FLARE

Value Creation through Information Management

A Benefits Realisation Initiative

Table of Contents

Executive Summary

Flare have partnered with ECIM and CDA to evaluate the realisation of Information Management (IM) benefits by surveying a number of oil companies, including those presenting projects at ECIM over the last 4 years. Although the primary aim was to establish an industry focus and consensus on IM best practices, the survey also considered collaboration opportunities with respondents questioned about success of IM projects, their predicted benefits, and whether they made a long term difference to the business.

Invites were sent to IM contacts in approximately 90 companies, mostly in Norway and the UK. Only 13 substantially complete responses were submitted, the low participation rate probably reflecting the challenging financial and staffing situation faced by the oil and gas industry. Since the low number of responses precludes meaningful statistical analysis, this report attempts to qualitatively identify apparent trends and directions.

Financial benefits appeared to be a key driver for project approvals with either the project sponsor or IT/IM the stakeholders that gained the most. ***Risk related benefits*** were also commonly identified in the business case with both financial and risk benefit realisation generally occurring in the long term. Of all the benefit categories, ***intangible benefits*** had the highest number being defined after the project start and were more likely to be realized in the medium timeframe. On average projects delivered around half of the projected benefits.

More than three-quarters of respondents thought that ***Working collaboratively with another company*** would have improved the outcomes of their project with 85% saying that they would consider collaborating with other companies in the future, suggesting that there is an opportunity for increased collaboration in the industry. The most popular areas for future collaboration were "Data Quality Management" (DQM) and "Standards/Guidelines" with constraints to developing collaborative initiatives most commonly identified as "Data Confidentiality" and "Company Confidentiality".

Suggestions about '***Where IM can make a significant contribution to the company in the future***' were varied, but the top items included, "Establishment of minimum standards for data and information", "Transparency of data quality and better understanding", and "More collaborative approach to IM with other companies".

These results suggest it would be possible for oil and gas companies to collaborate on the design of DQM governance, validation rules, reporting processes, and other IM framework components, while implementing solutions independently, so that company and data confidentiality does not become an issue. There is an opportunity for OGA, through its 'Information Management Forum', to support and promote such collaboration and potentially reduce industry costs.

Introduction

1.1 Study Purpose & Background

An analysis of presentations at last year's ECIM conference might suggest that the industry:

- Has not moved forward substantially in some areas, including Data Quality Management and Governance
- Is constrained in its ability to exploit emerging trends such as "Big Data and Analytics"

Flare believes that this view is not necessarily consistent with real industry experience, that progress has been made in many areas and, as a result, oil and gas companies have benefited from the Information Management (IM)[1] projects and practices that have been implemented.

Flare have partnered with ECIM and CDA to evaluate the realisation of Information Management benefits over the past 3-4 years. All oil companies that have presented projects at ECIM over the last 4 years, as well as some additional companies, were invited to complete a survey regarding the success of IM projects, their predicted benefits, and whether they made a long term difference to the business.

The primary aim of this work is to establish an industry focus and consensus on IM best practices, with ECIM and CDA taking a leading role. This focus will ensure that the industry continues to learn, improve and can potentially reduce project costs in the future. We also want to understand how organizations can collaborate and realise synergies in the industry, particularly during times of budgetary constraint.

1.2 Study Objectives

The study had a number of objectives:

1. Identify what IM in our industry does well and what improvements might be made
2. Assess the benefits that have been realised through IM related projects and initiatives
3. Provide evidence of the value generated from IM projects, initiatives and services, thus providing direction for future IM work
4. Outline areas for collaboration and shared working in the industry that will maintain existing benefits at lower overall cost

1.3 Methodology

An online survey was conducted using a comprehensive set of questions. Invites were sent to Information Management contacts, mainly in Norway and UK, with some others from elsewhere in Europe and North America. Invitees included:

- Past ECIM presenters
- CDA Council representatives
- Other Flare contacts

1.4 Respondent Summary

Invitations to participate in the survey were sent to approximately 90 companies. Disappointingly, only 17 responses were submitted and, of these, 4 were significantly incomplete and were excluded from the final results while some of the 13 that were included did not answer every question. The low participation rate

[1] In this document the term 'Information' is used to imply both data and documents

probably reflects the current difficult financial situation of the oil and gas industry. Budget cuts and resultant downsizing continue to challenge IM management with associated resourcing and organizational change issues requiring most of their attention.

Participating companies included approximately 50% mid-size organizations (101-500 users), 25% large (>500 users) and 25% small companies (<101 users).

2 Results

2.1 Benefits

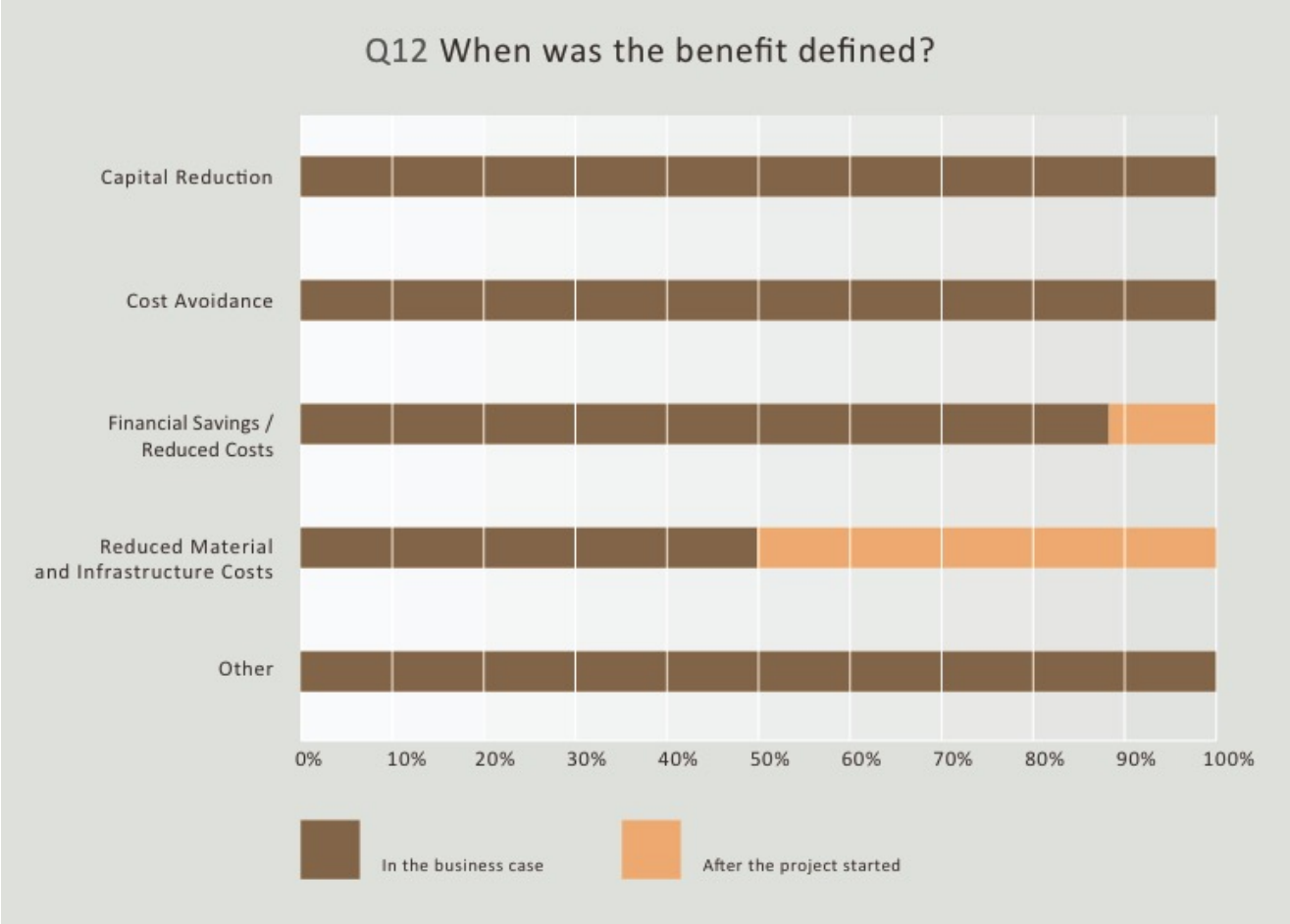
The objectives of most IM projects are to deliver some improvement to processes or the way of doing things and are generally defined within the business case, collectively defining the benefits that a project will provide to the company.

Respondents were asked a series of questions related to benefits. Interestingly, although the majority of respondents (75%) indicated that there was an individual appointed to be responsible for the realisation of project benefits, most (63%) indicated that there was no company-wide benefits realisation process in place. This was an unexpected result, given that benefits form an integral part of defining project success as well as being a measure of whether projects are approved for funding.

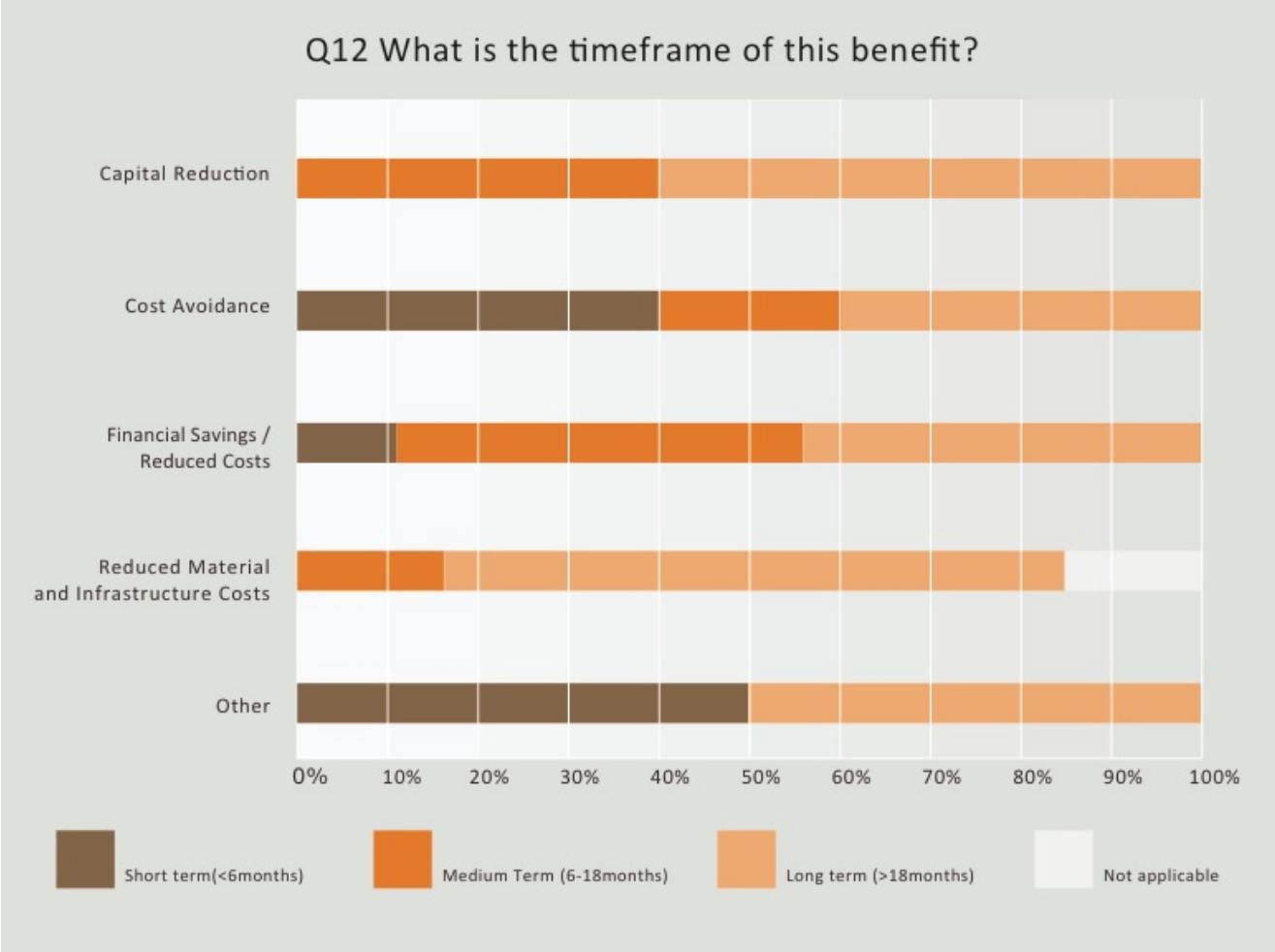
Project benefits were defined into four broad categories: ***Financial, Risk, Whole Company***, and ***Intangible benefits***. Each category identified a number of common benefits that were assessed against when they were defined, the benefit realisation timeframe, perceived dollar value of the benefit, and which stakeholders most gained from the benefits.

2.1.1 Financial benefits

All ***Financial*** related benefits scored highly in terms of being defined within the Business Case at project outset, with only a very small number defined after the project had started.



From this one can conclude that financial benefits appear to be a key driver for project approvals although the majority of financial benefits realisation occurred in the long term.

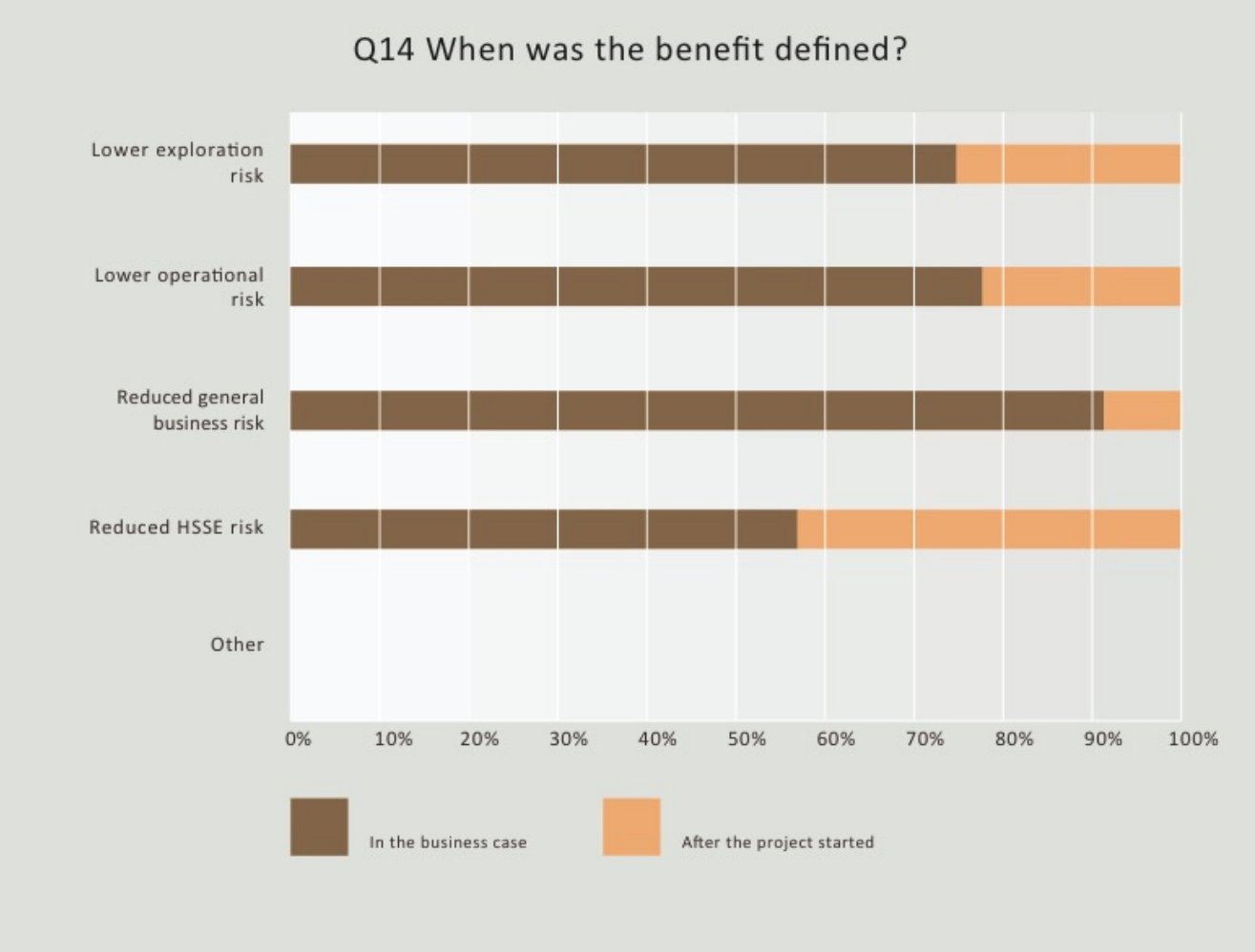


There were a varied mix of responses to the perceived financial benefits. This variation may be due to the size of the projects being undertaken as around half of the projects analysed had a total budget of under $1 million. A small project with a limited base of influence may only achieve a small cost saving.

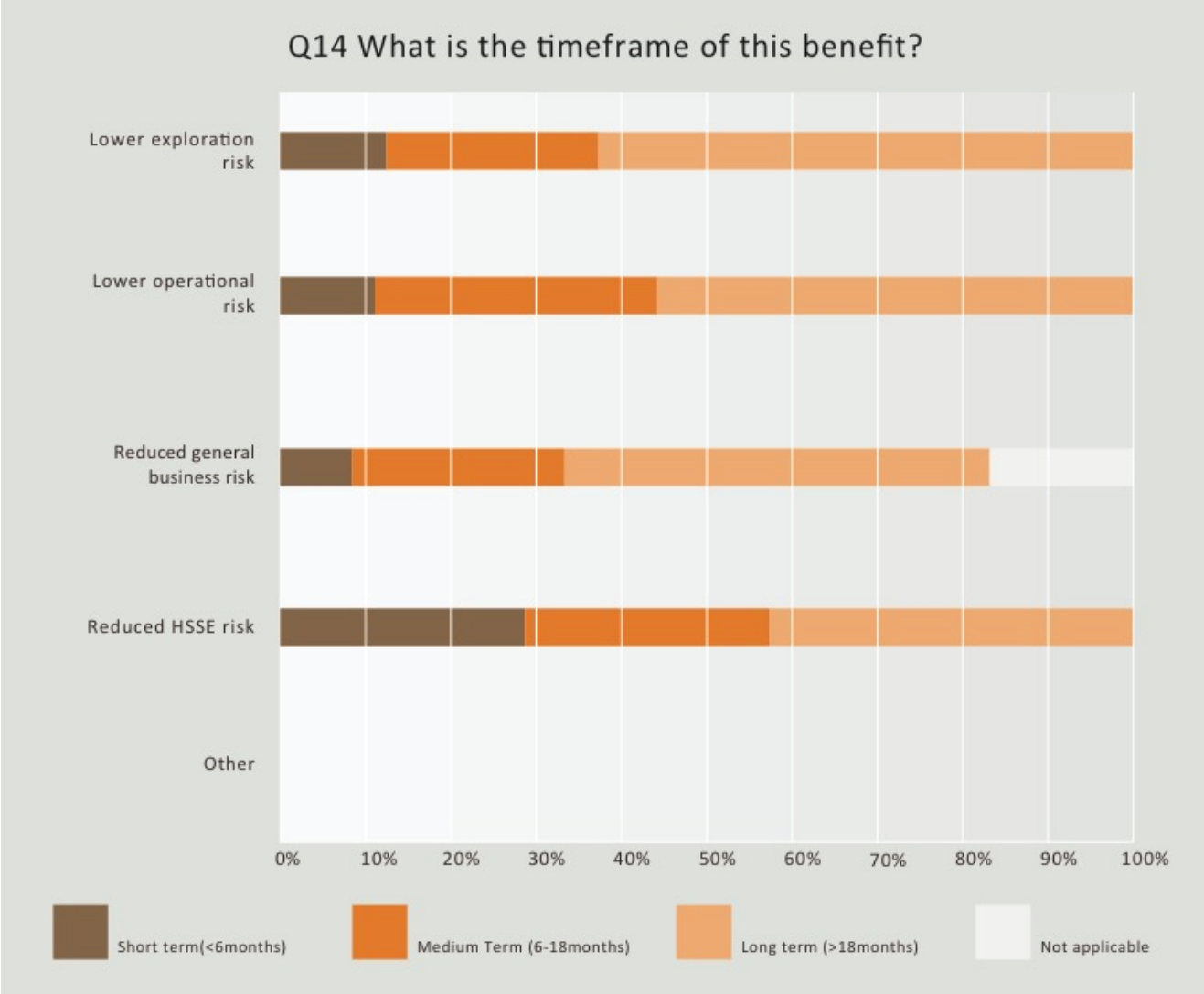
The stakeholders that gained most from financial benefits appeared to be either the project sponsor or IT/IM. There were also high scores for “exploration” compared to all other departments, however this may be a reflection of the project focus of most respondents with over 80% of projects targeted to exploration as opposed to 50% related to production and just over 40% related to development.

2.1.2 Risk benefits

Risk related benefits scored highly in terms of being defined within the business case. This was not unexpected given that risk management is a key requirement within the oil and gas industry.



Similar to financial benefits, the majority of risk related benefits were identified as being realised in the long term.

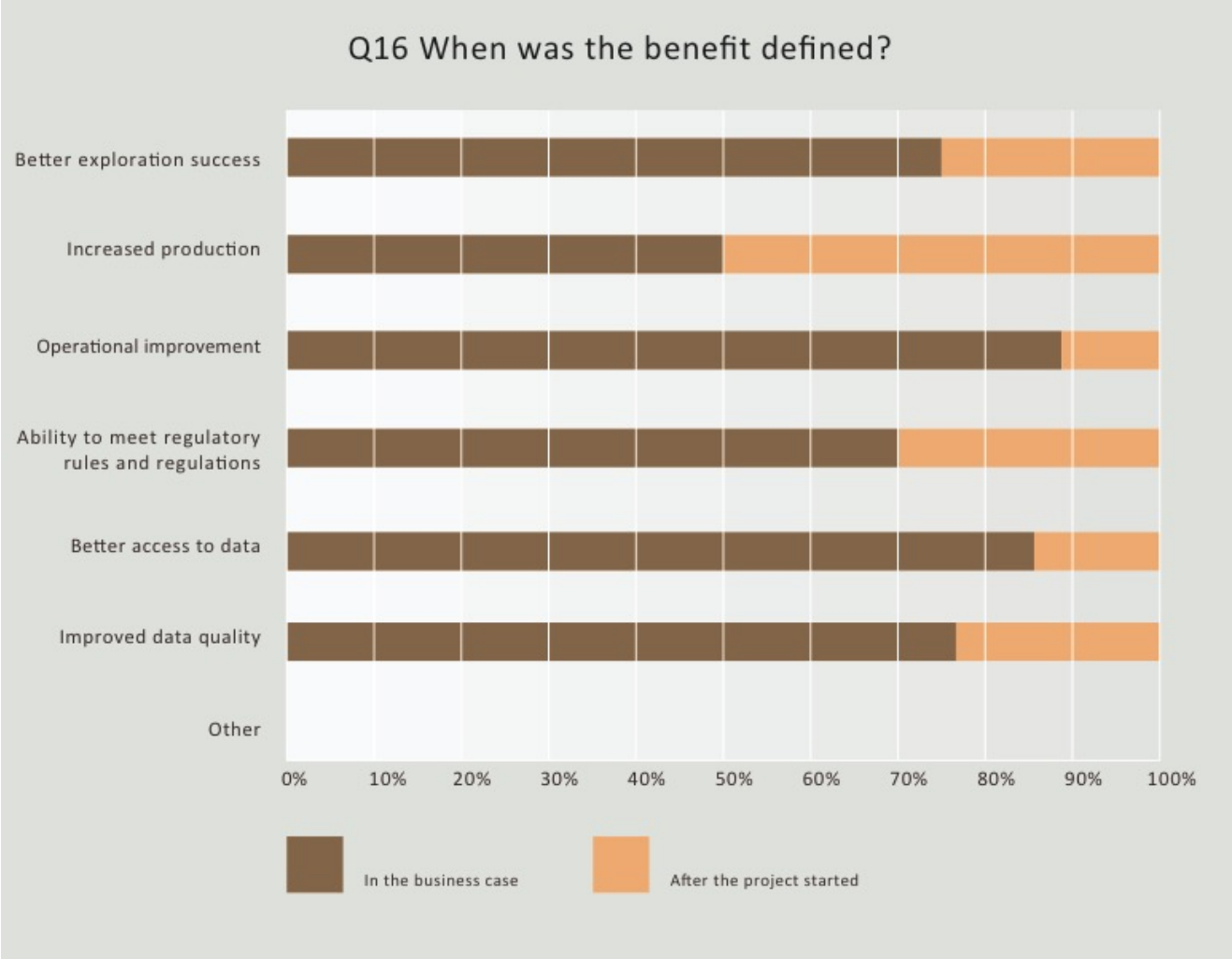


There were a range of responses relating to the perceived dollar value of risk-related benefits with a high proportion of respondents specifying a non-dollar value to risk benefits. This is not an unexpected result given that risks can often be qualitative and not easily quantifiable. Also, given that the timeframe of risk related benefits are realised in the long term, some risks may not as yet be defined and therefore quantified with a monetary value.

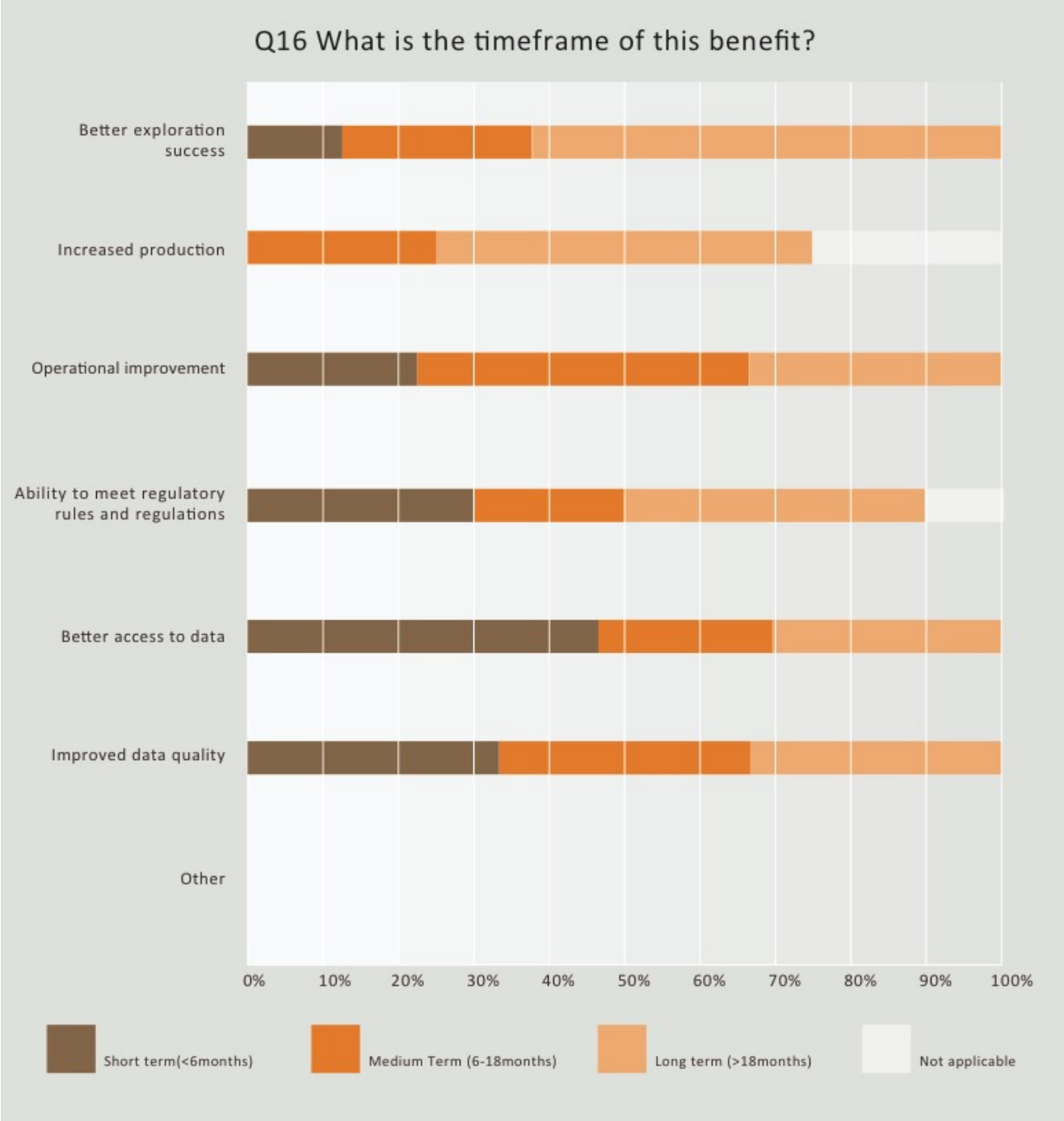
Data relating to stakeholders correlated with the type of risk benefits identified which was to be expected. For example, Exploration (82%) was the main beneficiary of “Lower Exploration Risk” whereas “Lower Operational Risk”, “Reduced General Business Risk” and “Reduced HSSE risk” was relatively evenly spread between Exploration, Production, HSSE, Developments, Maintenance and Operations. The percentage of risk benefits to sponsors and IT/IM was lower than that of financial benefits with all scoring below 50%.

2.1.3 Whole company benefits

Whole Company benefits were predominately defined within the business case with all benefits scoring high except for "Increased Production" which had a 50/50 split between being defined within the business case and after project start.



There was more of a mix of timeframe for benefits realisation compared to ***Financial*** and ***Risk*** benefits with a higher proportion of these benefits being realised either within the short or medium term.



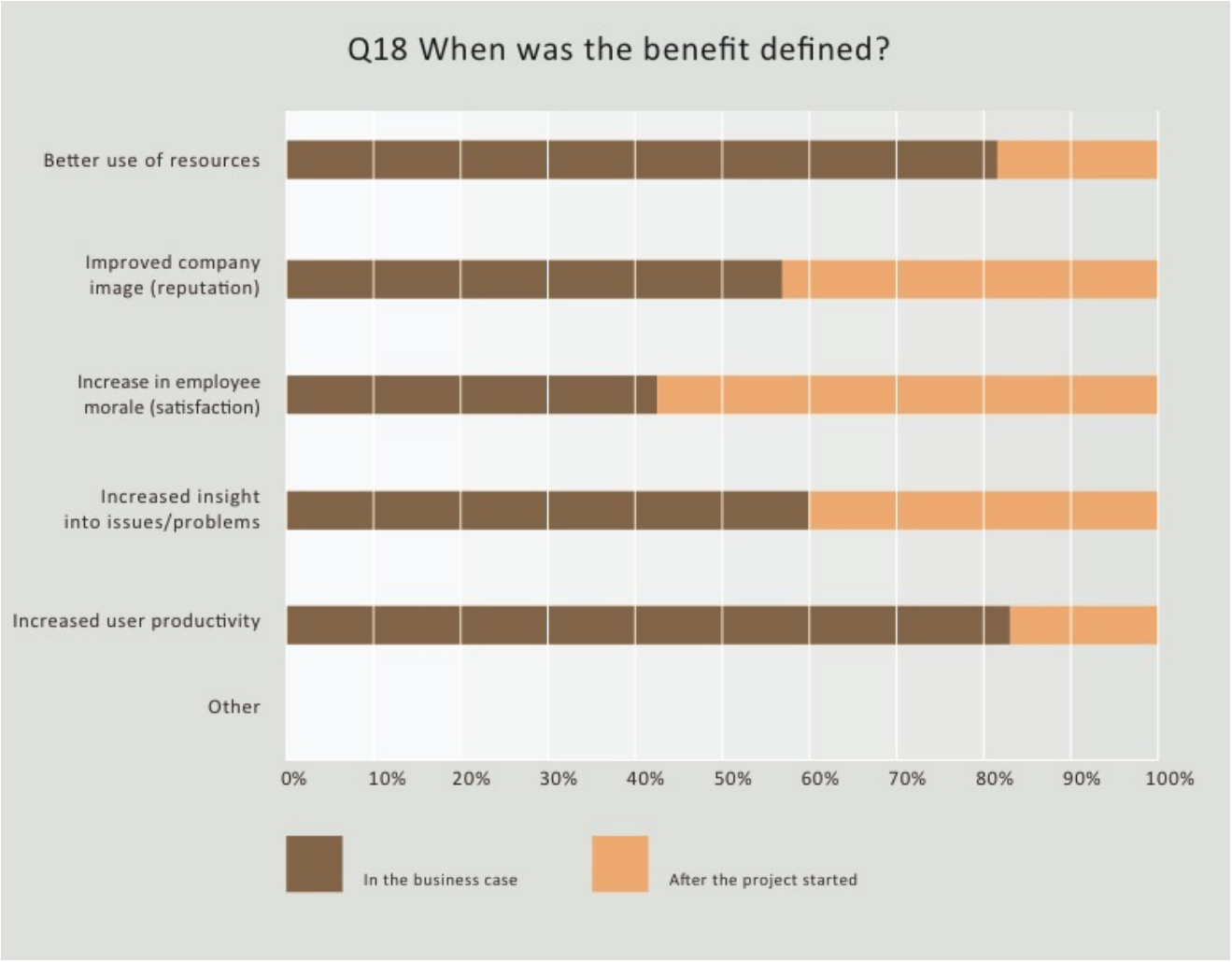
There was a broad variation of the perceived dollar value of ***Whole Company Benefits*** which makes it difficult to draw any solid conclusions. Interestingly, given the timeframe indicated, most of these benefits would likely have been realised, so a possible conclusion is that no measure was put in place to identify the value of these benefits. The benefit relating to the ability to meet regulatory rules and regulations had an even split between a low dollar value (<$100K) and not being applicable.

Similar to the majority of risk related benefits, ***Whole Company Benefits*** had a fairly even distribution across all stakeholder groups with some of the department-specific benefits such as “better exploration success” having a higher proportion of exploration stakeholders as beneficiaries. There was also a higher proportion of sponsors

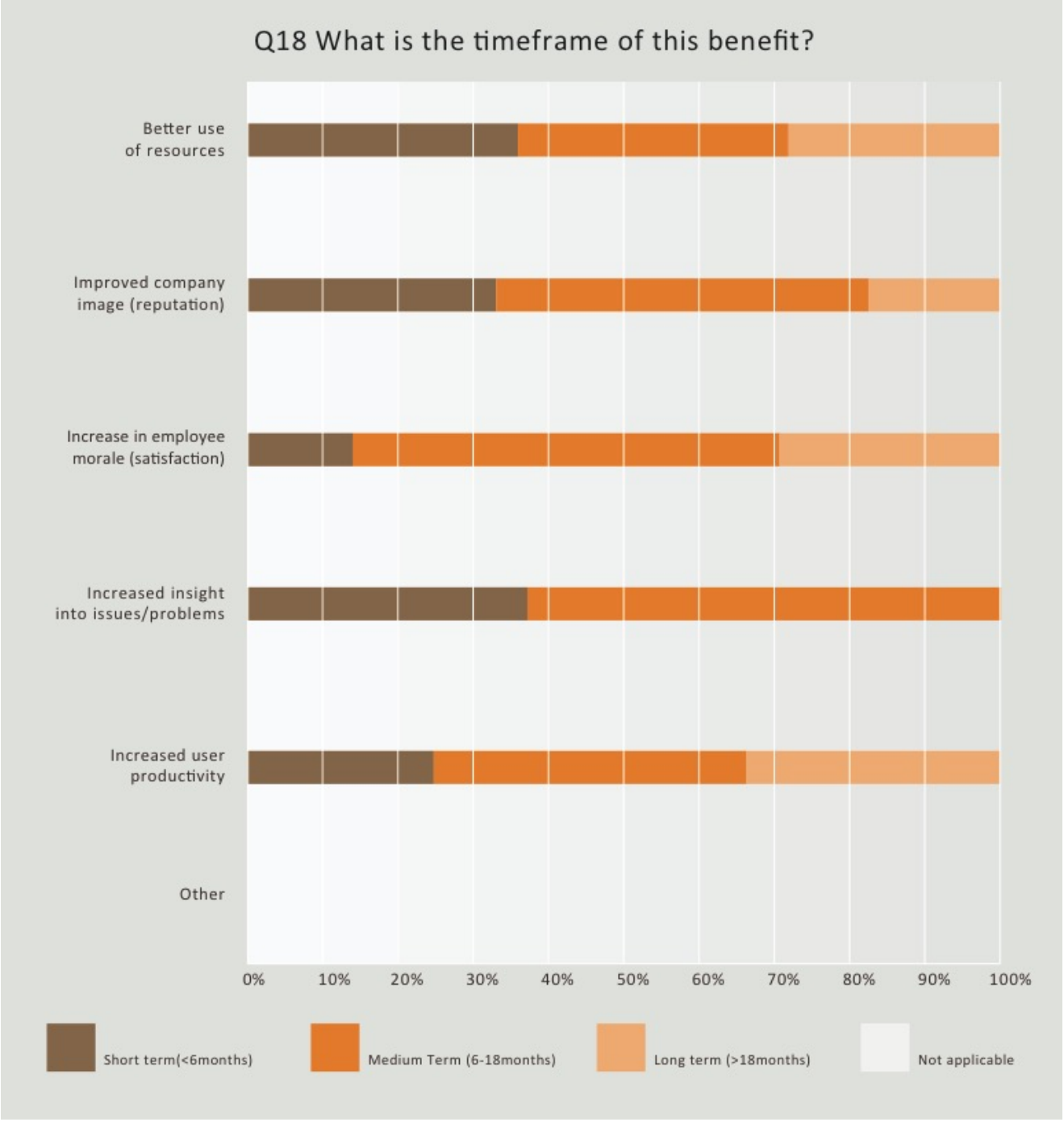
and IT/IM stakeholders benefitting from whole company benefits which is similar to the results seen for financial benefits.

2.1.4 Intangible benefits

Of all the benefit categories, ***Intangible benefits*** had the highest number being defined after the project start although most were defined within the business case.



This category of benefits scored highly on the medium term timeframe compared to other benefit categories. In particular, benefits relating to “increase in employee morale” and “increased insight into issues/problems” were predominately (more than 50%) realised in the medium term.



As might be expected with ***Intangible Benefits***, there were relatively few associated dollar values, the majority of scores falling within the “not applicable” category (40%-67%). Intangible benefits by definition are generally qualitative and have associated no monetary value, or such values are difficult to define and measure.

Similar to whole company benefits, there was a fairly even spread across all stakeholder groups in terms of benefitting from ***Intangible Benefits***, although “Sponsors”, “IT/IM/ID” and “Exploration” also scored highly for certain benefits within this category.

2.1.5 Measuring benefits

Four options were provided to respondents relating to ***Measuring Benefits*** of which "Financial Analysis" scored the lowest (15%). This result correlates well with the low level of responses seen relating to the perceived dollar value of benefits. Less than a third of respondents used user surveys to measure benefits with just over a third of respondents indicating that no measurements were used. "Dashboards and Scorecards" (46%) appear to be the most prevalent form of benefits measure.

The weighted average of responses related to project success indicated that the projects delivered around half of the projected benefits. None of the projects failed to deliver expected benefits to stakeholders, nor did any of the projects exceed the amount of benefits to the company that were originally identified in the business case.

When asked about ***Key Success Factors***, respondents ranked a "clear business case" as the highest in importance with "senior management support" overwhelmingly in second place, followed closely by "adequate resourcing". The remaining key success factors included a "good level of sponsorship", "good communication with all stakeholders" with "good change management" ranked as the least important factor.

When assessing the ***Long Term Sustainability of Benefits***, approximately half the respondents indicated that "all benefits continue to be realised one year after project completion" with about 40% of respondents indicating that "some benefits" were still being seen. Only one respondent indicated that the company was now gaining little benefit from the solution implemented by the project.

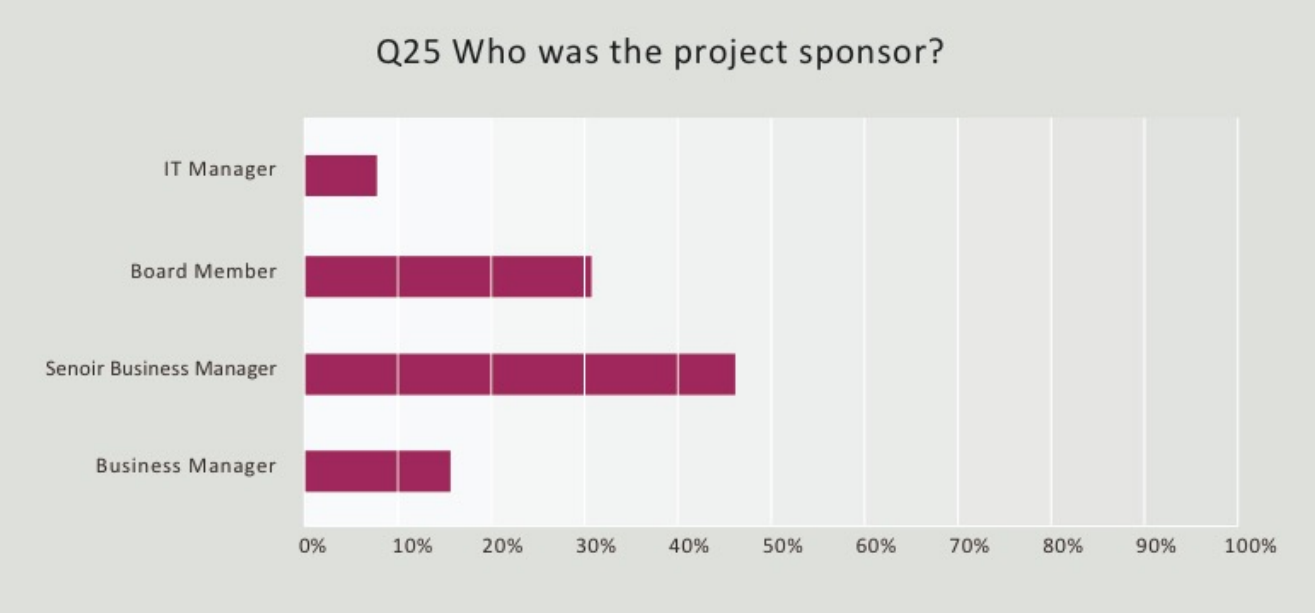
Finally, in the comments section, a number of additional points were made by respondents including:

- The importance of maintaining a benefits register and having a dedicated resource to fully measure, report and understand project benefits
- Benefits can be compromised by other project factors such as budget overspend
- It is difficult to accurately measure benefits particularly when dealing with intangible benefits
- External factors such as the rapid reduction in commodity prices can have an impact on benefits realisation
- Benefits evaluation is an ongoing process, both during and after project completion, and therefore it can be difficult to provide a definitive measure of benefit success

2.2 Change Management

2.2.1 Project sponsor

The ***Project Sponsor*** was most commonly identified as a "Senior Business Manager" (6 responses) or a "Board Member" (4 responses) with a "Business Manager" sponsoring 2 projects and only one project sponsored by an "IT Manager".



2.2.2 Project support

The amount of ***Support provided*** varied across projects from the lowest value, "Figurehead only" to greatest involvement, "Active weekly participation". On average the sponsor provided, "Limited support when requested".

2.2.3 Engagement with stakeholders

Engagement with stakeholders prior to project start was significant with 77% of respondents reporting, "Frequent engagements with main stakeholders" or "Full and frequent engagement with all stakeholders" and only one project reporting, "Engagement limited to main stakeholders" and one "No engagement" during this phase.

During the project engagement continued to be high with 77% of respondents reporting, "Frequent engagements with main stakeholders" or "Full and frequent engagement with all stakeholders", and just 1 project reporting, "Engagement limited to main stakeholders".

Post-project stakeholder engagement dropped slightly with 63% of respondents reporting, "Frequent engagements with main stakeholders" or "Full and frequent engagement with all stakeholders", and only one project reporting, "Engagement limited to main stakeholders" and one "No engagement" during this phase.

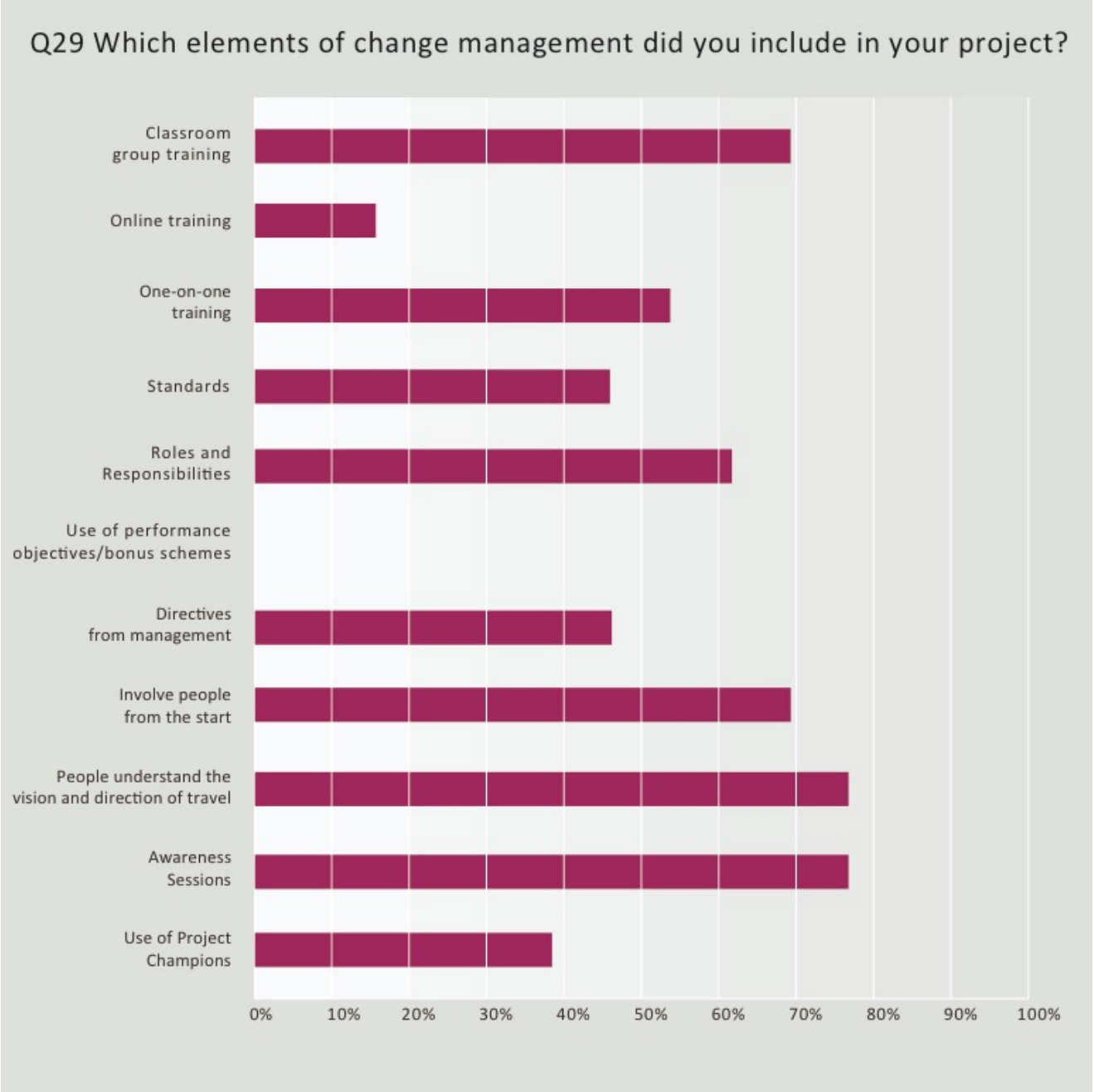
Asked to comment on stakeholder engagement, one respondent remarked that, "Stakeholder engagement is key to project success …. we deliberately chose to embed members of our project team in the exploration function to help facilitate strong stakeholder relations". In another project, "Interest was high to start but fell

away when technology failed to work (too late and slow when it arrived and also IM governance wasn't followed so meta-data was not there to improve search)".

A respondent commented that "We have a regular agenda item in our Weekly Team Technical Meetings to discuss any issues that have arisen/need addressing/are upcoming. When solutions are found/in place, this forum is also used to communicate this". The observation that "The project will never end" made by another respondent is perhaps subject to a variety of interpretations.

2.2.4 Change management elements

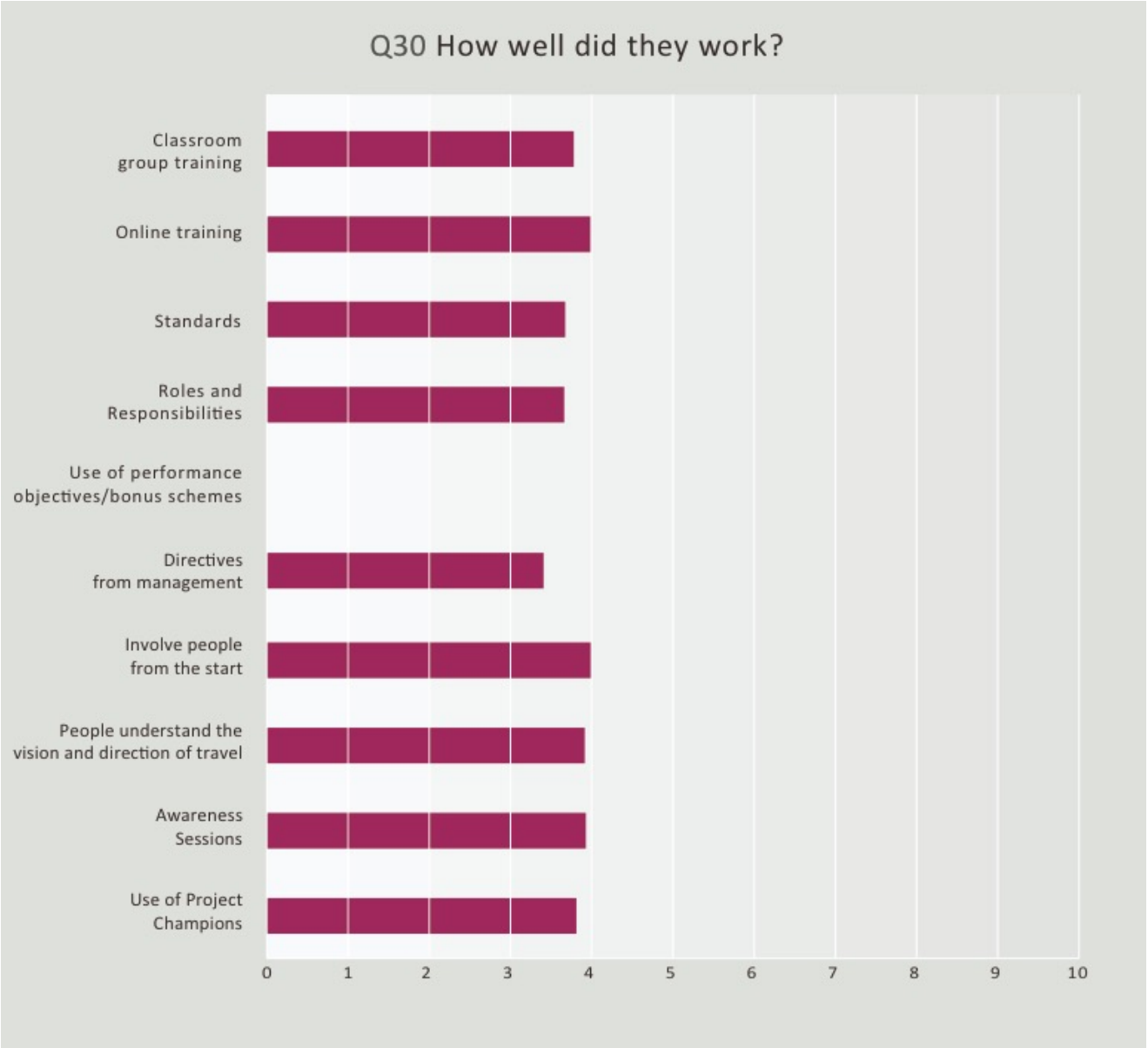
When considering ***Change Management Elements***, 77% of respondents indicated that "People understand the vision and direction of travel". "Awareness sessions" were the most commonly used change management approach (77%), closely followed by "Classroom group training" and "Involve people from the start" (69% each).



Rather surprisingly, “Online training” was only provided in two projects and none of the respondents reported “Use of performance objectives/ bonus schemes”. Other change management elements such as “Directives from management”, “Use of project champions” and “One-on-one training” were typically used by about 50% of the projects.

2.2.5 How well did change management elements work?

When asked ‘***How well did the various change management elements work’***, respondents scored them very similarly, rating all between 3 (“limited value”) and 4 (“value in some areas”).

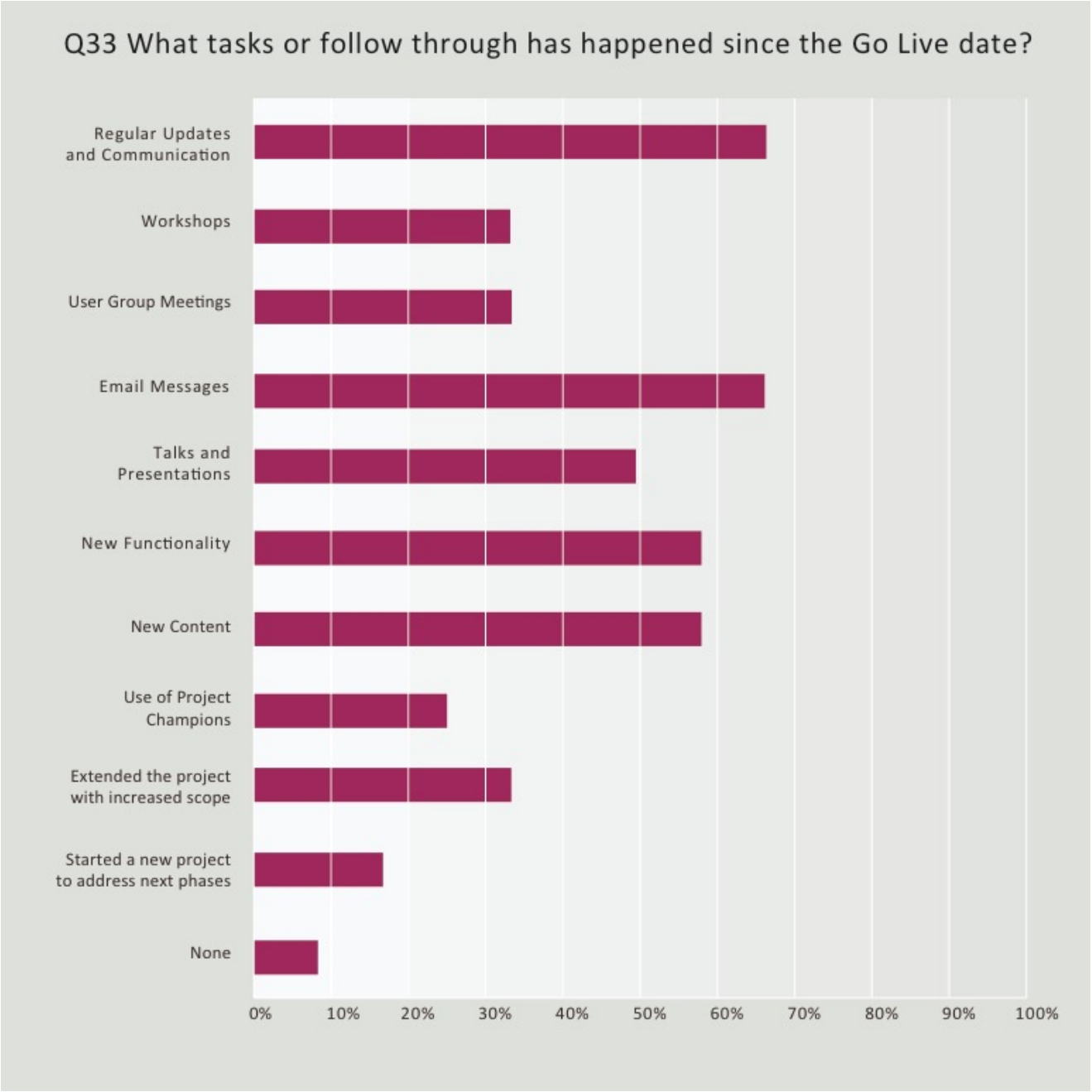


2.2.6 Desire to change

The ***Desire to change*** varied widely with responses ranging from 2 to 5 (out of 5) with an average rating of 3.3.

2.2.7 Follow through activities

When asked what ***Task or Follow Through*** had happened since the go live date, 67% of respondents identified both, “Regular Updates & Communication” and “Email messages” with 58% selecting, “New Functionality“ and “New Content“. Only one project said “Nothing” had happened.



Effective change management is widely regarded as an essential aspect of any IM project so it is rather surprising that “good change management” ranked as the least important ***Key Success Factor*** (see section 2.1).

2.3 Collaboration

Collaboration is often viewed as a desirable objective by the oil and gas industry, but seems only rarely to be realised. In the current economically difficult times, collaboration on information management between companies should be a viable option. The new Oil and Gas Authority (OGA) in the UK has suggested that better collaboration in Information and Data Management is a key enabler to better data, lower risks and reduced costs.

2.3.1 Working collaboratively

The survey asked a number of questions regarding collaboration, currently and in the future. Over 76% of respondents thought that ***Working collaboratively with another company*** would have improved the outcomes of their project. Some of the reasons given for this include:

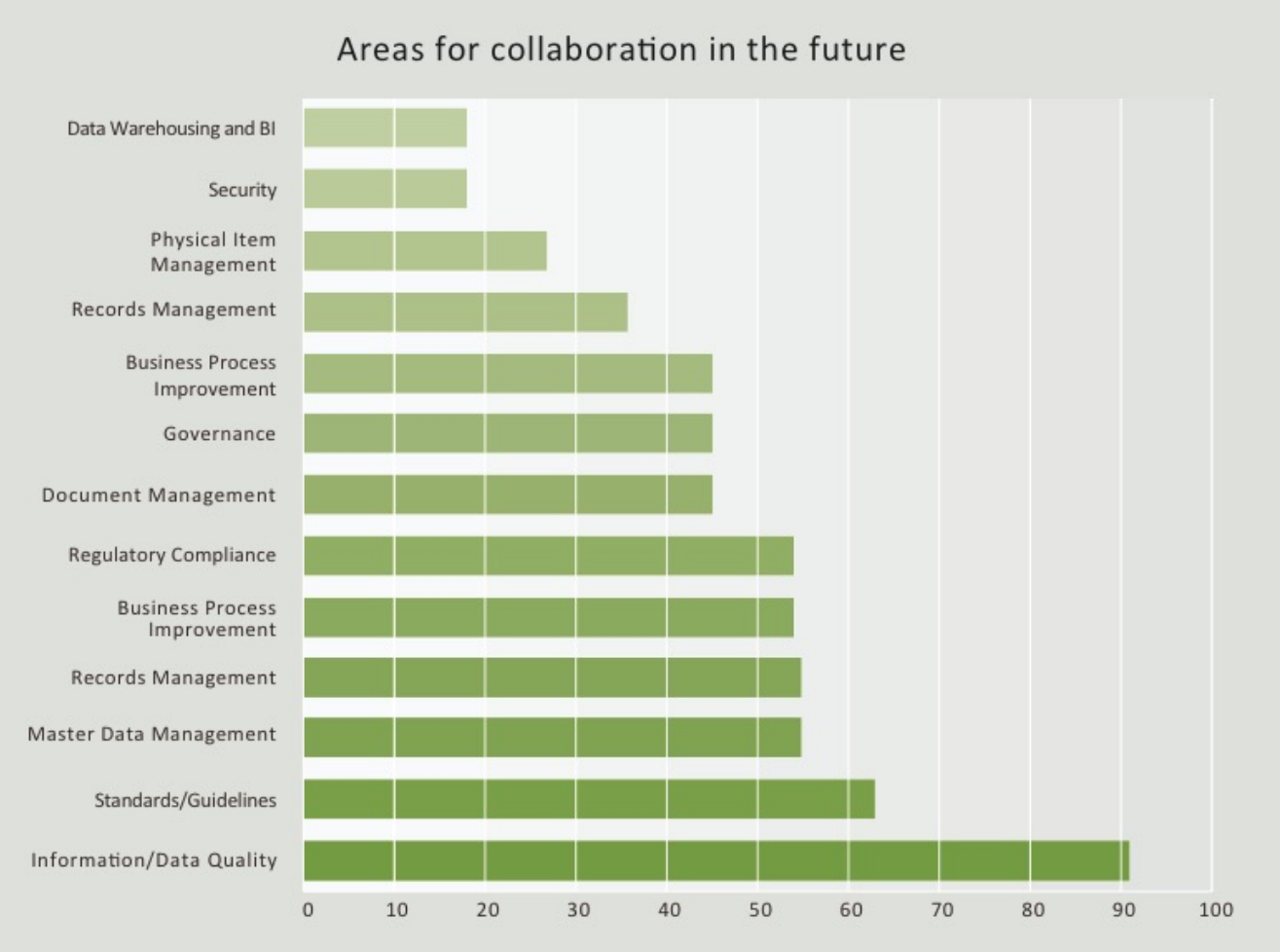
- Knowledge sharing in the current economic climate would have made things easier
- Use of existing standards is key
- Being able to peer review projects and ideas against your peers is a powerful tool
- Sharing development time and cost is a key driver
- If everyone ensured that their well data was the best possible, we would only have to look after our own operated wells
- It's too easy to re-invent things, such as taxonomies and how to deal with SharePoint. Collaboration would produce standard answers that all can benefit from
- Collaboration can provide more gravitas to messaging and communication to management
- Sharing experiences, expectations and approach probably would have positively influenced internal discussions

2.3.2 Collaborating in future

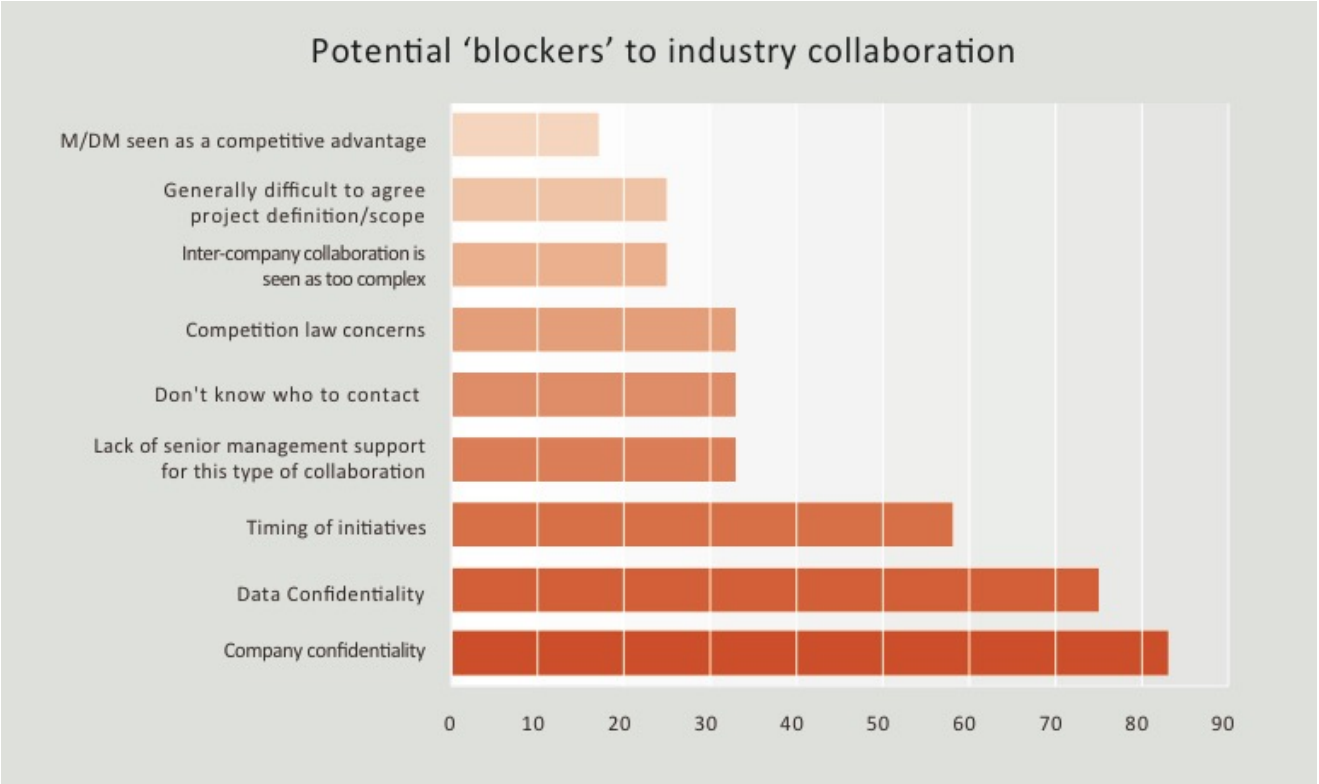
When asked '***Would you consider collaborating with other E&P companies in the future to derive collective value and lower project cost***', 85% of responders said that they would consider collaborating with other companies in the future.

2.3.3 Possible collaboration areas

Responders were asked to suggest possible areas for collaboration in the future. The graph below shows the range of responses, with “Data Quality Management” (DQM) and “Standards/Guidelines” creation being the two areas that show the most promise.



However, there are also some constraints to developing collaborative projects and initiatives and respondents identified a set of potential 'blockers' to industry collaboration. The chart below shows the relative frequency.



The overriding concerns are "Data Confidentiality" and "Company Confidentiality". We would suggest that these two reasons have always been the main blockers to creative collaboration.

2.4 Other Key Points

2.4.1 Creating value

When asked if users perceive that '***Information Management creates value'*** for their company, the average value was 3.7 from a maximum of 5. It would appear that the three main reasons why some business users do not see the value created by good IM are:

- Lack of business understanding/interest
- Lack of management support and endorsement
- Initiative and project overload

The IM community needs to understand these issues in more detail and deal with them head on. Taking the above three issues in order:

- Ensure that sessions are organised with all levels of the company to clearly articulate the benefits and value of good IM. Use simple terms and examples and keep it brief. Successful initiatives usually use a combination of short informal presentations, posters and targeted messaging. The messaging must be maintained and sustained over time.

- Some managers will understand IM and some won't. Some see IM as a business tax and often want to outsource it to another company as it's not considered a core business function. A sustained messaging campaign to senior management is required, stressing the value created by good IM is the key to success. Showing that the company has a lower risk profile or can increase production through better IM is a powerful message and one that most senior managers will not ignore.

- Many E&P companies, during better economic times, have large numbers of projects and initiatives running at the same time. Each project will have a sponsor and each generally requires business input into a new solution that the project is trying to implement. This causes stress on often limited numbers of people with the result that sponsorship and involvement in the project suffers. One way to resolve this is to setup an IM governance board that sponsor/promote all IM projects under an umbrella arrangement. This cuts down overhead and focuses sponsors on the projects that are important.

2.4.2 Contribution of IM

Respondents were asked to provide up to five ideas on '***where IM can make a significant contribution to the company in the future***'. The responses were varied, but the top items included:

1. Cost reductions gained from data analytics
2. Taxonomy and ontology
3. Establishment of minimum standards for data and information
4. Tackle unstructured data in a more robust manner
5. Transparency of data quality and better understanding
6. Knowledge management and dissemination
7. More collaborative approach to IM with other companies
8. Provision of better and consistent change management

2.4.3 Headcount

Over the last two years, as might be expected during the current industry downturn, 55% of companies reported a reduction in the number of IM staff employed by their company. However, 27% reported an increase in the number of staff, whilst 18% indicated no change in numbers.

3 Summary

3.1 Conclusions

The small sample size precludes drawing definitive conclusions from the survey, however it is possible to infer some patterns from the data and suggest some interesting implications.

All ***Financial*** related benefits scored highly in terms of being defined within the Business Case at project outset, with only a very small number defined after the project had started. From this one can conclude that financial benefits appear to be a key driver for project approvals although the majority of financial benefits realisation occurred in the long term.

It is interesting that ***Financial Benefits*** figured so highly in the business cases but were poorly measured afterwards. It is generally easy to state benefits, but much harder to measure after-the-fact. Perhaps real benefits from IM should have a greater focus on value creation rather than cost savings or efficiency.

Risk related benefits scored highly in terms of being defined within the business case. This was not unexpected given that risk management is a key requirement within the oil and gas industry. Similar to financial benefits, the majority of risk related benefits were identified as being realised in the long term with a high proportion of respondents specifying a non-dollar value to risk benefits. The percentage of risk benefits to sponsors and IT/IM was lower than that of financial benefits with all scoring below 50%.

There was a broad variation of the perceived dollar value of ***Whole Company Benefits*** which makes it difficult to draw any solid conclusions. Interestingly, given the timeframe indicated, most of these benefits would likely have already been realised, so a possible conclusion is that no measure was put in place to identify the value of these benefits.

Intangible benefits scored highly on the medium term timeframe compared to other benefit categories. In particular, benefits relating to "increase in employee morale" and "increased insight into issues/problems" were predominately (more than 50%) realised in the medium term. It would be interesting to determine how these two intangible benefits contributed to measurable improvements in company performance.

The finding that less than a third of respondents used user surveys to measure benefits with just over a third of respondents indicating that no measurements were used suggest that a greater focus on user benefits might be helpful in justifying IM future projects. This conclusion is reinforced by the fact that almost two-thirds of the respondents said there was no company-wide benefits realisation process in place, an unexpected result, given that benefits form an integral part of defining project success as well as being a measure of whether projects are approved for funding.

Responses related to project success indicated that the projects delivered around half of the projected benefits. None of the projects failed to deliver expected benefits to stakeholders, nor did any of the projects exceed the amount of benefits to the company that were originally identified in the business case. The medium score here may be related to the low proportion of companies that have a company-wide benefits realisation process, suggesting this is still an area in relative infancy and therefore not properly measured. It is also perhaps foreseeable that projects assessed by the IM team, will inevitably score in the middle, with no unsuccessful and no wildly successful outcomes.

Respondents ranked a "clear business case" as the most important ***Key Success Factor***, while "good change management" ranked as the least important factor. Could the low level of importance placed on change management be a factor in the medium level of benefits realised on projects?

Engagement with stakeholders prior to project start was significant and continued to be high during the project, but dropped slightly post-project. When asked if users perceive that '***Information Management creates value'*** for their company, the average value was 3.7 from a maximum of 5. Whilst not a bad result, it suggests that more marketing and business communication is needed to ensure that the correct messages are getting to the business community. It is worth considering whether long-term benefits might increase if the level of stakeholder engagement were maintained for some time following project completion.

Although the majority of projects incorporated multiple ***Change Management Elements***, it is noteworthy that none of them included "Use of performance objectives/ bonus schemes". Use of incentives might increase take-up and business value, but would require appropriate measurements to be put in place.

Effective change management is widely regarded as an essential aspect of any IM project so it is rather surprising that "good change management" ranked as the least important ***Key Success Factor***. Given the small number of participants in this survey it is not possible to draw meaningful conclusions from any statistical analysis, but in future surveys with greater participation it might be instructive to examine the correlation between project success and change management.

It is encouraging that more than three-quarters of respondents thought that ***Working collaboratively with another company*** would have improved the outcomes of their project with 85% saying that they would consider collaborating with other companies in the future. This overwhelming response suggests that there is much room for further collaboration in the industry.

It seems that the desire to work with other companies exists, at least at the individual level. Given the current business challenges including the reduction in the number of IM staff reported by more than half of respondents, collaboration on information management between companies should be an attractive option.

Considering the two most popular collaboration topics of "Data Quality Management" (DQM) and "Standards / Guidelines", in these two cases, all oil and gas companies deal with broadly the same datasets, in similar formats, applications and databases, and generally have similar user expectations. The industry needs to design and use a standard DQM setup, using standard validation rules, governance, reporting and technology. Each company may have their own unique requirements, but overall, we are all trying to achieve the same things.

The overriding concerns are "Data Confidentiality" and "Company Confidentiality". Historically, these two reasons have frequently been the main blockers to creative collaboration. However, if this continues, collaboration will remain low and costs will remain high. Taking the DQM example from above, it would be possible for two or more companies to collaborate on a new DQM framework, involving the design of the DQM governance, validation rules, reporting, etc. They could then implement the framework separately, so that company confidentiality and data confidentiality does not become an issue.

Oil and gas companies need to start working more collaboratively in the information and data space, especially in the current economic climate. Reducing costs, whilst maintaining effort and value are key drivers and can be met by building closer relationships between individuals and companies. In the UK, the OGA, through its 'Information Management Forum', will promote collaboration and hopefully drive sharing and associated benefits of reduced costs.

3.2 Possible Next Steps

Consideration should be given to repeating the survey on an annual or, perhaps, biannual, basis as a way to identify and monitor changes in the industry. As organizations begin to stabilise after adapting to current oil prices it is hoped that companies will be more able and willing to participate.

Future surveys would benefit from fewer questions and with a stronger focus on user satisfaction and perceived value to the business. At least some of the questions should be addressed to business users rather than IT/IM staff.

It would be useful to give further consideration to IM measurements. A workshop, jointly sponsored by ECIM and CDA, and focussed on the measurement of IM value creation could act as a catalyst for ongoing activities with the goal of identifying pragmatic metrics and ultimately spurring a change of mind-set in the industry.

About Flare

Flare provides information management consulting, software solutions and related services to the E&P industry.

Formed in 1998 by people with a background in geoscience and petroleum engineering Flare brings extensive industry experience gained at management, operations and technical levels, both within oil companies and the E&P service sector.

The Flare team has developed consulting and services based on a practical, holistic approach to managing knowledge, information and data that focuses on real business needs. The same thinking is encapsulated within Flare's portfolio of software solutions. These include the Catalog for publishing and finding information, Tracker for organising deliverables and Cortex for classification and text analytics. These are all underpinned by Flare's comprehensive Taxonomies. We also have a range of specialised modules, including Emergency Response, Exploration Opportunity Manager and Wellfile.

Since its formation Flare has worked on a broad range of projects with E&P organizations around the world and has gained a reputation for excellence and innovation. Engagements have ranged from information management strategy development, through data and information clean-up projects to software implementations and associated change management. Flare has worked with a wide range of organizations from small independents to large multinational oil companies as well as governments, services organizations and industry groups.

Flare Solutions Limited

Europe:
Tel: +44 203 397 7766
Fax: +44 8704 602 543

North America:
Tel: +1 403 932 4597

E-mail:
enquiries@flare-solutions.com