Branding, marketing and

6 Contained in official speech archive and widely reported in the Malaysian press, including *The Rakyat Post*.

7 Some key contributions to this body of knowledge are set out in Chapter 2 of this report.

reputation' – see below). Costs of any industrial design protection were also requested.

Organisational development and business process improvement
Intended to capture the more incremental forms of innovation vital to many companies, including any work on efficiency, effectiveness, quality, change or business strategy programmes, as well as new management information systems and involvement in open innovation initiatives. Although capital expenditure on equipment was excluded from this section, costs of adapting any such equipment to suit the company's specific needs was requested.

Employer-funded training and intellectual capital development
To include internal and external sources, and all forms of learning and skills development plus specialist recruitment of new talent.

Branding/marketing and reputation
To include expenditure on product launches, rebranding, packaging and market research.

This left one more sector-dependent area, namely copyright materials (other than software, which is by default protected under copyright law). Copyright assets are known to be very important in certain sectors, but are not necessarily revenue-generative; those that do not generate revenue might also be captured under branding/marketing and reputation investment, leading to the possibility of double-counting. For NCII Phase II this was addressed using additional non-core questions.

The intangible assets, which primarily constitute outputs, were organised into five families:

- registered intellectual property rights, such as patents, trade marks and industrial designs
- copyright materials
- contractual agreements with customers, suppliers, licensees and other third parties
- internal resources such as proprietary processes and trade secrets
- external relationships.

The financial measures of return, which in this model are the outcomes, were divided into four main areas:

- improvements in efficiency
- new products and services (either new to firm, or new to market)
- licensing incomes
- incentives awarded, eg R&D tax credits.

The NCII model also provided the option of measuring own-branded product or service sales more generally, in order to capture additional results attributable to investments currently being made in branding and reputation.

Two important decisions were made in terms of project scope.

It was agreed that the focus would be on determining the aggregate effects of innovation, at least for this phase of work, because of the likelihood that establishing the contribution to given outputs made by individual investments or assets was likely to require data that would be too granular for many companies to be able to provide.

In all cases, the emphasis was placed on capturing revenue (or, in the case of efficiency benefits, cost savings) rather than profit. Although the concept of 'Return on Innovation' might suggest an emphasis on profit, profit data was considered too likely to be influenced by factors not related to innovation. The use of revenue figures also improved comparability with existing international benchmarks.

1.5 THE ROLE OF ACCA

When the NCII Phase II questionnaire was introduced to PLCs, it became apparent that calculations used to measure investments of this nature are strongly reliant on the ability of individual firms to identify the nature and extent of relevant expenditure. The earliest stage of company engagement with NCII Phase II confirmed that companies may not always find this process straightforward, as eligible sums are seldom shown on their balance sheets, and could appear in a number of different places within their profit and loss account.

Since it consists of PLCs, the initial target audience for NCII does at least have the theoretical benefit of having access to adequate human resources to conduct the necessary investigations and extract the figures. This is less likely to be the case with SMEs and other unquoted companies, which are at least as capable of being innovative, and for which the tool is ultimately also intended.

The NCII initiative has a number of characteristics that make it of particular interest to ACCA. ACCA has a long-standing interest in the role of intangible assets in small and medium-sized enterprises, which were first researched in detail in 2006 (Martin and Hartley 2006); the topics raised have featured in subsequent reports (eg ACCA/IP Institute/ESRC 2007). There are also potential synergies between the analytical approach introduced by NCII and the introduction of integrated reporting, which is currently being incorporated within ACCA's course programme. In addition, ACCA's strong presence in Asia-Pacific generally and Malaysia in particular meant that the NCII activity has clear relevance for its current membership.

ACCA's engagement enabled the principles of NCII to be explored with a small, non-corporate participant sample in order to obtain some preliminary answers to the following questions:

- How far does the introduction of NCII support the principles behind integrated reporting?
- How much information on intangible assets can SMEs and other unquoted firms identify?
- What information is most time-consuming or difficult for them to find?
- What conclusions might be drawn from the findings about the need to raise intangible asset awareness during professional development?

Chapter 2 briefly summarises the research reference points for the approaches taken for NCII. The remainder of this study then sets out to answer the four questions set out above.

Chapter 3 considers the connection between NCII and integrated reporting, with an examination of the commonalities and differences between the two. The three remaining points are considered in subsequent chapters by examining the methodology, findings and conclusions.

2. Frameworks for investigating innovation investment

The NCII tool is based on principles derived from practices that have been established over several decades.

The NCII tool is based on principles derived from practices that have been established over several decades, embodied in research, guidance and regulations, aimed at quantifying the importance and/or value of intangible assets and the role they play in supporting company performance. Five strands are of particular note:

- the 'growth accounting' approach primarily associated with US economist Robert Solow in the 1950s (Solow 1957)
- the 'investment in knowledge' school of economic thought, led by researchers Carol Corrado, Charles Hulten and Daniel Sichel (2005; 2006)
- current research by Nesta to investigate and quantify the relationship between intangible asset investment, innovation and growth
- the international accounting standards generally applied to business intangible assets, particularly IAS 38 and IFRS 3
- shifts in accountancy practice towards broader measurements, particularly integrated reporting (discussed in more detail in Chapter 3).

Each of these is briefly summarised below.

2.1 GROWTH ACCOUNTING

Growth accounting takes an economic approach to the question of determining the relative contribution different elements make to the growth of an economy. It attempts to separate the importance of labour, capital investment and natural resources from other potential elements when considering the expansion of a specific economy.

Growth accounting made visible what was missing from previous measures or factors of growth. By starting with overall output – or growth in output – and subtracting the contribution that could be attributed to having more workers or more raw materials, it became clear that some countries had a 'residual' percentage of economic growth. This missing element is attributed to the improvement in the productivity of assets (including labour and capital) through, for example, technological change and better ways of working.

Subsequent study has focused on the constituent parts of this residual percentage, and on the fact that it seems to be an increasingly important factor in explaining growth in developed countries (and therefore of particular interest for countries such as Malaysia, which are working to align their economies more closely with those of Europe and the US).

This school of thought brought intangible asset investment under the spotlight, with a strong initial focus on software and information technology (prompted by the 1987 quote from Solow that 'the IT revolution can be seen everywhere except in the productivity statistics').

2.2 INVESTMENT IN KNOWLEDGE

Starting from growth accounting principles, researchers Corrado, Hulten and Sichel, working respectively in the Federal Reserve, the National Bureau of Economic Research and the Conference Board, developed a model for the range of 'intangible' assets – looking at a variety of potential contributors to economic growth, including research and development, software and IT, and process improvements through, for example, investments in management consultancy (Corrado et al. 2006).

Their key finding was that, for the US, a potential explanation for the remainder of economic growth referred to above lay in the range of 'intangible' asset investments US firms were making, calculated at over $1trillion annually, which rivalled the investment figure for more traditional tangible assets. Corrado et al. classed this range of investments as those that an economy can make in knowledge, and in doing things better: that is, investments in innovation.

A further, very important, associated finding was that the types of decision being made in relation to expenditure on software and other identifiable intangible assets were motivated by the expectation of long-term benefit in just the same way as investments in tangible assets. Corrado et al. (2006) concluded that there was, in

effect, no real difference between tangible and intangible spending, other than that the costs relating to such investments would be found wholly or mostly within the profit and loss account rather than on the balance sheet, where amortisation and/or depreciation would normally be applied.

More recent research into national investments in intangible assets shows that these are now closely linked with growth across all developed economies (Corrado et al. 2013) and have continued to grow in importance (Hulten 2013). The most recent study has also examined how the balance of investments in intangible assets has changed over time for developed economies such as the UK, and now exceeds tangible assets by approximately one-third (OECD 2013).

2.3 NESTA RESEARCH

The above developments in growth accounting and accounting for intangibles have proceeded at a national level, investigating the sources of growth for countries. Nesta's previous Innovation Index work also focuses on the macro-economic picture, in this instance in the UK (for the latest figures, see Goodridge et al. 2014).

The Innovation Index was first produced in pilot form in 2009. It was based on a major review of the drivers for economic growth, and shows that that between 1990 and 2007 traditional measures (improvement in labour quality and tangible capital investment) were responsible for less than one-third of it. The remaining two-thirds were accounted for by investment in innovation and broader associated 'total factor productivity' benefits.

Other Nesta research (Nesta 2009) has examined the relationship between firm growth and innovation, focusing particularly on companies that are recognisably 'innovators' (in either products or processes) and those that exhibit high levels of growth (defined as more than 20% workforce expansion over three consecutive years). This established that innovative firms grew almost twice as fast, on average, as those that were failing to innovate.

Nesta has also established a clear connection between investment in intangible assets, innovation and company growth. One recent work stream (Sena et al. 2013) of particular interest for this study confirms that appropriate government action can facilitate investment in intangible assets (and thereby trigger high-growth 'episodes'), and that these positive growth effects relate to all types of intangible investment by firms, not just research and development.

2.4 INTERNATIONAL ACCOUNTING STANDARDS

Under standard accounting procedures,[8] it is not generally permissible to regard research expenditure as an investment, and development expenditure can only be capitalised if it meets a range of tests showing that it contributes to company income and profitability. As a result, many companies have very few intangibles on the balance sheet, and where they do, this is indicative of the presence of expenditure rather than (necessarily) identifiable assets.

When a company is merged or acquired, international standards[9] require an assessment of tangible and identifiable intangible asset value to be made, with unidentifiable assets and the premium paid over and above asset value to be attributed to goodwill. Although still subject to tests and limitations, this process generally finds substantial amounts of intangible asset value; research conducted by Inngot for the NCII Phase II project, based on analysis by KPMG and Deloitte, shows that identified intangibles typically account for 30%–40% of the total price paid (Deloitte and Touche LLP 2007; KPMG AG Wirtschaftsprüfungsgesellschaft, 2010).

This position has a number of implications for a project such as NCII, which focuses on intangible assets.

Companies are unlikely to have an inventory of intangible assets in the same way that they might be expected to have a detailed listing of tangible assets (which will underpin entries found on the balance sheet).

It is unlikely that companies will be able to identify internally-generated intangible assets, or attribute cost or value to them, on the basis of their balance sheet (the only exception being where the assets have been acquired).

Finding investments attributable to the creation of intangible outputs is likely to require study of several different parts of the profit and loss account (such as departmental payroll, external supplier payments, marketing expenditure and legal fees).

Although the assets in question may not be evident in company accounts, their value would become evident were the business to be sold (ie the value is present, but hidden).

2.5 SHIFTS IN ACCOUNTANCY PRACTICE: INTEGRATED REPORTING

Clearly, it is important for accounting statements to be based on factual, externally evidenced transactions when attributing value to assets. Nonetheless, it is also necessary for management to be equipped to focus on the elements that drive growth and value within their businesses, and be able to articulate these to shareholders and investors. In addition, many firms are unused to focusing their internal – or external – management information systems on areas of investment in knowledge and intangibles.

In this regard, there is a convergence of interest between advocates of better-integrated approaches to management accounting and policy initiatives seeking to drive greater awareness of the role and importance of innovation within firms. This aspect is addressed in greater detail in the following chapter.

8 The International Accounting Standard containing the relevant intangible asset treatment is IAS 38.

9 The International Financial Reporting Standard relating to 'business combinations' is IFRS 3.

2.6 SUMMARY

The combination of the five strands set out above – growth accounting, investment in knowledge, existing indices and supporting research, statutory accounting and integrated reporting – provides a strong intellectual bedrock on which to develop a tool for understanding the 'hidden' innovation in intangibles that is driving growth in economies.

The literature also confirms a number of specific principles that feature in the NCII approach:

- the need to focus on investments that are off-balance sheet, with an associated requirement for support by definition and identification
- the need for a broad spread of investments to be taken into account (rather than a narrow focus on research and development)
- the legitimacy of applying treatments that view costs associated with creating intangible assets as if they were investments for the longer term (as is in fact the case)
- the importance of assisting companies in identifying areas of expenditure that represent movement between different forms of capital, in order to accommodate the new company reporting practices now gathering momentum.

3. Integrated reporting

In December 2013, the International Integrated Reporting Council (IIRC) launched a new integrated reporting framework.

In December 2013, the International Integrated Reporting Council (IIRC) launched a new integrated reporting framework. IIRC is a global coalition of regulators, investors, companies, standard setters, the accounting profession and NGOs with an interest in encouraging value creation for the long term.

The framework document (IIRC 2013) describes the role of integrated reporting (IR) as follows.

'The primary purpose of an integrated report is to explain to providers of financial capital how an organisation creates value over time…Integrated thinking takes into account the connectivity and interdependencies between the range of factors that affect an organisation's ability to create value over time, including:

- the capitals that the organisation uses or affects, and the critical interdependencies, including trade-offs, between them
- the capacity of the organisation to respond to key stakeholders' legitimate needs and interests
- how the organisation tailors its business model and strategy to respond to its external environment and the risks and opportunities it faces
- the organisation's activities, performance (financial and other) and outcomes in terms of the capitals – past, present and future.'

The overall aim of IR is to embed 'integrated thinking' into corporate reporting, with the aim of improving financial stability and sustainability through 'efficient and productive capital allocation'.

ACCA is the first global accountancy body to introduce the IR approach into its qualification (with effect from December 2014). Since IR is an important development for the company audience at which NCII is directed, mapping the approaches embodied within NCII against those contained in IR was an important step in ACCA's decision to support the NCII Phase II approach. Furthermore, if useful synergies exist between NCII and IR, each may help the other in showing the wider relevance of engaging in structured assessment and benchmarking of innovation activity.

3.1 INTEGRATED THINKING AND THE SIX IR CAPITALS

The principle of 'integrated thinking' espoused by IR is defined within the framework document as 'the active consideration by an organisation of the relationships between its various operating and functional units and the capitals that the organisation uses or affects'. This includes ensuring that decisions made in each business area have a positive impact on value generation within the company as a whole.

The general principle of improving capital allocation is clearly relevant to both the external stakeholder discussions being developed as part of NCII[10] and to management decision making. The particular significance for NCII is that the 'capitals' include headings that specifically reference intellectual capital and more generally include consideration of training, branding and organisational improvements. All these are present in the NCII framework, described in more detail in the methodology section below.

The six capitals that feature in IR are financial capital, manufactured capital, intellectual capital, social and relationship capital, human capital and natural capital. The integrated thinking model is that these capitals are 'stocks and flows'; they act as inputs for the company and are then transformed through the business activities into outputs and outcomes. These strengthen the capitals over time, but also cause movements in value to occur between them, as illustrated Figure 3.1, reproduced from the *International IR Framework* (IIRC 2013).

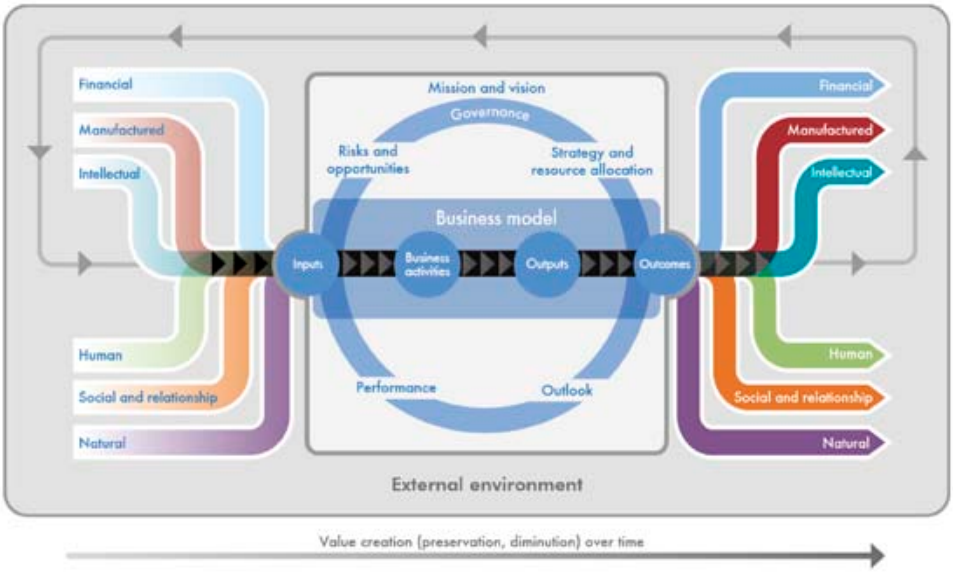
The central focus on inputs, outputs and outcomes has much in common with the approach taken in the development of NCII.

While the IIRC does not dictate the use of specific key performance indicators (KPIs) or set out a particular format for reporting, it does state that organisations need to use appropriate quantitative and qualitative measures to determine which capital movements are important and material for them (IIRC 2013). Strategic decisions on innovation might well lead to a reduction in short-term financial capital (ie by incurring some additional cost) in the interests of achieving improvements to other capitals (eg intellectual, human, social and relationship capital) that provide benefits in the longer term, and this will need to be explained to the satisfaction of shareholders.

The specific references within the IR framework to the role of innovation in maintaining competitiveness also suggest that the discipline of identifying relevant expenditure will be of increasing importance. The finding from NCII Phase I, that only 20% of Malaysian companies were able to quantify their innovation, indicates that NCII may well be a beneficial 'stepping stone' for any corporations moving towards the adoption of IR.

During the initial meetings for NCII Phase II with the senior management of PLCs, some of whom managed a very diverse set of operations, it became apparent that the selection of an appropriate business unit would be important in linking relevant inputs to relevant outputs for calculation

Figure 3.1: The six capitals included in integrated reporting



Source: *The International IR Framework* (IRRC 2013),

10 In a parallel project to NCII Phase II, Nesta and Alpha Catalyst Consulting have interviewed a range of investors to determine their attitudes towards innovation investment.

purposes. It is therefore interesting to note that the IR framework also refers to the importance of choosing an appropriate 'reporting boundary' or business unit across which IR can be fully deployed (section 3.30 onwards). While the IR approach suggests that the financial reporting entity should be the central consideration, the framework also acknowledges that the business model may be the determinant of this.

Disaggregating the organisation into its material constituent operations and associated business models is important to an effective explanation of how the organisation operates (IIRC 2013).

3.2 COMPARISON OF IR CAPITALS AND NCII INVESTMENT INPUTS

Clearly, there is a difference in scope between IR and NCII in that the first of these is seeking to capture the whole process of value creation, whereas the latter is seeking to exclude value that is generated by doing 'more of the same thing' – in itself a perfectly legitimate business activity, but not one that conforms to the definition of innovation. As a result, the most that NCII can be is a measurement tool informing selected inputs and outputs within the spectrum of IR capitals.

Subject to this limitation, however, there are a number of points where measurement of inputs and outputs is likely to have a positive effect on an organisation's ability to adopt integrated thinking in general and IR in particular.

Financial capital has obvious relevance as an innovation input, since such activity needs to be funded. Although movements in financial capital do not necessarily indicate the presence of innovation, successful innovation would be expected to lead to movements in financial capital, making it an important part of the calculation of 'Return on Innovation'.

Manufactured capital is defined by IR as being the tangible resources (other than natural ones) available as inputs, and is not restricted to those made by the organisation itself. NCII seeks to track the use of specialist equipment and design inputs provided by the business and third parties, both of which could feature in this category.

Intellectual capital is clearly of primary importance to NCII and is defined in the framework document as 'Organisational, knowledge-based intangibles, including: intellectual property, such as patents, copyrights, software, rights and licences [and] "organisational capital" such as tacit knowledge, systems, procedures and protocols'. This includes several specific areas measured by NCII and appears to cover three of its pillars, namely R&D, software and copyrights (where relevant);

Human capital extends to 'loyalties and motivations for improving processes, goods and services, including personnel's ability to lead, manage and collaborate'; it therefore appears to cover some aspects of organisational development as well as training;

Social and relationship capital includes key stakeholder relationships and 'intangibles associated with the brand and reputation that an organisation has developed'. Expenditure captured under the associated NCII heading would therefore help companies to understand this area more fully in terms of expenditure and, potentially, outcomes (enabling elements of marketing to be seen as investments rather than simply costs).

The last area of natural capital is less obviously relevant; NCII does consider the extent to which organisations have obtained legal rights that ensure access to natural resources, but these exploitation rights themselves would properly fall within the definition of intellectual capital as quoted above.

3.3 MOVEMENTS IN CAPITAL AND NCII

The IR framework stresses the interdependence of the six types of capital it recognises, stating, at 2.9:

'Because value is created over different time horizons and for different stakeholders through different capitals, it is unlikely to be created through the maximisation of one capital while disregarding the others. For example, the maximisation of financial capital (e.g., profit) at the expense of human capital (e.g., through inappropriate human resource policies and practices) is unlikely to maximise value for the organisation in the longer term'.

IR recognises that not all organisations will use the same capitals or be equally dependent on them. Nonetheless, the key point is that the relationship between the capitals is likely to be very fluid and therefore needs to be explained, as highlighted at 2.12:

'The overall stock of capitals is not fixed over time. There is a constant flow between and within the capitals as they are increased, decreased or transformed. For example, when an organisation improves its human capital through employee training, the related training costs reduce its financial capital. The effect is that financial capital has been transformed into human capital. Although this example is simple and presented only from the organisation's perspective, it demonstrates the continuous interaction and transformation between the capitals, albeit with varying rates and outcomes'.

The NCII approach has a potentially significant benefit for companies seeking to understand movements between different types of capital (and when trying to explain the reasons for such movements to external stakeholders).

The principle that underpins the input side of the 'Return on Innovation' calculation is that NCII should capture the ways in which existing financial and human capitals are being converted through innovative activities into intellectual, relationship and new human capitals, which might otherwise be inseparable from other routine expenditure.

NCII can also perform a similar function on the output side, by capturing which of these capitals are being converted back into financial capital in the form of enhanced profits – whether from increased sales, or from cost savings attributable to the investments' demonstrable (or anticipated) longer-term benefit.

As indicated above, it seems highly likely that many organisations with an interest in adopting IR principles could struggle to identify the assets that underpin or represent their key inputs, outputs and outcomes. These will need to be separated and understood in order to produce a compliant report. As the framework states at 2.28: 'The organization needs information about its

performance, which involves setting up measurement and monitoring systems to provide information for decision-making'. Where companies struggle to identify valid inputs for NCII, it seems highly likely that they will need to implement such systems in order to accommodate the wider-ranging requirements of IR.

The Framework document also specifically addresses the role of innovation, saying at 2.24:

'Business activities include the planning, design and manufacture of products or the deployment of specialized skills and knowledge in the provision of services. Encouraging a culture of innovation is often a key business activity in terms of generating new products and services that anticipate customer demand, introducing efficiencies and better use of technology, substituting inputs to minimize adverse social or environmental effects, and finding alternative uses for outputs'.

3.4 COMPATIBILITY OF UNDERLYING PRINCIPLES

IR is intended to be flexible in its presentation and reporting while offering a number of guiding principles that it recommends be adopted consistently. These are to be viewed in the light of the organisation's strategic focus and future orientation and require it to show 'how the continued availability, quality and affordability of significant capitals contribute to the organisation's ability to achieve its strategic objectives in the future and create value' (3.5).

Four of these principles appear to have particular relevance for NCII.

The concept of 'materiality' (3.17 onwards) is important in two respects: firstly, IR should include everything that is material to a company's ability to create value, but not include information that does not substantively affect this central purpose; secondly, the organisation is expected to take quantitative and qualitative factors into account when assessing importance. An organisation that has used NCII should be much better placed to understand which of its innovation-related activities currently make(s) a material contribution. Just as importantly, it will bring into question areas of inactivity.

Reliability (3.39 onwards), or faithful representation, is clearly vital. IR says that this is enhanced by robust internal systems, including 'internal audit or similar functions', a category into which NCII would appear to fit.

Completeness (3.47 onwards) is also important because 'certain matters within an industry are likely to be material to all organisations in that industry'. This argues in favour of the ability to benchmark against peers when comparing performance. The creation (over time) of a shared data pool (anonymised, but capable of being interrogated by sector and by size) is one of the aspirations of NCII when the Phase II principles are rolled out more widely.

Similarly, requirements for consistency and comparability (3.54 onwards) highlight the importance of establishing and maintaining KPIs between reports and of adopting measures that can be readily compared between organisations. This will be easier to do if the diverse nature of innovation and the inputs and outputs relating to it are more widely understood and subjected to standardised descriptions and tests.

3.5 THE IR REPORT

The IR framework document devotes a section to the different parts of the integrated report. Again, several aspects have clear relevance to NCII and the information this is seeking to capture and benchmark.

The company's business model needs to be set out clearly (4.10 onwards). This is the process by which its activities turn inputs into outputs and outcomes, thereby creating value. Although it is not the objective of NCII (in its current form) to delve into the detail of a company's business model, the measurements it obtains are relevant in supporting (or contradicting) a firm's statements about the nature of that model. For example, a company may claim to be a consistent innovator or a low-cost provider; the former would be expected to have a range of innovation outputs, while the latter should be able to demonstrate how its processes and policies generate efficiency savings.

Examples provided for the business activities (4.16 onwards) include 'How the organisation approaches the need to innovate' and 'how the business model has been designed to adapt to change… When material, an integrated report discusses the contribution made to the organisation's long term success by initiatives such as process improvement, employee training and relationships management'. These areas are all tracked by NCII.

When explaining strategy and resource allocation (4.27 onwards), the company's perspective on competitive advantage is important, with three particular examples being given: 'the role of innovation; how the organisation develops and exploits intellectual capital; [and] the extent to which environmental and social considerations have been embedded into the organisation's strategy to give it a competitive advantage'.

Also, when explaining the basis of preparation and report presentation (4.40 onwards), it is recommended that organisations set out the significant frameworks and methods they have used. One such method could be NCII.

4. Methodology

The objective was to recruit a small group of companies that could provide case studies.

The participants for NCII Phase II were drawn from a group of PLCs, including some that were already conversant with the context and purpose of the initiative from their involvement in Phase I. The small participant set and the availability of consulting support permitted the measurement tool to be piloted in a very 'hands-on' manner. This depth and frequency of engagement were felt to be important in getting early, comprehensive feedback on the presentation and content of the question set.

An important benefit to AIM and to the project arising from the involvement of ACCA was therefore that it provided an opportunity to start to understand the challenges that would probably be experienced in extending NCII to a wider audience. By engaging a modest number of SMEs and mid-market companies less likely to allocate dedicated resource to completion of the questionnaire, reducing the level of support provided to a more readily scalable one (to a level potentially distributable via a Web-based tool) and providing feedback in a more standardised manner, some important variations could be tested and fed back into the development process.

The core question set was retained virtually unaltered, in particular retaining the emphasis on ensuring that all questions asked were capable of being answered with a financial figure or a quantity count. Even so, some adaptations to the methodology were felt to be essential. These focused on the following areas:

- removal of the majority of 'additional' questions (which provided useful background data but did not feed directly into output measures)
- incorporation of a mechanism to assist users to move quickly through sections they did not consider to be relevant (reducing the time required for completion)
- simplification of the process of capturing feedback on the challenges that might exist in collecting the required input and output data, and adding structure to it
- incorporation of initial feedback received from users in PLCs about the definitions applied to different data capture fields, to address potential ambiguities.

4.1 PARTICIPANT IDENTIFICATION AND RECRUITMENT

The agreed objective for the ACCA study was to recruit a small group of participating companies (up to 10), preferably drawn from a range of sectors and varying in size (by employee numbers and turnover), who could provide case studies.

In all, interest was expressed by 23 ACCA members, who were recruited from two sources.

Firstly, suitable members were identified on the basis of responses to ACCA's Global Economic Conditions Survey (GECS) between Q4 2011 and Q1 2014. A selection for mailing was made by targeting GECS respondents who:

- worked in large corporates, SMEs or small or medium-sized accountancy practices (SMPs), and
- reported opportunities for their businesses or clients through i) innovation or ii) investments in quality standards or iii) strengthening supply chain relationships.

These filters yielded 46 unique, named contacts and when contacted by e-mail, at least seven indications of interest were received (15% success rate).

Secondly, ACCA wrote to members in SMEs and SMPs in Malaysia, which together make up approximately 40% of ACCA's almost 11,000 members in the country. On the basis of the accompanying e-mail trail and the timing of replies, this yielded 16 indications of interest (about 0.15% response, but from an audience that had not been pre-qualified in terms of their willingness to participate in research activity).

Participant recruitment was supported by Dr Benjamin Reid from Nesta and Aina Zahari from Alpha Catalyst Consulting,

who gave a presentation to four interested parties (representing three different prospective participants) at ACCA's office in Kuala Lumpur. This orientation meeting provided the background to the tool and an overview of the data to be captured, with opportunities to ask questions.

Eight questionnaires were received in time to be analysed as part of the study. A number of reminders were sent to prospective participants, which led to two written notifications of withdrawals – one owing to concerns over the disclosure of commercially sensitive information, and the other because of doubts over the benefits to be obtained from the exercise. This experience is compared with that of the PLC NCII audience in the following chapter.

The eight completed responses represent a little under 40% of the remaining set of 21 participants. This represents a reasonably good level of interest and there are indications that the response rate would have been higher if the request for information had not coincided with tax return deadlines for some ACCA members. Of these responses, two were generated by the targeted mailing and six by the general one.

4.2 PARTICIPANT PROFILE

The methods of participant recruitment, as described above, precluded proactive targeting of any particular sector(s). The eight respondents, whose names have been replaced with letter codes in the interests of confidentiality, broadly conformed to the desired profile, representing:

- Firms A, B and C – construction and property – average annual turnover RM100m
- Firm D – palm oil – turnover RM200m+
- Firm E – wholesaler and retailer – turnover RM15m
- Firm F – contract manufacturer – turnover RM20m
- Firm G – recruitment agency – turnover RM20k (start-up)
- Firm H – not-for-profit organisation – turnover US $35m+.

Malaysia's economic strategy specifies particular National Key Economic Areas (NKEAs). Construction is not specifically listed, though industries based in the Kuala Lumpur area are. Online searches indicated that the ACCA respondents were involved a number of industries that are specifically targeted for intervention by AIM, including tourism, palm oil, wholesale and retail, and business services.

Although it was not the intention of the ACCA exercise to contribute directly to the main NCII data sample, the inclusion of some larger SME and 'mid-market' companies with turnover measured in millions of Malaysian ringgits (RM), together with the presence of construction and palm oil companies whose activities were comparable with those of other firms already participating in NCII Phase II, provided an unplanned additional point of comparison and calibration.

It appears likely that the selection process' emphasis on SMPs and SMEs with innovation, supply chain and quality standard opportunities may have favoured the participation of larger SMEs rather than smaller and less mature businesses, which may also be less likely to employ qualified accountants.

4.3 STUDY DESIGN

In order to facilitate completion by larger organisations, the aggregated question set used for NCII was originally divided into a series of worksheets, each containing up to 10 'core' questions and a smaller number of additional questions. The division was made principally on the basis of departmental areas of responsibility, with the addition of a 'master sheet' requesting general profiling data on turnover, expenditure and headcount.

The presentation/layout of the questions can be seen from Figure 4.1, taken from the research and development-related section.

The division of the overall question set into different functional areas (such as operations, sales, marketing, finance and legal) appeared appropriate for the targeted PLC audience as it conformed to the traditional structures found in a number of NCII Phase II participants.

This methodology was simplified and streamlined for the ACCA study, as the rigid departmental structures appeared less likely to be relevant. The question set was divided into just two worksheets – one to capture innovation inputs, the other the corresponding outputs – on the presumption that the ACCA member contact would be responsible for collating all the inputs rather than distributing it to several other departments.

The core question set was almost identical to that used for NCII, but the effect of re-organising the questions more specifically around inputs and outputs produced a strong emphasis on the Nesta categories for inputs, with the direct measurement of intangible assets acting as an output/outcome check and balance.

The NCII Phase II questionnaire asked participants to rate the difficulty of obtaining answers using a scale of 1–5, with a field to capture additional explanation. Since this information was regarded as particularly important for ACCA purposes, it was replaced by a drop-down list defaulted to blue ('How easy is this data to obtain?') and featuring three options, one of which was to be selected for each question:

- routinely captured (coded green)
- accessible with additional work (coded amber)
- not recorded/not accessible (coded red).

The input worksheet featured eight sections. Each of these (apart from the baseline data) provided an initial yes/no selection option, enabling the respondent to bypass any individual section not considered relevant by them, in the interests of easier and speedier completion. An explicit split between external and internal costs was added with the view that (on the basis of early feedback) it was likely to simplify data gathering and improve comparability with baseline UK data.

The full list of input sections was:

- a baseline set of questions on financial performance for the last two years, to provide context on the business's size and trajectory (turnover, expenditure, profit, balance sheet)
- research and development (external/internal spend, which could be completed for each element separately or as a combined R&D figure, plus patenting spend)
- software (external/internal spend plus investment in databases) (see Figure 4.2)
- design (external/internal spend plus investment in design registration)
- organisational development and business process improvement (external/internal spend plus investment in open innovation activities and any customisation of capital equipment purchases)
- employer-funded training and intellectual capital development (external/internal spend plus an estimate of the proportion of 'routine' training and any investment in specialist recruitment to build the company's skills base)
- branding/marketing and reputation (external/internal spend plus an estimate of the proportion of 'new product' spend; external/internal market research spend plus any investment in trade marks)
- copyright, if copyright materials are sold by the company (external/internal spend only).

The output worksheet was divided into two categories:

- financial measurements of branded/proprietary goods sales, new product/service introductions and sales, new customer sales, licensing income, grants and efficiency savings (all with yes/no qualifying questions for speed of completion)
- quantitative measurements of outputs, product range, new product and process/technology introductions, the development pipeline, online promotional activity, supplier and partner development, employee turnover and IP rights ownership.

Figure 4.1: A sample page of the NCII questionnaire, research and development section

	REQUIRED DATA		NOTES
	Please supply as much of the following information as you can:		***Here's what we mean:***
1	Total investment in research last year		Please provide research figure (pre-development expenditure)
2	Total investment in development last year		Please provide figure for taking products/services to market (post-research) - not including marketing cost, but including prototyping
3	Amount spent internally on product and service design last year (to improve performance or appearance)		This is the staff cost of those working in-house on design, including their associated costs - do not include R&D
4	Amount spent externally on product and service design last year (to improve performance or appearance)		This is the fees paid to designers for work that has been outsourced or procured - do not include R&D
5	Investment in data (other than customer lists)		For example, data for software. Do not include data bought for marketing and sales purposes
6	Investment last year in open innovation initiatives		This is the staff cost and expenses dedicated to sourcing innovation from staff or external third parties (excluding existing suppliers)
7	No. of new processes/technologies introduced in last year		i.e. a significant internal process change introduced to reduce costs or improve production efficiency
8	No. of new-to-market products or services launched in last year		"New to market" is a product or service that has not already been launched in your market by a competitor
9	No. of new product developments started in last year		
10	No. of new service developments started in last year		
11	No. of major software releases/upgrades in last year (including websites)		Only include if software is part of a product or service you supply to a customer

4.4 FOLLOW-UP AND EVALUATION

The questionnaires were issued to all 23 interested parties at the end of June 2014, immediately after the introductory event in Kuala Lumpur. To assist with orientation, ACCA members also received a copy of the presentation delivered in Kuala Lumpur at the ACCA offices, and a PowerPoint version of the Excel questions.

Most participants who completed the survey returned the questionnaire within the requested time of three weeks. Following receipt, each questionnaire was checked and any apparent inconsistencies were queried directly with the main contact via e-mail.

A report based on the answers provided was then prepared for each participant. The first four sections had a standard format:

- an introduction to NCII
- NCII in context: the challenge of innovation
- input and output measures in NCII
- the calculations used to process the data provided.

The final three sections were personalised to the company or organisation completing the questionnaire and provided commentary on:

- data availability – the extent to which the company had been able to supply the information requested, and areas where there appeared to be a mismatch between inputs and outputs (suggesting investment was present, but not accounted for within the response)
- innovation inputs – setting out the mix of input elements and drawing conclusions from the company's expenditure profile, with benchmarking provided against UK sector data and a calculation to show the amended cost of the expenditure when amortised over its probable useful life
- innovation outputs – providing additional 'return on innovation' calculations.

Although section v) could be completed for all participants, the level of detail that could be provided in sections vi) and vii) depended to a considerable extent on the participants' ability to provide data. This is examined in the next chapter.

Figure 4.2: Sample page of the revised questionnaire for ACCA members, on software

Section 3 - Software		Value	Rating
3.1	Did your company purchase or develop any custom software in this period?	Please select	If "no", please go to section 4
	Exclude 'off the shelf' software purchased for routine tasks such as word processing/ Microsoft Office/ software updates. Include any software which performs a specific or special business function. Web design and improvement of management information systems are included under separate sections below.		
3.2	What was your company's expenditure on software and software development purchased from other organisations in this period?	0RM	How easy is this data to obtain?
	Include any software services bought-in to develop, customise or license software. Include the cost of any contractors used by the company. Exclude software that is embedded in other items of current or capital expenditure. Exclude databases (these are entered below).		
3.3	What was your company's expenditure on software development conducted by your own staff in this period?	0RM	How easy is this data to obtain?
	Include the staff costs of all involved, and costs associated with their work such as facilities, overheads and materials - but not any capital items. Estimates of staff time/payroll are acceptable. Exclude databases - these are entered below.		
3.4	Did your company use databases in its day-to-day business in this period?	Please select	If "no", please go to section 4
	Exclude marketing databases (customer/prospect lists) - these should be included in your reputational and branding investments below.		
3.5	During this period, what was your company's expenditure on databases?	0RM	How easy is this data to obtain?
	Include the purchase of databases of all kinds and your own development expenditure on databases (estimates of time/payroll are acceptable). Also include costs attributable to the development of databases, if you have not already included these in your software development figures provided above. Exclude databases bought for market research or any marketing and sales purpose - these are entered below.		
	SECTION TOTAL	0RM	

5. Findings

What conclusions can be drawn about professional development needs?

ACCA's interest in participating at this early stage of the NCII project was not to determine how much innovation investment companies are making, but to understand what challenges they face in seeking to understand their expenditure.

Accordingly, rather than set out the return on investment calculations that could be produced using the adapted methodology, this chapter is primarily concerned with setting out what firms were able to identify, and which aspects were most problematic. This is provided for each individual (anonymised) respondent, so that trends can be more easily observed.

The final chapter of this study considers what conclusions might be drawn about professional development needs.

5.1 DATA SUPPLIED: INVESTMENT INPUTS AND INNOVATION OUTPUTS

In the responses provided the input areas are fully or partially completed as shown in Table 5.1.

All eight companies were able to provide the base data requested, giving the necessary benchmarking information on size and any overall growth trend. Thereafter, the level of section completion varied substantially.

Firm D, whose activities involve a considerable amount of research and development, was able to identify expenditure in five categories in total, and Firm A was able to report investment in four categories. Firms B and E, by contrast, did not identify any areas of investment in innovation at all.

Table 5.1: Responses provided by each company in the sample

Company	Base data	R&D	Software	Design	Organisational development	Training	Marketing	Copyright
Firm A	Y	Y	N	Y	N	Y	Y	N
Firm B	Y	N	N	N	N	N	N	N
Firm C	Y	N	Y	N	N	Y	N	N
Firm D	Y	Y	Y	N	Y	Y	N	Y
Firm E	Y	N	N	N	N	N	N	N
Firm F	Y	N	N	N	N	N	Y	N
Firm G	Y	N	Y	Y	N	N	N	N
Firm H	Y	Y	Y	N	N	Y	N	N

Overall, the amount of design investment being identified appears low, a finding consistent with other surveys: this particular aspect of innovation often appears to be under-reported. While definitions were provided, it is possible that some users interpreted the 'development' heading as being suitable for recording activities that would be more accurately characterised as design.

Outputs were divided into two sections – financial outputs (where the expected input was an income or cost-saving figure) and numeric outputs (where the outputs are volumes). Looking at the first of these, the position was as shown in Table 5.2.

Responses received to the key quantitative outputs can be summarised as in Table 5.3.

Comparison of Tables 5.2 and 5.3 suggests that it is generally easier for companies to find output volume figures than it is for them to identify the financial outcomes that the inputs and outputs produce.

More detailed analysis of the data present and absent is contained in the following sections.

5.2 COMPLETENESS OF RESPONSES: ACCA VS NCII

Comparison of the financial and non-financial outputs with the financial inputs reveals discrepancies that make it appear highly likely that relevant activity is present, but is not being captured, as the following examples show.

Firm B appears to have introduced a new product without deriving any income from it or spending any money on developing it (unless the expenditure was in a prior year and therefore not captured by this process).

Firms C and E both appear to have gained new customers without spending any money on branding and marketing (which is possible, but seems unlikely).

Firm H is a not-for-profit organisation, so it is unsurprising to find no financial outputs, but it is puzzling to find no non-financial outputs (since it is clear from other literature available on the Internet that the organisation does in fact produce new products).

This comparison suggests that several of the companies are experiencing difficulties in identifying expenditure relating to results that are typically associated with innovation. The design of the survey made it relatively simple for

Table 5.2: Financial outputs for each company in the sample

Company	Brand goods	New product	Unique product	New customer	License	Grants	Efficiency savings
Firm A	Y	Y	N	Y	N	N	N
Firm B	N	N	N	N	N	N	N
Firm C	N	N	N	Y	N	N	N
Firm D	Y	N	N	Y	N	N	Y
Firm E	N	N	N	Y	N	N	N
Firm F	N	N	N	N	N	N	N
Firm G	N	N	N	Y	N	N	N
Firm H	N	N	N	N	N	Y	N

Table 5.3: Key quantitative outputs for each company in the sample

Company	Product range	Product launch	Product pipeline	New process	New customer	New supplier	New partner
Firm A	Y	Y	Y	N/A	N/A	Y	Y
Firm B	N	Y	Y	N	Y	Y	N
Firm C	Y	N	N	N	N	N	N
Firm D	Y	N	Y	Y	Y	Y	N
Firm E	Y	N	N	N	Y	Y	N
Firm F	Y	N	N	N	N	N	N
Firm G	Y	N	N	N	Y	Y	N
Firm H	N/A	N/A	N/A	N/A	N/A	N/A	N/A

participants to skip sections if they did not view them as relevant; were the tool to be offered as a Web survey, as is AIM's probable intention, it is likely that any such effect would be reduced because the selection criteria could be presented in a more interactive way.

When compared with the experiences of gathering data from larger firms for NCII, many similarities arise, and a few differences. The following quote is taken from Nesta's summary report for AIM (Nesta et al. 2014):

'Our key finding from the piloting phase on data availability is that the vast majority of Malaysian companies' management accounts are not set up for the data for the NCII Tool simply to be 'read off' existing measurements. For all the pilot companies, at least some effort was involved in collating existing information in new ways, and for others, some data needed to be generated through new report and queries of management information systems, some data estimated as best they can, and other data was simply not resource or cost-effectively available in the time frame'.

Overall, Nesta's conclusion was that most of the PLCs were making investments in most of the categories, and that the majority were able to provide sufficient data to enable a useful set of results to be produced. Where data was not provided, further questioning established that discrepancies between inputs and outputs were most likely to be attributable to data availability rather than the absence of investment. Nonetheless, most respondents answered only the 'core' set of approximately 70 questions and did not provide the additional information also requested.

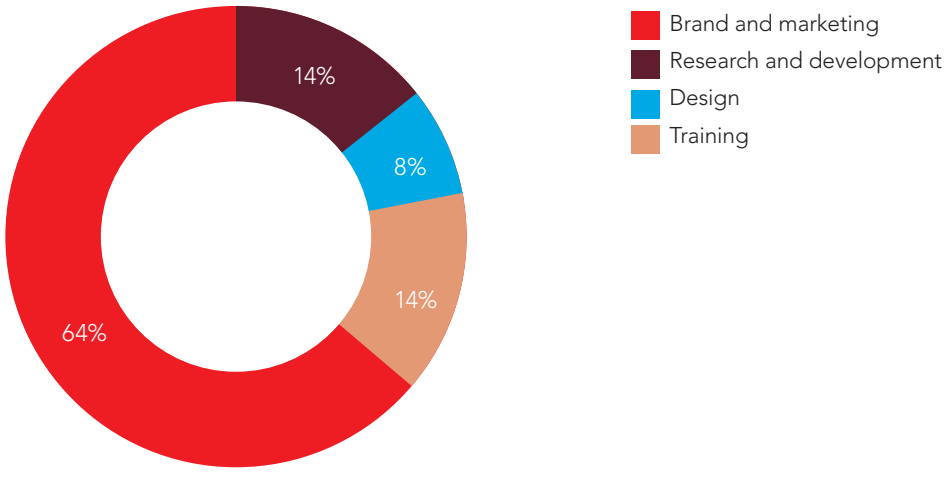
Among the pilot companies using the 'enhanced' version of the tool (ie the version produced with some refinements following initial feedback from the first two or three users), base data questions were most easily answered on average (100%), followed by Finance/HR questions (85%), Sales questions (79%), R&D/Tech (73%), Operations (70%), Marketing (56%) and IP/Legal questions (52%). There is no directly comparable figure for the ACCA sample as the questionnaire was not divided along departmental lines (and it should also be noted that these boundaries were only offered as an indication of the department thought most likely to have the data required; it is not necessarily reflective of the subject matter).

Nesta also commented on two further findings relevant to larger businesses, but less significant for the SMEs that were the primary ACCA audience.

Firstly, there was a need in larger organisations not only for a project champion but also for a data coordinator. Because these individuals were being tasked with 'selling' the benefits of the project across up to seven different departments, they needed a good degree of familiarity with the project as well as a degree of influence.

Secondly, because the organisations were also more diverse, there was a need for consistency in the selection of the right level of reporting entities. In some cases, further discussion proved necessary to ensure that appropriate business unit selections were made and consistently applied. This is a potential difficulty also expected with integrated reporting, as noted in Chapter 3, section 3.4 above.

Figure 5.1: Distribution of spending on innovation in Firm A



5.3 INPUT ANALYSIS

Where the amount of data supplied permitted it, the report provided for each firm gave a total level of innovation expenditure and the results of an amortisation calculation. This expressed the effects of spreading of the cost of each company's innovation expenditure over the number of years that are considered likely to achieve business benefit, thus mirroring the treatment that would be applied to investment in tangible assets. Although both Nesta and Inngot made it clear to participants that this would not be a permissible treatment in their statutory accounts, this strategy takes to their logical conclusion the observations of economists such as Corrado et al. (2005) on the motivational similarities between tangible and intangible investment.

The amortisation calculation was performed by totalling all the elements of innovation expenditure falling within each category of investment (research and development, design, etc.) and applying a lifespan estimate based on rounded figures from two sets of UK survey findings: the Innovation Index (Goodrich et al. 2012: 73) and Office of National Statistics data on intangible assets, dating from 2008 and 2010 (Field and Franklin 2010).

The effects of the investment calculation varied considerably by company, according to the mix of expenditure each reported. This is because the estimated lifespan varies substantially across each type of investment. Both research and development and design are relatively long-lived categories, estimated at five years; accordingly, the amortisation calculation allocated 20% of the cost to each year. Software was estimated to be of benefit for three years, so 33% of the cost was counted in-year; staff training and organisational processes were both accounted for at 40% in-year; and the most short-lived expenditure, on branding and reputation, was counted at 60% in-year.

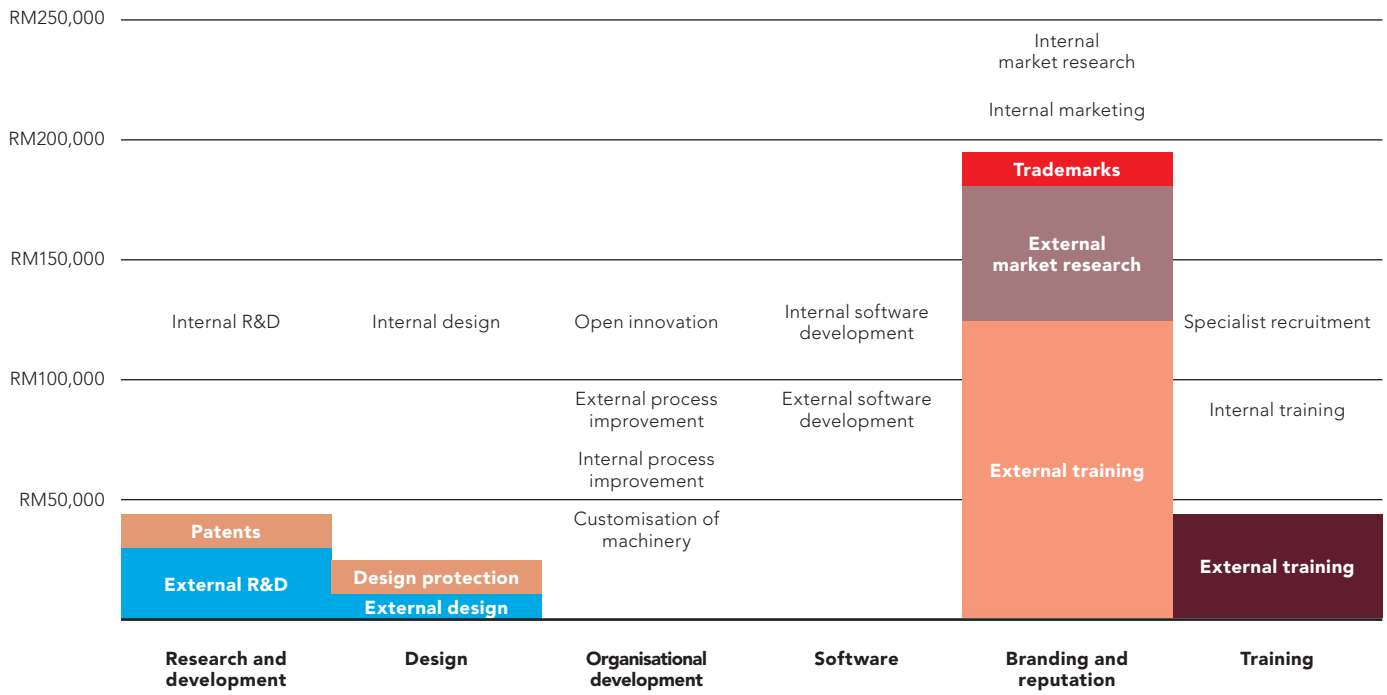
In the case of Firm A, around RM300,000 of expenditure relating to innovation was identified using the questionnaire. This was represented in Figure 5.1.

The breakdown of the individual elements within each category was also provided, in the format shown in Figure 5.2.

When the amortisation calculation was applied to this expenditure for Firm A, the in-year cost halved, to just under RM150,000. This figure was of considerable interest because the annual profit for Firm A in that particular year was under RM500,000, suggesting that regarding innovation as an investment for the future would make a substantial difference to the firm's reported level of profitability.

Clearly, this is a simple calculation which treats each year in isolation, which is not the way in which amortisation is applied in other contexts. Nonetheless, if the calculation were performed each year, it would be possible to ensure that the 'carry forward' amounts from previous years' investment in innovation were applied, which would lead to a different and more representative calculation.

Figure 5.2: Breakdown of expenditure by category, for Firm A



5.4 INPUT BENCHMARKING

As set out in Chapter 1, one of the primary motivators for NCII is to facilitate benchmarking between companies. For reasons of data sample size, it was not possible to provide benchmarking against other firms in Malaysia from the outset (it will take some time to create a suitable set of data that will allow meaningful, if anonymised, comparisons to be made by company size or activity sector).

It is, however, possible to benchmark the inputs against UK data from the Innovation Index. This is not to suggest that the two economies are directly comparable: rather, the benefit in the Malaysian context is that it enables businesses to compare an aspect of their innovation performance with that in one of the top performing economies as defined by the Global Innovation Index. Given that the main purpose of the NCII is to provoke strategic debate within firms, this was agreed to be a legitimate approach.

The benchmarking of innovation inputs was done using the 2011 Innovation Index as a reference year (representing the most recent robust core data sample set available). The data was then processed by:

- splitting the source data from the Innovation Index inputs into top-level SIC code – a fairly coarse adjustment, but one that still brings out significant differences in the levels and types of innovation investment, then
- establishing the overall turnover of the firms represented in each sector, then
- calculating an average turnover for the firms in each sector, then
- calculating the percentage of intangible investment attributable to each of the six core categories, and lastly
- mapping these percentages to produce sector-level typical profiles that could then be used as a basis for comparison with Malaysian businesses.

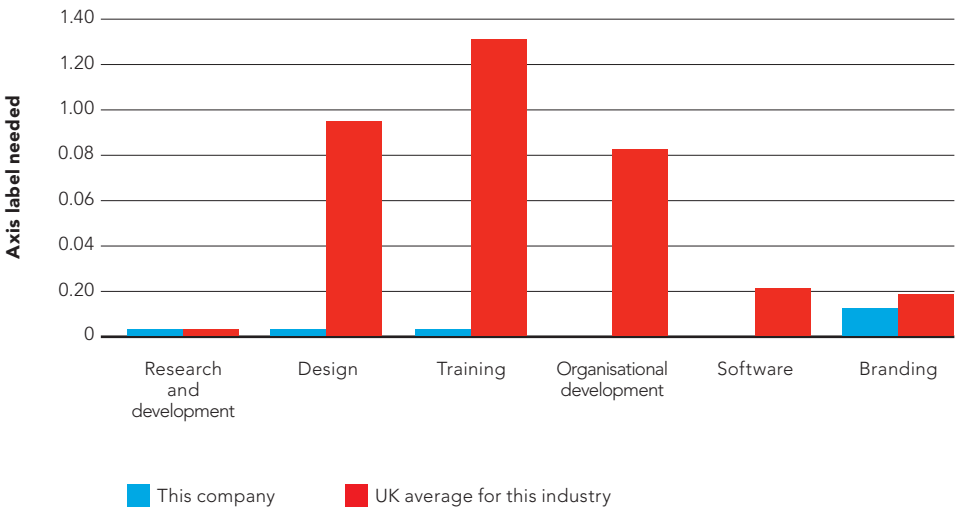
Use of the construction sector SIC code dataset for Firm A enabled the benchmarking shown in Figure 5.3 to be performed, for which additional commentary was then provided.

Although the samples for both NCII and ACCA were small, analysis of NCII expenditure conducted by Nesta concludes that the presence or absence of any investment had similar patterns between the UK in 2011 and Malaysia in 2014, but that the absolute levels in Malaysia were similar or, in most cases, lower (only one NCII Phase II participant appeared to be spending more money on innovation than its UK counterparts). This finding is consistent with the view, suggested by the macroeconomic data on innovation, that most Malaysian companies are likely to be starting from a less intangibles-intensive position than UK firms.

Inngot undertook additional research for Nesta to determine whether there was good evidence for adopting an overall adjustment that would enable the UK data to be re-baselined for Malaysia, and create a meaningful comparison. The research studied two sources believed to be promising, being the Global Innovation Index and the National Intellectual Capital database (Ståhle et al. 2014). The second of these has the advantage that is origins lie in the same total factor productivity (TFP) approach used in growth accounting.

Inngot's research shows that while innovation-related measurements do exist at a national level that could form the basis for a suitable benchmark, there are significant challenges in isolating the evidence base used to derive the figures (some of which, for example, infer new ratios from other pre-existing ratios). Without reverting back to the base data, the conclusion is that problems arise in using these figures outside their original context, and much more detailed work would be required on the sources than could be accommodated within the original project scope.

Figure 5.3: Firm A's innovation expenditure benchmarked against the UK 2011 industry average



5.5 OUTPUT ANALYSIS

As indicated in Chapter 1, section 1.4 above, the NCII tool was applied in four different areas in order to provide measures for calculating a financial 'return on innovation'. In the ACCA sample, several companies were able to provide information on their new product sales, which enabled a simple calculation to be made comparing the proportion of turnover accounted for by new products with the proportion of costs accounted for by innovation expenditure. Where the data was provided to produce this figure, it generally indicated that the uplift in sales significantly exceeded the uplift in costs.

Nonetheless, the other indicators referenced in Chapter 1, section 1.4 (improvements in efficiency; new products and services; licensing incomes; incentives awarded) were more elusive. None of the ACCA participants identified the presence of any licensing income, and only one company identified the receipt of grants linked to its innovative activities, which was the not-for-profit organisation that was wholly reliant on grants. Most significantly, only one company (Firm D) was able to say that it set targets for efficiency improvements, but even this firm indicated that the data on those savings was not accessible.

The absence of data on this category appears likely to reflect a wider difficulty. For example, Firm F is a contract manufacturer producing over 500 different lines. The nature of its business means that it may not be very active in research and development or design, but it would be surprising if efficiency savings were not high priorities.

This appears to be a potentially significant management information gap, and one that was also apparent from responses to the full NCII questionnaire (see section 5.7 below).

To endeavour to address this gap, an extra question was added, asking for overall output levels (as a non-financial volume metric) for possible comparison with the overall financial performance data.

Although six of the eight respondents were able to enter a figure (which appeared incorrect in at least one case), these units proved to be very difficult to interpret without additional insights into what they represented. It was concluded that data of this nature would either need to be compiled over multiple years, or require comparative data to be gathered for the prior year to show whether any implied efficiency improvement had in fact taken place.

The non-financial measurements captured did enable further calculations to be made on innovation outputs, in some cases. For example, by comparing products in development with the existing ranges, ratios indicating the rate at which the company's offering was being replenished and the amount of 'headroom' represented by the potential new products could be created. It was also possible to determine movements in the range of external suppliers being used, the number of active partnerships in which the participant was engaged, and to compare the number of IP rights already registered or granted with the number of rights being progressed.

5.6 QUESTIONS SMES FIND DIFFICULT TO ANSWER

For each input and output, participants were asked to record the difficulty of capture with a simple traffic light coding (with the default, neutral value being blue, to be used where a particular question was not deemed to be relevant to the company's operations). In all cases where an 'N' is present in Tables 5.1 to 5.3, this field would be left at the neutral blue setting.

This coding was introduced to overcome the difficulty apparent from initial responses to the NCII version, and across the PLC (ie non-SME) participant sample as a whole, half the companies did not provide answers to the ease of access questions.

Tables 5.4 and 5.5 show where each ACCA participant had moderate difficulty in providing information (amber), or was not able to provide it at all (red).

Two sets of responses are worthy of special mention.

Firm A could not identify the breakdown between external research and external development, but could give a combined figure with additional work. It indicated that a figure for internal R&D would be accessible with additional work, but did not provide one, but in all other cases the 'additional work' did result in a figure.

Firm D omitted to select a value on two inputs that they provided relating to internal organisational development and external copyright works, so no assessment can be made on difficulty (though it can safely be assumed that the difficulty was, at worst, 'amber').

For innovation outputs, the position (set out on the same basis as above) was as shown in Table 5.5.

There are three points of particular note in these data.

Although Firm A appears to have had more difficulty identifying information routinely than other participating firms, it also appears to have provided more and better data than any of the others.

Firm D's red coding of website information is because the R&D department completing the questionnaire does not promote or publicise its activities in this way (ie it does not follow that the company does not have a Web presence);

Firm F provided a number of outputs without indicating difficulty level (such as total numbers of employees, suppliers and customers).

Table 5.4: Areas where sample firms had difficulty providing information on innovation inputs

Company	Accessible with additional work	Not recorded/not accessible
Firm A	Combined external R&D, internal R&D; patenting costs[external design; design registration; % of training that was 'routine'; external marketing & promotional spend; % of marketing spent on new products; trade mark application costs	External research and external development
Firm B	None (no relevant inputs identified)	
Firm C	None (supplied some data but did not mark up its difficulty)	
Firm D	External research; external development; patenting costs; all software information; all organisational development data; internal training and proportion that is routine; amount spent on internal copyright works	None
Firm E	None (no relevant inputs identified)	
Firm F	Market research	None
Firm G	None	
Firm H	None	External development expenditure; all internal R&D; patenting costs; external & internal software development; all training data

Table 5.5: Areas where sample firms had difficulty providing information on innovation outputs

Company	Accessible with additional work	Not recorded/not accessible
Firm A	Total branded product sales; total new product sales; total new product sales; total outputs; number of products; number of new products; number of times development halted; number of new processes; number of redesigns; total number of customers; social media followers; new suppliers; all employee numbers; all IP numbers (except for designs)	Number of externally developed processes/technologies; number of new customers; number of social media followers
Firm B	None (all relevant inputs coded green)	
Firm C	None (all relevant inputs coded green)	
Firm D	Value of sales made to new customers, number of existing and new suppliers, trade mark activity	Efficiency savings, website visitors, social media followers
Firm E	Value of sales to new customers; volume of customers; volume of new customers; number of distinct products & services	None
Firm F	Product output; number of products & services; number of employees joining and leaving	None
Firm G	Website visitors; number of existing and new suppliers	None
Firm H	None	No volume-related outputs provided – all marked as not recorded or not accessible

5.7 SME AREAS OF DIFFICULTY VS PLC AREAS OF DIFFICULTY: MALAYSIA BENCHMARKS

At the time that the ACCA survey was being completed, Alpha Catalyst Consulting conducted a study of the responses provided to the 'standard' NCII survey used with PLCs and came to the following conclusions, shown here by way of comparison. The sample size was similar (eight PLCs at the time of completion).

Base data on revenue, expenditure and employees were easily captured (the same is true for ACCA).

Most of those questioned for NCII (over 80%) could provide data on R&D initiatives, such as investment in R&D and new services, processes and technologies launched. The PLC sample was, however, skewed towards companies already perceived as being innovative, who were therefore more likely than average to be engaged in R&D. The ACCA volunteer sample provides a more randomised sample; here, where R&D was relevant, around 60% of possible information was supplied.

On IP and legal questions, most PLCs (80%+) could identify the number of patents/trademarks they owned, but not many of these firms (only one-third) said they were involved with new designs. As shown in Tables 5.4 and 5.5, design information was generally lacking across the ACCA sample and fewer of the participants reported the presence of any registered rights.

Both samples could easily answer finance/HR questions, consisting mainly of questions on spending on training and whether grants/tax reliefs had been obtained. In the ACCA sample, half of the companies provided training, which their answers indicated was mainly facilitated by external providers.

Over 80% of PLCs participating in NCII incurred expenditure relating to process improvement and the development of information systems. These expenditures were captured in the ACCA version under two separate headings – organisational development and software. By comparison, half of the ACCA sample companies indicated that they did spend money on software development, but not all were able to quantify this expenditure: only a small number (under 20%) identified expenditure on aspects of organisational development. As explained in Section 5.5, this area is likely to have been understated.

NCII PLC participants appear to have found sales-related data on new customer acquisitions and overall sales values reasonably straightforward to obtain. The ACCA participant sample found it more difficult to separate new and existing business, though two-thirds had made sales to new people.

Lastly, marketing data also appears to have been easier for larger companies to find.

The introduction of percentage estimates to capture 'routine' training and the proportion of marketing expenditure linked to new products appears to have been broadly successful. These percentages were used on three occasions to provide estimates; there were only two instances where the facility to estimate could have been used and was not, and in one of these cases, it was because no financial data at all was available on training.

Nesta's conclusions on PLC users are that when the balance of data availability across the main categories is studied, output measures prove to be the most problematic. The benefits of incremental innovation were the hardest to measure.

Nesta also conducted its own comparison of the returns from ACCA participants with those provided by PLCs with the benefit of additional resources. Its conclusions are that:

While a majority of firms could provide data on new customers, most could not provide data on their revenues from new products and services that year, and, notably, the value of efficiency savings from process and practice improvement. Compared to the main NCII sample, smaller firms' ability to split out revenue from different products and services appears lower, although the larger firms also generally found placing a financial figure on the value of efficiency savings extremely challenging.

6. Conclusions

There is little doubt that participation in NCII has the potential to make organisations better equipped to comply with IR, as this gathers momentum as a reporting standard.

6.1 HOW FAR DOES THE INTRODUCTION OF NCII SUPPORT THE PRINCIPLES BEHIND INTEGRATED REPORTING (IR)?

There is little doubt that participation in NCII has the potential to make organisations better equipped to comply with IR, as this gathers momentum as a reporting standard.

Although NCII is not intended to be a complete reporting framework, its results are capable of being used to compile a significant proportion of the hard-to-measure capitals on which IR participants are expected to report. It also provides a relatively 'low-friction' means of determining what additional disciplines need to be adopted – not least through the management information gaps it reveals.

The benefits of a company's involvement with NCII should grow considerably if it is used consistently over a period of time, because this will help to document the aggregated effects of the flow of capitals in the context of innovation. Further benchmarking benefits will also be realised as more in-country benchmarking information becomes available.

It will be advisable to maintain close dialogue between ACCA and AIM and its advisers and consultants as the tool progresses and awareness of IR spreads. In particular, when developing the next stage of the tool for wider deployment, providing points of cross-reference between NCII questions and IR requirements could add significant value.

One specific area that may be useful to consider is the reintroduction and refinement of the distinction between outputs and outcomes, which have largely been merged for the purposes of this ACCA study as a means of simplifying the process for reducing barriers to adoption. There may also be merit in incorporating a category or heading to describe business activities. In this way, NCII participants will find it easier to set out their value creation process with regard to innovation activity in a fully IR-compliant manner.

6.2 HOW MUCH INFORMATION ON INTANGIBLE ASSETS CAN SMES AND MID-MARKET COMPANIES IDENTIFY?

The case studies produced during the ACCA exercise indicate a number of preliminary findings, and these gain added weight when compared with the NCII sample gathered from PLCs. They can be summarised as follows.

Of the financial measures requested, the inputs emerge as easier for companies to identify than the outcomes, although most are able to provide volume-related outputs.

Comparison of intangible expenditure (input) data supplied with output (asset) data and outcome (financial performance) data strongly suggests that participants were more likely to be experiencing difficulty finding information on their investments than simply not making any investment at all.

Splitting investment between internal (staff and people-related) costs and external (bought-in) costs appears to be a helpful strategy, other than the difficulties experienced in separating research from development (which are not critical for the model to function, but may have wider implications – see section 6.4 below).

The larger the company, the more likely it is in general to be able to answer the questions. This may indicate that the 'unstructured' data is available but that it is necessary to devote more time to finding it. It is interesting that the smallest company surveyed, being a start-up and having a good overview of its business, had no difficulty answering the questionnaire or responding to additional enquiries – it was simply that a number of categories of investment were genuinely not relevant to the business at its current stage of development.

6.3 WHICH DATA ARE MOST TIME-CONSUMING OR DIFFICULT FOR THEM TO FIND?

The biggest difficulty highlighted in both the NCII and ACCA samples is that companies struggle to measure or quantify efficiency savings, even though this is (presumably) a strategic objective for many companies in the sectors surveyed. It may suggest that incremental forms of innovation are harder to measure than activities that are clearly 'badged' as being innovative (such as R&D). It seems inconsistent with the amount of investment made in 'lean' manufacturing processes – or, it may suggest that such activities are seen either as a matter of compliance, or as a general cost of doing business not distinguishable from everyday activities.

This does not appear to be more or less of a problem for large or small businesses, and is not being solved by the provision of more intensive consulting support to assist in requirements definition. It suggests that some of these investigations are not easy for any business, regardless of size, and that record-keeping may need to improve in order to make NCIIs (and IRs) principles easier to adopt.

It will be important to compare the data found in the Malaysian study with the ability to identify intangible inputs, outputs and outcomes in other countries. A similar study in the UK, for example, would be of particular interest as it is the source for much of the benchmarking data currently available for use.

6.4 WHAT CONCLUSIONS MIGHT BE DRAWN FROM THE FINDINGS ABOUT THE NEED TO RAISE INTANGIBLE ASSET AWARENESS DURING PROFESSIONAL DEVELOPMENT?

For NCII, Nesta noted that the questionnaire was most comprehensively completed by companies that had reasonable levels of investment in research and development, such as a defined department. In practice, many of the pilot firms struggled to distinguish between research and development expenditure, unless they were accounting for it in certain ways to claim R&D tax incentives. This was also the case with the ACCA sample. Given the different treatment provided for intangible assets depending on whether they relate to research or development, this was not a conclusion that was expected.

The findings appear consistent with the view that standards are likely to drive both behaviour and systems development, in accounting and in management more generally. The need to provide information on investments in tangible assets for balance sheet purposes means that methods have to be in place to capture this data; but because the statutory responsibility does not apply to intangibles in the same way, the systems are absent.

The mindset required for IR is that capital is transformed through business activities, not that costs become 'sunk'. Providing a means of capturing these inputs and understanding their relationship to outputs and outcomes is an important professional discipline, and one necessary in order to provide proper support for strategic decision making – especially when dealing with investments for the long-term, which are susceptible to being 'diverted' in favour of achieving short-term performance objectives.

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