

Research Report



Factors in project success

Prepared for: The Association for Project Management (APM)

Prepared by: BMG Research

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Key summary points

Context

- With inputs from a literature review, depth interviews with senior project professionals and educators, and the deliberations of APM and its partners, a framework of project success factors has been developed.
- The framework has 12 main success factors, each with a small group of contributory or subsidiary success factors.
- This framework was used as the basis of an on-line survey of 862 project professionals (divided equally between APM members and non-members).
- Respondents were asked to say how important each factor in the framework is to project success in general (and to suggest amendments and additions), to rate their most recent project as to its success, and to report the degree to which each success factor was in place in that most recent project.
- Respondents to the survey were widely varied in respect of age, length of project experience, sectors, types and values of project, and project roles. However, there was particularly strong representation of middle-aged and older respondents who worked in senior positions on high value projects.

Findings

- The main success factors had average ratings for their importance to project success in general of between 8.2 and 8.7 on a 10-point scale.
- The subsidiary success factors were given average ratings of between 7.5 and 9.2 on a 10-point scale.
- Differences between different groups of respondents on these ratings were relatively minor but it was found that respondents from public sectors (in government, education, and health) tended to give higher ratings.
- 230 respondents made suggestions for amending or adding to the framework. Many of these suggestions reinforced the existing framework or gave nuance to it but there were some comments which suggest that minor adjustments to the framework would be valuable.
- Respondents rated their most recent completed projects on a range of measures – delivery to time, to budget, to specification and quality, to the funder's satisfaction, to the key stakeholders' satisfaction, and overall. Average ratings ranged from 7.5 (on delivery to time) to 8.1 (on specification and quality). The average 'overall success' rating was 8.1 on a 10-point scale.
- Shorter, stand-alone projects, with lower-end budgets, were rated as more successful than their counterparts.
- Old respondents with greater experience and in senior roles were more likely to rate their most recent completed projects as successful than were their counterparts.

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- Ratings of the extent to which main success factors were in place in recent completed projects ranged from 6.8 (for 'Project planning and review') to 7.4 (for 'Competent project teams') on a 10-point scale.
- Ratings of the extent to which subsidiary success factors were in place in recent completed projects ranged from 6.1 to 7.7 on a 10-point scale.
- There were moderate positive correlations between ratings of the success of recent projects and of the extent to which success factors were in place.
- Cross-relating respondents' perceptions of importance of success factors to the extent to which they were in place in their most recent projects shows a small group of factors ('Project planning and review', 'Pre-project planning is thorough and considered', and 'The project has realistic time schedules') as being of higher than average importance but as having lower than average likelihood of being in place in recent projects.

Issues

- A number of key issues which APM and its partners may wish to consider are suggested. These include:
 - The framework is broadly endorsed by the generally high 'importance' ratings given to its elements. However, while positive, correlations of each of the individual success factors with actual project success were moderate. An interpretation is that the framework as a whole contains the factors which lead to successful projects but no single factor is indispensable to success – unique project configurations make particular factors more or less important in different cases.
 - Respondents' suggestions of refinements to the framework (for example, concerning more direct reference to team-building and team ethos, management of change in project parameters during the course of projects, and the importance of supplier contracts) may be valuable in finalising the framework.
 - The general lack of variation in measures of the importance of factors and of their having been in place in recent projects suggests that a set of basic factors – routine good practice – is transferable to most project environments.
 - Measures of success of recent projects and of the extent to which success factors were in place in recent projects could be described as 'moderate' or 'reasonable' at best (and as 'mediocre' at worst) – projects have some margin to move towards much more frequent excellence in their environments, control, and delivery.

1 Background and early research stages

1.1 Introduction

1. The Association for Project Management (APM), the leading representative organisation for project management professionals, seeks to advance the status of project management¹, in industry, commerce, and government, as an important and distinctive set of knowledge, skills, and attributes; and to raise the overall frequency with which these are actually deployed in projects within and outside the UK.
2. As a contribution to this, APM is seeking to identify and codify the factors which lead to successful delivery of projects, for use both as an educational tool by the profession and as a measuring stick against which the presence of the factors in the 'project environment' as a whole can be periodically assessed.

1.2 APM's initial framework of project success factors

3. The process by which APM has pursued this outcome has had a sequence of steps. First, APM used its expertise and that of its varied advisers (senior project management professionals and academics) to generate a preliminary framework of success factors. These were:
 - **Effective governance:** having clear structures and responsibilities for decision making in place, with clear reporting lines between individuals and groups involved in project management and delivery.
 - **Capable sponsors:** those with ultimate responsibility for project delivery recognise that responsibility and behave accordingly.
 - **Aligned supply chain:** the organisations which supply goods or services into the project are aware of what they are delivering into, of what is required and when, and are committed to meeting their obligations to a high standard and on time.
 - **Proven methods and tools:** best practice techniques in project management as appropriate to the type of project are consistently applied.
 - **Appropriate standards:** all good practice standards appropriate to the project (such as quality, environmental, health and safety or corporate social responsibility standards) are recognised at all levels and adhered to.
 - **Commitment to projects success:** there must be a will for the project to succeed and a belief that it can be achieved, amongst all parties involved in delivering the project throughout its lifetime.
 - **Supportive organisations:** the organisational infrastructure (for example, culture and structure) and environment in which the project is delivered is conducive to

¹ Broadly, 'project management' is distinguished from management in general as being that which relates to the delivery of physical, organisational, or systems developments which have a particular objective and an end point rather than to the usual, on-going, activities of an organisation.

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its success – for example, trade unions, affected communities and local authorities, professional and trade associations, or pressure groups are on side.

- **Engaged users or operators:** the individuals or groups who will use the end product or service are engaged in the design and progress of the project.
- **Competent project professionals:** the team that manage the project are wholly competent, qualified and experienced in their particular roles.
- **Capable project teams:** the subject matter experts contributing to specialist teams within the project are wholly competent, qualified and experienced in their roles.
- **Secure funding:** the project has secure funding for the whole project, with possible contingencies in place to ensure funds can be released in such a way that cash flow difficulties do not arise.

1.3 A research commission

4. Following this, BMG Research was commissioned by APM to undertake a programme of research. The brief² for this research had the overall aims ‘to create an initial report which identifies the “Conditions for Project Success” and which, in providing a baseline evaluation of the current state of relevant project, programme, and portfolio activity, can be extended into longitudinal research delivering an annual “state of projects” report.’

1.4 Early stages of research

5. The research process approved by APM and undertaken by BMG had two initial elements:
 - A set of qualitative discussions with a further range of project management professionals and academics to gather additional views on APM’s initial set of success factors (as set out above) – basically, to see if the factors were regarded as important and whether or not the list had significant omissions.
 - A review of published literature on success factors in project management to examine other research and research conclusions, again to test the probable validity of APM’s initial framework of success factors and to identify any possibly important omissions.

1.5 Early stages of research: method

6. In the **qualitative research** stage, a total of 25 in-depth interviews were undertaken with senior project management professionals and academics, including APM members (9 interviews) and non-APM members (16 interviews). APM members were identified using contacts provided by APM. This list was supplemented using a database sourced from Experian. All respondents were experienced in managing projects of a value of £50,000 or more.

² *Invitation to Tender for the Provision of Research Services: Conditions for Project Success*, APM, September 2013

7. Interviews typically lasted between 30 and 90 minutes and were conducted between December 2013 and February 2014. Interviews were conducted using a semi-structured topic guide which ensured answers to specific questions but also gave interviewees scope to make wider comments and observations beyond those required by the guide. In particular, the interviews explored:
 - Respondents' experience of project management and their spontaneous perceptions as to which key factors and characteristics influence project success
 - Respondents' views on APM's current framework for project success and in what respects, if any, their definitions extend beyond, or differ from, APM's current approach
 - Respondents' perceptions of any gaps or of any improvements which are necessary to refine and add empirical meaning to APM's criteria and, in some cases, their suggestions as to further criteria which APM might wish to consider.
8. Discussions were digitally recorded (with the permission of respondents) and transcribed.
9. Analysis of transcripts was conducted using a data-mapping matrix approach, which comprises the construction of a grid (discussion themes X all respondents' answers on each theme). This process allows the full range of experiences and views to be documented, ensures that the process of qualitative analysis is both transparent and replicable, and allows the easy extraction of illustrative quotes.
10. As noted above, a **literature review** was used to set the study in the context of an understanding of the factors which a wider selection of commentators have reported as being important to project success and to examine how far APM's selection of eleven criteria fits within the wider repertoire.
11. In undertaking this review, it was noted that there is a very large volume of material which could potentially be reviewed³. A full review of this material was outside the scope of this project. Rather, an approach was taken which reduced the scale of review by two means. Firstly, only a selection of publications was considered. These publications were those supplied by APM, supplemented by a selection of other papers readily available online. It was assumed that these were sufficient to represent the ground covered by the wider literature. This is a reasonable assumption given that several of the publications reviewed (particularly Morris, referenced below) themselves draw on a wide range of other published material.
12. Secondly, the review was conducted by specific reference to APM's eleven success factors, rather than by summarising the whole content of the set of documents. Thus, the review firstly examined the extent to which the literature supports the particular eleven factors identified by APM; and, secondly, then identified other factors in the literature which are believed by authors to be important success factors but are *not* included in APM's list.

³ For example, the recent book '*Reconstructing Project Management*', Peter W. G. Morris, Wiley-Blackwell, 2013, identifies ninety-one references specifically on success factors in project management and many more which bear more peripherally on the issue.

1.6 Early stages of research: findings

13. The findings of these two initial elements of the research programme were reported, in two unpublished reports, to APM⁴ early in 2014. The reports were of significant length and, for brevity, their findings are not reproduced here in full. However, their main findings on each of the eleven success factors in APM's initial framework are summarised below. The left hand column summarises key points from the depth interviews whilst the right hand column shows findings from the qualitative research:

APM success factor	Depth interview findings	Literature review findings
Effective governance	This was universally acknowledged as a key factor but there was some suggestion that it encompasses other APM factors such as 'capable sponsors' and omits relevant concepts such as leadership and good communications.	The APM concept of governance is widely recognised in the literature but the use of the term itself (perhaps having grown in usage in recent years and therefore not present in some of the earlier publications which were reviewed) is not so frequent.
Capable sponsors	Again, this was widely acknowledged as an important success factor but there was some hint that defining who 'sponsors' are may not be consistent.	Again, this term is not widely used in the literature, perhaps being subsumed within 'commissioning organisations' or 'key stakeholders'. It is suggested that while the concept is important, developing the profession's understanding of the term may be necessary. It was also noted that having capable sponsors of projects is not something which is immediately within project control – sponsors may be capable or not; and, therefore, the 'success factor' may, in practice, be the ability to engage sponsors and to encourage or improve their capability.
Aligned supply chains	This was believed by respondents to be important but responses suggest that the item may be interpreted more simply as 'having good suppliers who know what we want' rather than responding to the concepts of integration and co-ordination of, and between, suppliers which the 'alignment' element of the factor implies.	Supply chain quality gets little attention in the literature. It was suggested that this may be because much of the literature focusses on within-project management systems and approaches rather than on external contributions.

⁴ *The factors which contribute to successful projects: qualitative research findings*, BMG for APM, March 2014; and *The factors which contribute to successful projects: literature review*, BMG for APM, January 2014

Proven methods and tools	This was accepted as important by most respondents but principal caveats were (a) that tools in themselves don't produce project success – they need to be in the hands of skilled professionals and (b) that they can inhibit flexible approaches.	The literature is replete with 'methods and tools' approaches and endorsements but some authors are sceptical as to whether their increasing use has actually improved project management and note that they can simply be fashionable – used for a period then falling into disuse and being replaced by others.
Appropriate standards	These were seen as important but, perhaps, more because they are often statutorily required and/ or a necessary protection of the company's reputation and/or necessary to win contracts. There was a suggestion that quality standards are important to project success, rather more so than environmental, health and safety, or other standards.	There is virtually no reference to standards in the literature. The review raised the question of how far standards, other than quality standards, do actually contribute to project success given the costs in money and time required to operate them.
Commitment to project success	This was universally recognised as critical to project success, often self-evidently so.	This receives relatively little attention in the literature. Commentary in the review suggested that the factor may be so obviously necessary that it receives little attention and/or that the literature tends to consider 'technical' aspects of projects rather more than their 'emotional' inputs.
Supportive organisations	Interview respondents recognised this as valuable but also pointed out that resistance frequently has to be overcome in winning unsupportive organisations or communities round. It was further recognised that projects could be successful even though some organisations or communities remain unsupportive through the fact that the stronger power lay on the side of the project.	The literature widely recognises the importance of the project's wider environment to its success and identifies growing awareness of the necessity of stakeholder management. Commentary in the literature review also made the same point as made in interviews that some, perhaps many, projects go ahead despite unreconciled opposition and asks, therefore, how critical this factor actually is. The point may be that projects need a balance of power in their favour rather than universal support.
Engaged users or operators	There was general agreement that early and continued engagement of users was important.	There are some references in the literature to customers, but more often to customer satisfaction as a success <i>criterion</i> than to customer engagement as a success <i>factor</i> .

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Competent project professionals and capable project teams	These were universally regarded as the sine qua non of successful projects and there was some reluctance to make a clear distinction between the two.	The literature also widely recognises these inputs as critical success factors. Where they are omitted from some success factor models, it was suggested that this is because they are so obviously important that it is not necessary to include them.
Secure funding	Again, there was general recognition that this was important to project success, though various sub-themes, such as contingency funding, risk management, and cost control were raised.	This is regarded as an underpinning of project success though delivery within budget is more frequently mentioned as a <i>measure</i> of project success and budget management and cost control are more frequently mentioned as aspects of <i>successful project management</i>

14. In addition to these views on APM's initial framework of success factors, the two initial research elements also suggested that the framework might have omissions or, at least, leave implicit, in its present terminology, aspects of project success which might be made more explicit. There was some correspondence between the two sources of evidence (qualitative discussions and literature review) as shown below:

Possible additional success factors	Depth interview findings	Literature review findings
Goals and objectives	Many respondents identify having clear goals and objectives as a success factor, sometimes extending this to concepts of 'vision' and 'mission' and 'drive to succeed'.	This factor is also substantially referenced in the literature.
Planning and review processes	Many respondents also identified various aspects of project planning and review which, in combination, suggest a further success factor of this type: <ul style="list-style-type: none"> • Good pre-planning and 'starting well'. • Regular progress monitoring and review throughout project lifetimes. • Flexibility backed up by effective risk and change management processes. • Good scheduling. • Budget control. • Post-project review to identify 'lessons learned'. 	The literature also has substantial emphasis on these processes as success factors, adding trouble shooting (and ultimately project abandonment if necessary) as other aspects.

Leadership	This is a factor which was mentioned somewhat more explicitly by respondents than in the initial APM framework. Though it has obvious linkage with APM's 'governance', 'competent project professionals' and 'commitment' items and with the 'vision/mission' observations above, there may be a case for its more explicit recognition.	There is recognition in the literature, including some focussed work, on leadership as an identifiable contribution to project success.
Communications	This potentially separable success factor may be implied by various current APM enablers – including the governance, capable sponsors, supportive organisations, and capable project teams items. However, there was more emphasis in interviews explicitly on communications between and within groups involved in delivery as a success factor.	There are occasional mentions in the literature of good communications as a significant factor in project success.

15. In summary, it was concluded that qualitative research and literature review had both provided abundant validation of the content of APM's initial framework. However, it was also suggested that they raised some questions as to possible amendments. These questions concerned five basic ideas:
- a) Some terms and language are not yet general currency and/or don't have clear and consistent meanings. This includes terms such as 'governance', 'sponsors', 'stakeholders', 'organisations' (in the 'supportive organisations' sense), and 'end-users or operators'. Thus, it would be useful in any presentation of the success factors to specify in everyday language exactly who or what, in APM's definitions, are embraced by the terms. It was also observed that the project management literature reviewed was frequently difficult to interpret because of 'management speak' and suggested accordingly that APM should avoid any loss of meaning through an assumption that its terminology is universally understood.
 - b) It was suggested that some items concern 'givens'. The obvious examples were 'capable sponsors' and 'supportive organisations'. While having both of these were confirmed, both by depth interviews and the literature review, as success factors, neither is necessarily in the control of project managers. It was suggested that the practical value of such items may be enhanced if the factors were converted slightly to include the idea of managing situations where one or both are not in place
 - c) It was suggested that some items in APM's current framework might be usefully combined or that some items were actually subsidiary components of others. An obvious combination might be between 'competent professionals' and 'capable

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teams' which were frequently discussed simultaneously by interview respondents and in the literature.

- d) Both depth interviews and literature review suggested a case for some additions to APM's initial list of factors. Contenders, as above, are factors concerned with:
- Goals, objectives, and vision.
 - Planning and review processes.
 - Leadership.
 - Communications.

It was suggested that APM might wish to consider whether these should be given a place in the framework and/or whether, if they are already believed to be located within it, whether these aspects should be made more explicit.

- e) Finally, it was noted that success factors tended to fall into two broad groups – factors which are descriptive of the environment in which projects take place (such as having secure funding or capable sponsors in place) and others which are more concerned with the actual execution and delivery of projects (such as having competent project teams and aligned supply chains). It was suggested that it might be helpful if presentation of the factors to the profession was ordered so as to introduce this distinction.

1.7 Refining the success factors

16. Following this initial research, further refinement of APM's initial framework was undertaken (by BMG and APM working in conjunction) which took account of these early research findings. This refinement principally consisted of:

- The addition of two new success factors, one relating to project goals and objectives, the second relating to project planning and review.
- The combination of the initial 'competent project professionals' and 'capable project teams' into a single factor.
- The addition of new sets of factors, subsidiary to the main factors, which allowed for the more explicit recognition of some factors such as leadership and communications and, generally, allowed more detailed specification of requirements for project success.
- The insertion of some explanatory notes to clarify the meaning of some terms which might otherwise be ambiguous.

17. The refined framework of success factors is set out below:

Effective governance
The project has strong, clearly identified leadership
The project has clarity as to how authority is distributed below the overall leadership level
The project has clear reporting lines
The project has clear and regular communications between all parties

Goals and objectives
The overall goal of the project is clearly specified and recognised by all stakeholders involved in the project
Subsidiary objectives are clearly specified and recognised by all stakeholders who need to be aware of them
Overall goals and subsidiary objectives are not in conflict
Project leadership has a clear vision of what project outcomes should be, maintains continuity of vision, and disseminates this vision to all involved in project delivery

Commitment to project success
All parties involved in the project are and remain committed to the project's success
Where there is any lack of commitment this is clearly recognised and dealt with
Project leadership, particularly, has and maintains commitment and has the skills and resources to inspire commitment in others

Capable sponsors – see below for definition
The project has named and active sponsors
The project has sponsors who have ultimate responsibility and accountability and are effective
The project has sponsors who stay in role for the life-cycle of the project

Note: 'Sponsors' here refers to the individual(s) or organisation(s) which have the ultimate responsibility for the project's goals and for its creation and existence. In the case of an internal, within-organisation, project, the 'sponsor' could, for example, be a company's Board or a committee within a public body. Where the project is an external one delivered on behalf of another organisation, the 'sponsor' may simply be the client.



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Secure funding
The project has a secure funding base at the point where the decision to start is taken
Any needs for contingency funding are recognised from the start
Tight control of budgets is in place to ensure that the value of available funding is maximised

Project planning and review
Pre-project planning is thorough and considered
The first, start-off, phase of the project is effective
There is regular and careful progress (time, scope, cost) monitoring and review throughout the project
The project has realistic time schedules
The project has active risk management and is flexible enough to respond to unforeseen hazards and opportunities
Post-project review is undertaken to learn lessons for the future

Supportive organisations - see below for definition
The environment in which the project operates is project- friendly rather than project- hostile
The organisation provides embedded support for project activity
The project team has the influencing skills to engage with necessary internal and external support
The project environment provides sufficient resourcing (including financing) and access to stakeholders

Note: 'Organisations' as used here refer to the employing organisation, although that can sometimes mean more than one (in the case of very large collaborative projects).

End users and operators
End users or operators are engaged in the design and progress of the project
Where end users or operators are reluctant to engage, the project team has the skills and techniques to increase and improve the quality of their engagement
End users or operators are able and enabled to take on what the project has produced effectively and efficiently

Note: 'End users and operators' refer to individual(s) or organisation(s) which use or operate the 'outcome' of a project. This could include, for example, the managers and staff of a new manufacturing facility, the office workers who use a newly-introduced software system, or the residents of a new housing development.

Competent project teams
Project professionals heading up or forming a core team are fully competent
Other team members are also fully competent in their roles
The project team engages in positive behaviours which encourage success

Aligned supply chain
All direct and indirect suppliers are aware of project needs, schedules, and quality standards
Higher and lower tiers of supply chains are co-ordinated

Proven methods and tools
Good practice project management techniques are applied
Management tools, methods and techniques are applied in a way which maintains an effective balance between flexibility and robustness

Appropriate standards
Quality standards are actively used to drive quality of outputs.
Adherence to other standards is regularly monitored in order to ensure delivery is to best practice levels

Note: ‘Standards’ here refers to the regulatory environment and appropriate standardised methods and tools.

1.8 Quantitative research

18. Following finalisation of the design of the framework of success factors, a survey was then undertaken. This survey had two primary purposes. First, to assess whether the project management profession as a whole viewed the framework as an adequate description of the factors which lead to project success. Second, to benchmark the extent to which the factors are in place in the delivery of current projects in the UK.
19. The framework was embodied in a questionnaire in which respondents were asked:
 - A series of classificatory questions (as to their occupations, roles in projects, length of experience, sectors, and so on).
 - To describe the nature of their most recent completed project and to rate its success on a number of criteria (delivery to time, budget, specification, and so on). These ratings used a 10-point scale from 1= wholly unsuccessful to 10 = wholly successful.

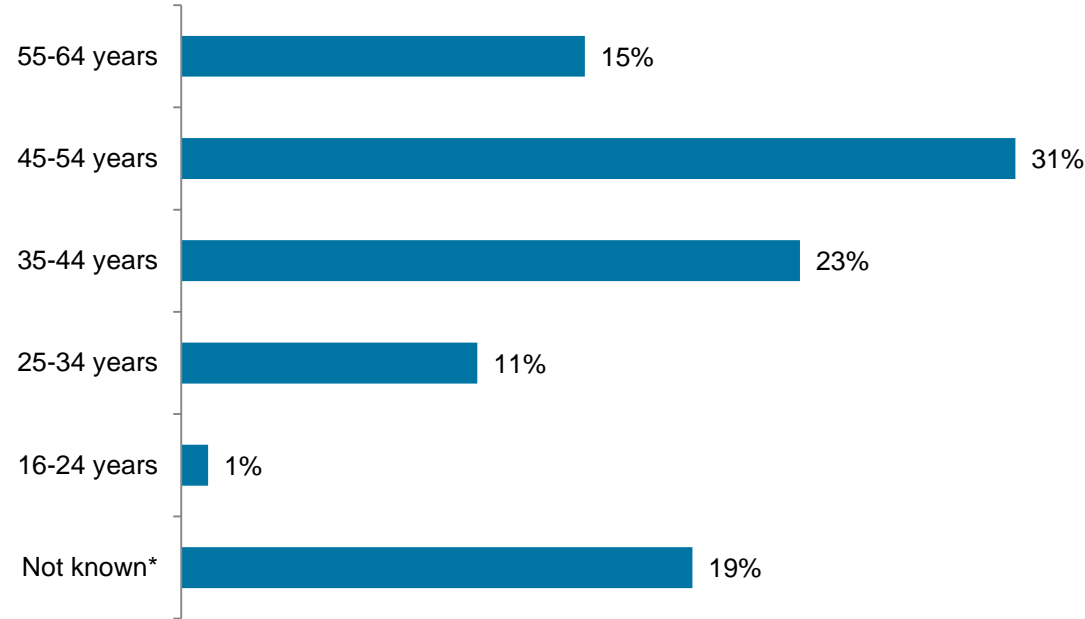
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- To rate each of the success factors on the extent to which: (1) they viewed each factor as being important to project success (on a 10-point scale from 1 = no importance to 10 = critical); and (2) to describe the status of each factor in their most recent completed project (on a 10-point scale from 1 = absent or extremely poor to 10 = excellent or best practice).
20. The survey was made available online and the APM's database of members and non-members was used as the sample frame. In total, 862 responses were received (428 members and 434 non-members). These responses now form the basis of the remainder of the report which follows. The methodology is outlined in more detail in Appendix I.
 21. In reading this report, it should be noted that the analysis and its interpretation are the responsibility of BMG Research and not of APM itself.

2 The sample of respondents

22. This chapter describes the sample of respondents to the quantitative survey. A first figure shows the age distribution of respondents. It can be seen that respondents were most frequently in 'middle years' age bands (35 to 54 years) but that there was a representation across the age spectrum:

Figure 1: Age distribution of survey respondents

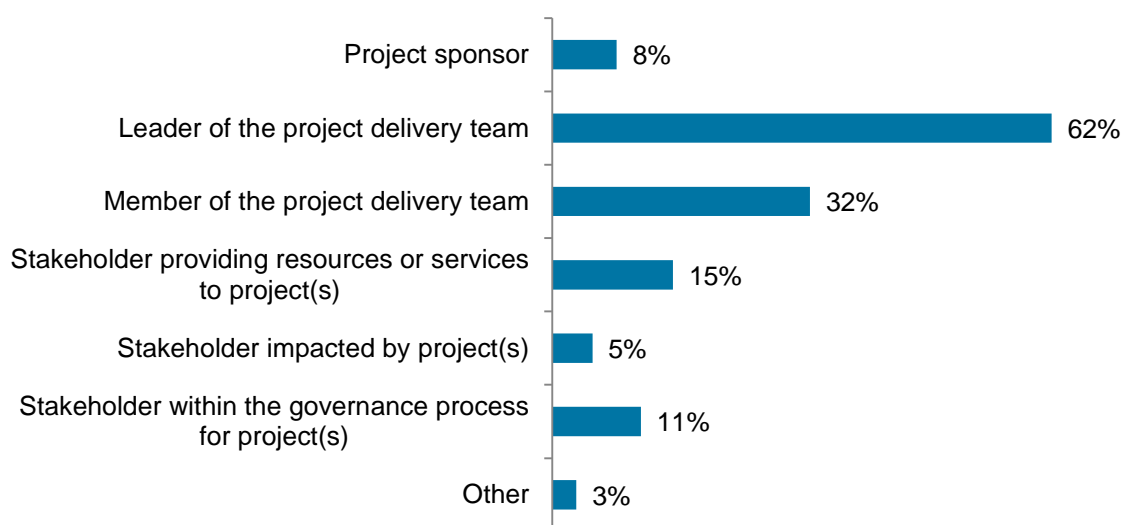


Base: 862 survey respondents
* Because the age variable was derived from database records, rather than being asked directly in the survey, there is a proportion of respondents with unknown ages

23. Given their relative seniority, many respondents had held senior roles:



Figure 2: Project management roles held by respondents*

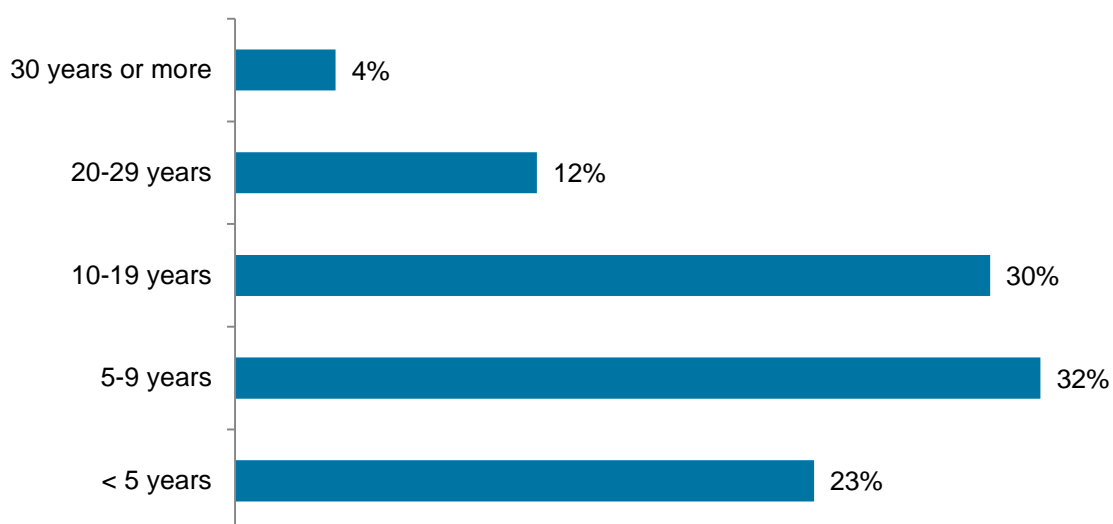


Base: 862 survey respondents

* Respondents could choose more than one category to reflect, in some cases, their varied experience; hence percentages add to more than 100%

24. Respondents' experience in the roles they identified was often significant. Nearly seven out of ten had at least 5 years' experience and around 1 in 6 had 20 or more years' experience:

Figure 3: Length of experience in project roles

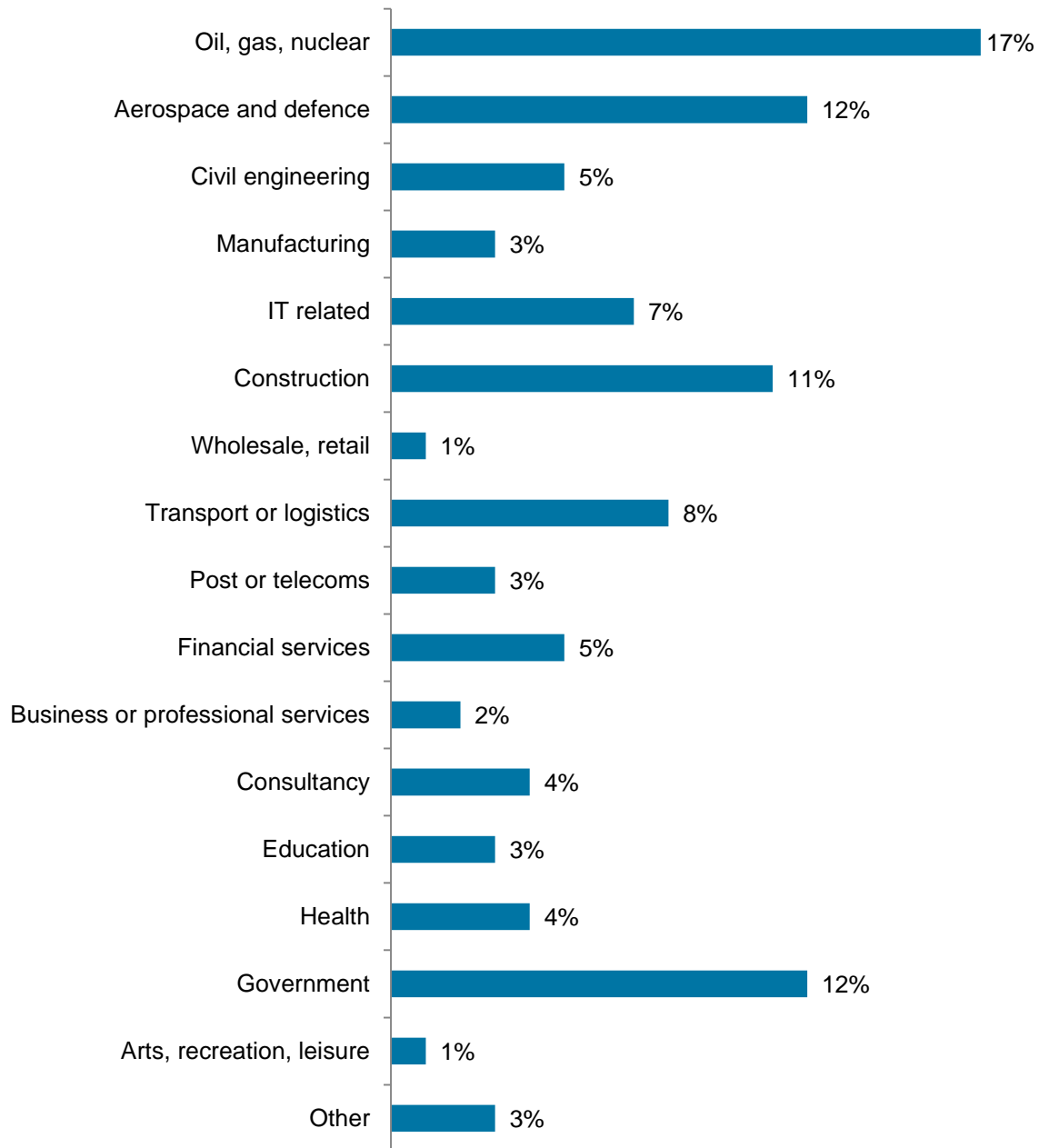


Base: 862 survey respondents

25. The majority of respondents, 88%, were currently employed, whilst 10% were self-employed and 2% described themselves as 'otherwise professionally active'. For those who were employed, their employer was very likely to be large: 74% of employed respondents worked for organisations employing 1,000 or more people, 12% worked for organisations employing between 250 and 999 people, and only 14% worked for

organisations with 249 or fewer staff. Employed staff were employed across a wide range of sectors but with some emphases in the oil/gas/nuclear, aerospace and defence, construction, transport and logistics, and government sectors:

Figure 4: Sectors in which employed survey respondents currently work



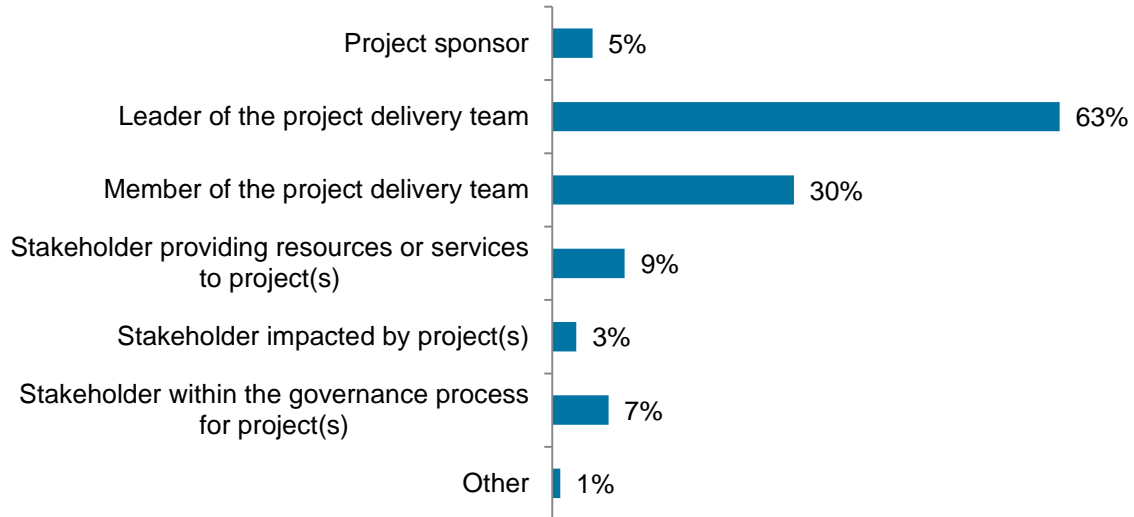
Base: 760 employed respondents

26. Self-employed respondents (85 cases in the survey) sold their services to a similarly wide range of sectors but with some concentrations in IT (14% of self-employed respondents), construction (13%), oil, gas or nuclear industries (9%), business or professional services (8%), government (8%) and financial services (7%).

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27. The survey also asked respondents to describe the *last major completed project* roles in which they had been involved. Their roles in that project were, again, mainly senior ones:

Figure 5: Respondents' roles in their most recent completed project*

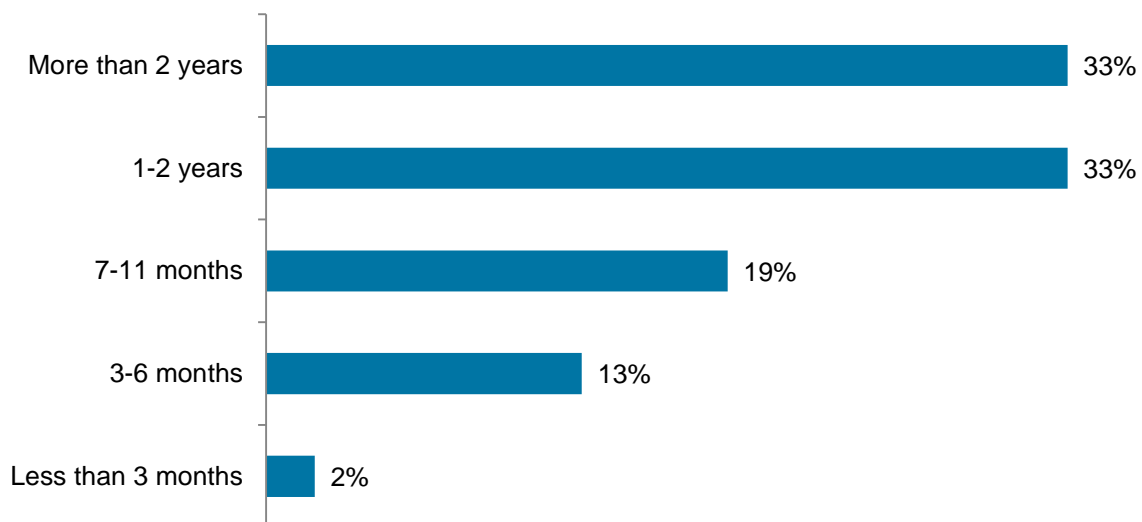


Base: 862 survey respondents

* Respondents could choose more than one category to reflect, in some cases, that they could have had dual roles in the project

28. The projects were mostly very significant ones. Their durations were often substantial with two-thirds lasting at least a year:

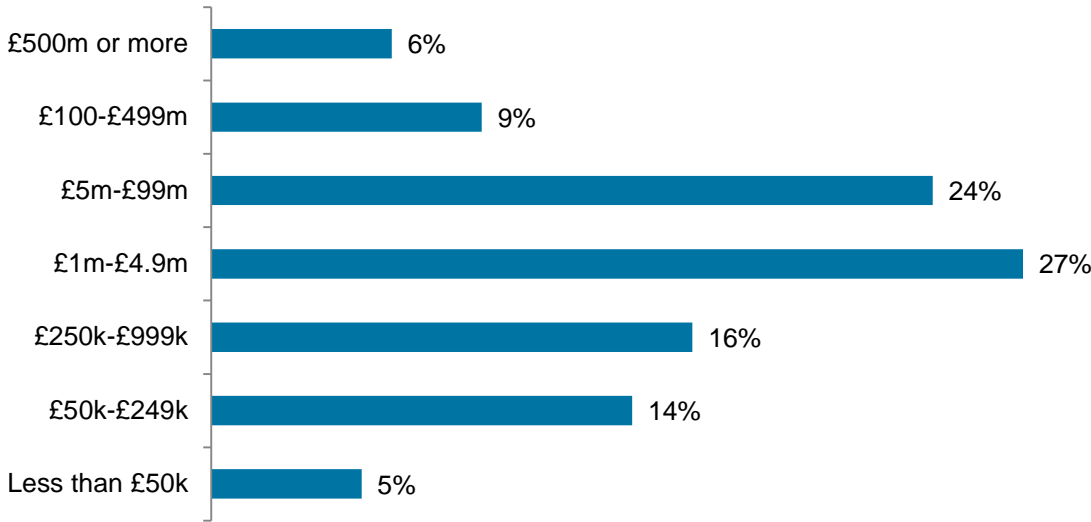
Figure 6: Duration of respondents' most recent completed project



Base: 862 survey respondents

29. A majority of projects (66%) were parts of wider programmes rather than (in the other 34% of cases) ‘stand-alone’ projects and had large values (see next figure) in numerous cases (as the project itself rather than the programme as a whole, in cases where projects were not ‘stand-alone’). Higher values, as would be expected, occurred in the oil, gas, and nuclear sectors and in aerospace and defence, whilst lower value projects were more likely in service sectors:

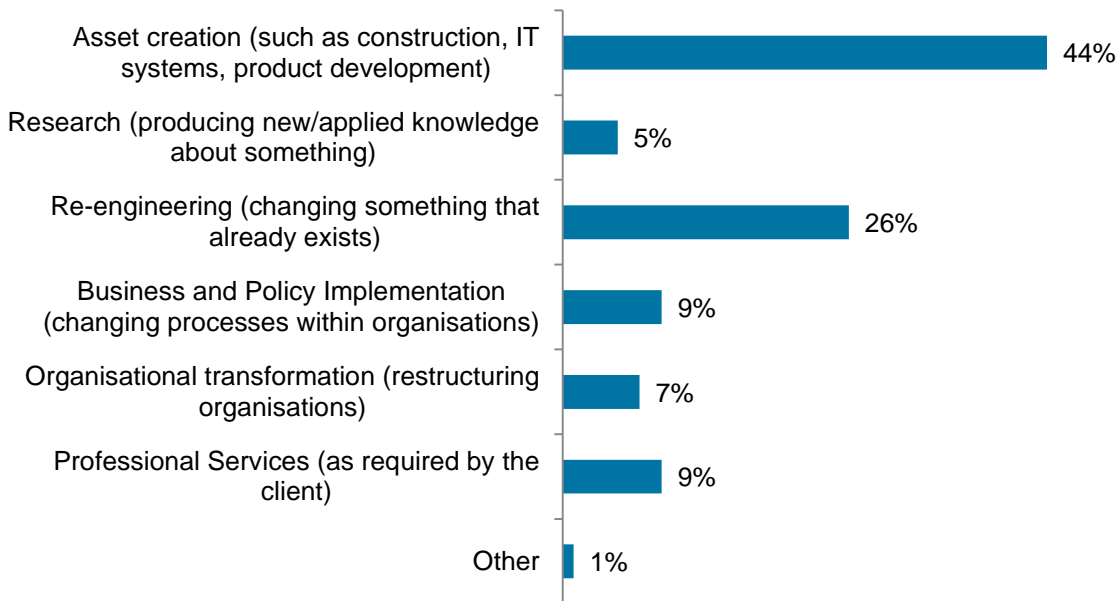
Figure 7: Value of respondents’ most recent completed project



Base: 862 survey respondents

30. In terms of project type, ‘asset creation’ and ‘re-engineering’ projects were most frequent:

Figure 8: Type of respondents’ most recently completed project



Base: 862 survey respondents

Factors in project success

31. And finally, in respect of respondents' most recent projects, half (50%) were 'internal' projects (that is, they were delivered internally to the respondent's organisation) and half (50%) were 'external' projects (that is, they were delivered on behalf of a client external to the respondent's organisation) – the former type being more frequent (73%) where respondents were employed in public services sectors, the latter type being more frequent (71%) where respondents were employed in the civil engineering or construction sectors.
32. Thus, in summary of the characteristics of respondents in the survey sample:
 - Respondents were mainly mature individuals with substantial project management experience employed across a wide range of sectors in senior project management roles.
 - In their most recent projects, they had mainly had leading roles in substantial projects of varied types but generally of significant duration and value.

3 Project managers' perceptions of APM's success factors

3.1 Introduction

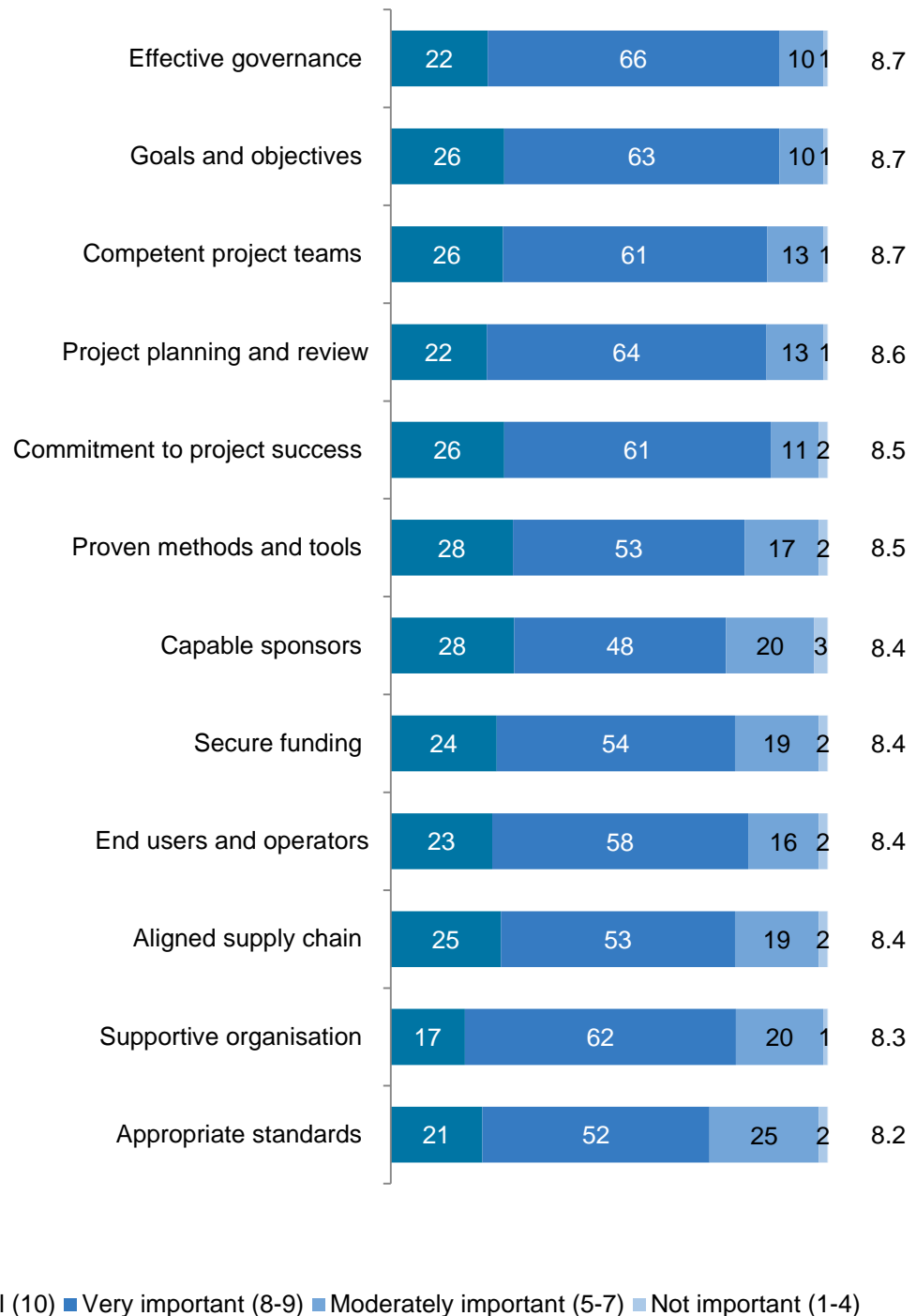
33. A main function of the survey was to assess the extent to which project management professionals agree that APM's framework of success factors, as set out in the introductory chapter, is an effective summary of the factors which lead to projects being successfully delivered.
34. This chapter sets out survey findings which allow this assessment.

3.2 Importance of the success factors

35. A first analysis sets out a number of scores based on project professionals' ratings, on a 10-point scale, of the various items which make up the framework. Figure 9 shows for each main success factor:
 - The proportions of respondents who scored factors as not important (ratings of 1-4), moderately important (ratings of 5-7), very important (ratings of 8-9), and critical (rating of 10).
 - The mean rating of each factor.

Factors in project success

Figure 9: Respondents' perceptions of the importance of main factors to project success (ratings and average scores)



36. Essentially, Figure 9 shows that *all* the factors were regarded as important to project success with relatively little differentiation between them, average ratings varying only between 8.2 and 8.7 and substantial majorities in each case giving 'critical' or 'very important' ratings to each factor. Within this narrow range, however, the factors which were given the highest scores were 'effective governance', 'goals and objectives' and

'competent project teams'. At the other end of the range, 'supportive organisations' and 'appropriate standards' were given the lowest scores.

37. There was relatively little variation in the importance accorded to the *subsidiary* factors within each 'headline' factor. Average ratings for these subsidiary factors are shown in rank order in the table which follows. It can be seen that they range from 9.2 to 7.5. The most highly rated subsidiary factors concern clarity and recognition of goals, clear vision, strong leadership, and good communications. At the lower end of the range, more 'technical' matters such as monitoring of standards, supply chain co-ordination, and having sponsors who stay in role, whilst still important are somewhat less highly rated:

Table 1: Respondents' perceptions of the importance of subsidiary factors to project success (average scores)

	Average ratings
The overall goal of the project is clearly specified and recognised by all stakeholders involved in the project	9.2
Project leadership has a clear vision of what project outcomes should be, maintains continuity of vision, and disseminates this vision to all involved in project delivery	9.1
The project has strong, clearly identified leadership	9.0
The project has clear and regular communications between all parties	9.0
All parties involved in the project are and remain committed to the project's success	8.9
Project professionals heading up or forming a core team are fully committed	8.8
There is regular and careful progress (time, scope, cost) monitoring and review throughout the project	8.8
The project has realistic time schedules	8.8
Project leadership, particularly, has and maintains commitment and has the skills and resources to inspire commitment in others	8.7
The project team engages in positive behaviours which encourage success	8.7
The project team has the influencing skills to engage with necessary internal and external support	8.6
End users or operators are able and enabled to take on what the project has produced effectively and efficiently	8.6
The project has sponsors who have ultimate responsibility and accountability and are effective	8.6
The project has a secure funding base at the point where the decision to start is taken	8.6
Pre-project planning is thorough and considered	8.6
The project has active risk management and is flexible enough to respond to unforeseen hazards and opportunities	8.6

Factors in project success

	Average ratings
Good practice project management techniques are applied	8.6
The project has clear reporting lines	8.5
The project environment provides sufficient resourcing (including financing) and access to stakeholders	8.5
End users or operators are engaged in the design and progress of the project	8.5
Tight control of budgets is in place to ensure that the value of available funding is maximised	8.5
All direct and indirect suppliers are aware of project needs, schedules and quality standards	8.5
The project has clarity as to how authority is distributed below the overall leadership level	8.4
Other team members are also fully competent in their roles	8.4
The project has named and active sponsors	8.4
The first, start-off, phase of the project is effective	8.4
Management tools, methods and techniques are applied in a way which maintains an effective balance between flexibility and robustness	8.4
Overall goals and subsidiary objectives are not in conflict	8.3
Where there is any lack of commitment, this is clearly recognised and dealt with	8.3
Quality standards are actively used to drive quality of outputs	8.3
The environment in which the project operates is project-friendly rather than project-hostile	8.3
Where end users or operators are reluctant to engage, the project team has the skills and techniques to increase and improve the quality of their engagement	8.2
The organisation provides embedded support for project activity	8.0
Any needs for contingency funding are recognised from the start	8.0
Post-project review is undertaken to learn lessons for the future	8.0
Subsidiary objectives are clearly specified and recognised by all stakeholders who need to be aware of them	7.9
Higher and lower tiers of supply chains are co-ordinated	7.9
Adherence to other standards is regularly monitored in order to ensure delivery is to best practice levels	7.9
The project has sponsors who stay in role for the life-cycle of the project	7.5

3.3 Variation between different groups of project professions

38. Overall, given the relatively high ratings given to all of the success factors, it can reasonably be argued that these findings constitute professional endorsement of the framework as a whole.
39. A further question, however, is that of whether the level of endorsement differs between different groups of project professionals. The basic message of the data is that it does not do so to any significant degree – there were few significant differences between the ratings made by respondents according to their age, length of project experience, size of employing organisation, project role, or sector. A table below, however, sets out, at the level of the 'headline' success factors, where some significantly higher average ratings were given by different groups. It should be emphasised that these differences are marginal ones (for example, an average rating by one group of 8.9 can be significantly different from an average rating of 8.6 by another group). It can be seen that there is no strong consistency to these differences but there was some tendency for the public sectors and those in project leader roles to give somewhat higher ratings:

Table 2: Groups giving significantly higher average ratings to the importance of on 'headline' success factors

Factor	Groups giving higher rating
Effective governance	Government, education, and health sectors Respondents with 10 or more years' experience
Goals and objectives	Government, education and health sectors
Commitment to project success	IT/telecoms sector
Capable sponsors	Respondents in organisations with 1,000 or more employees Service Sectors Respondents in project leader or sponsor roles
Secure funding	Construction/civil engineering sectors Respondents in project leader roles
Project planning and review	No significant differences
Supportive organisations	Government, education, and health sectors Respondents in project leader roles
End users and operators	Service sectors
Competent project teams	No significant differences
Aligned supply chains	Respondents in organisations with 1,000 or more employees Service sectors
Proven methods and tools	Government, education, and health sectors
Appropriate standards	Construction/civil engineering sectors

3.4 Respondent's clarifications

40. As well as rating the existing success factors within the framework, project professionals were asked whether or not there were 'any further factors which you believe contribute substantially to project success which have not been identified or identified clearly enough' and were then invited to describe those factors.
41. 330 respondents said 'yes' to the first question and, of these, 230 respondents supplied some clarification.
42. Many of these clarifications add further nuance or emphasis to the factors as they stand. Many comments are unique but some which can reasonably be grouped together are illustrated below.
43. The single largest group of comments represent an expansion of the 'competent project team' elements of the framework. These focus on the importance of teamwork, team building, team ethos, attitudes and 'soft skills'. Some examples are:

A 'can do' attitude that permeates amongst all team members!

A team of people who work well together.

Active team morale boosting and social activity. Gives team members reasons to be in touch with one another outside direct project concerns and promotes good, productive working patterns as a whole project unit.

Attitude of the project manager towards the team in order to build a trust and friendly relationship where team members can consult the project manager after dropping the ball.

Authority, human and soft skills to get the best out and manage the project team in harmony and effectively.

Brain storming session of project team on a regular basis.

Building a team ethos and commitment to the delivery of the project with mutual project team member support and determination.

Can-do attitude in all project staff. Young inexperienced can-doers will out-perform experienced negative types. It is this positive attitude that is vital to success.

Close working and effective joint working of technical staff with technically competent programme team.

Common sense (focusing on the basics), strong leadership and a hardworking and motivated team are the key to a project's success.

Depending upon the nature of the project, if there are issues then there needs to be recognition of these and a 'healthy' forum within which concerns can be raised. Meetings/discussions held under the auspices of 'Chatham House' rules can achieve this.

Developing measures of success. Developing appropriate enablers. Constantly monitoring performance and taking corrective action when needed. Incentivising and rewarding staff. Celebrating positive behaviours.

Effective team cohesion. Proper training for new members joining the team during the course of the project.

Formal and informal communication. Celebration of success and recognition of teams and individuals. The intangible creation of a project spirit.

Getting the right mix of people. Qualifications etc. are great but unless people get on and trust each other you are still doomed!

Good inter-personal or "soft" skills to deal with people as individuals so you can play to their strengths and not treat them as faceless "resources".

Having a good team spirit, where despite any adversarial comments or actions from the client/stakeholders the delivery team still pulls together.

Human factors amongst the team members, people capable and willing to work as a team without 'peacocking'.

I believe that a flexible team who understand and appreciate each other and the project needs ensures effective delivery of the project.

People deliver projects so it's critical that you get a good team established early and communicate through regular reviews to make people feel comfortable and empowered.

Recognition of individual and team performance to reward positive behaviours. Teambuilding to enhance a collaborative and trusting team environment.

The how is just as important as the what. Subject matter expertise can be sourced as can project skills but attitude and behaviours have as much bearing on project success as capability.

44. A substantial number of respondents' observations focus on the engagement of the various parties involved in the project, whether described as sponsors, customers or stakeholders, and on the need for clarity, commitment, and alignment of purpose. As such, these comments give nuance, particularly to the 'commitment to project success', 'capable sponsors', 'goals and objectives', 'supportive organisations', and 'end users and operators' factors in the framework. Examples of comments are:

The importance of buy-in by the wider community of stakeholders - awareness of changes in the regulatory/legislative environment and awareness of the broader political environment.

Willingness for the environment organisation(s) to engage, help and support the project organisation and delivery.

Aligned vision throughout stakeholder community. Enabling infrastructure and processes. Access to talented people, either directly or across the organisational matrix. Project environment stability. Competent, committed and passionate sponsorship.

All third parties including internal supply chains must have a common project objective with clear consequences.

Clear communication and encouragement to share knowledge of the project throughout the design and planning stages and encouraging/setting up good

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relationships between all stakeholders and sponsors pays dividends during the later delivery phase.

Client satisfaction with end product and good training. It is no good delivering to time, cost and quality if it is not what customer originally wanted; good requirements mutually agreed are beneficial and critical.

Commitment to achieving the goals and keeping a friendly face at all times. Getting the team and stakeholders fully involved and continually briefed as to progress and problems.

Proactive, visible, vocal support of sponsor. Alignment of project to strategic objectives. Accountability for identifying ownership of project products/outputs within the business.

Project initiation and/or selection of projects. End-users should be involved in choosing projects that help solve their problems so that they may participate fully in its implementation.

Recognising the political aspects and impacts of the sponsors and stakeholders on the project and understanding that everything can be overcome with effective risk and opportunity management and planning within the constraints of the project.

Stakeholder relationships and experiences - although the desired result was or wasn't achieved, how satisfied are the key stakeholders, was the journey a pleasant or fruitful one.

That pre-planning includes developing a clear commercial strategy which the sponsor understands and agrees with.

That the client organisation is bought into the project delivery model being utilised to deliver the programme of projects.

Trusting relationships with sponsor, client and end users. Building relationships throughout the project to enable all parties to work together....No surprises for client, supplier or end users!!

Visibility of plans - the team need to know what they are aiming for and the commitment required.

45. A number of comments emphasised the necessity for effective risk management and for flexibility in projects with ability to handle changes during project lifetimes. These comments add nuance or emphasis to the present success factors, particularly that of 'The project has active risk management and is flexible enough to respond to unforeseen hazards and opportunities'. Examples are:

A robust change control system, as well as configuration management procedures, needs to be in place, to enable changes to be monitored and addressed in an efficient manner.

Ability to detect early enough changes in the project environment.

Good stakeholder analysis and understanding of stakeholders' reactions and needs when undergoing change.

Clearly defined escalation criteria parameters and associated processes.

Correct scoping pre-contract; risk identification at pre-contract; thorough feasibility review; control of risk from outset.

Effective change management at all levels for users after a project is completed. Right from management level down. Need to understand how their roles will change and how to ensure that journey is successful and implement it.

Effective management of change (MOC), recognising that many small changes eventually will impact the overall design and execution strategy.

Flexibility and managing change.

Identifying whether your project is complex or not and applying appropriate tools accordingly e.g. traditional analytical PM techniques are not as useful as they might be in a complex environment with a flexible and shifting requirement.

Pioneering at the front end and establish a project risk register which is reviewed regularly/frequently.

Political interference often shifts the goal posts in the middle of the scheme. Changes in leadership and reorganisation leads to demotivated workforce and knowledge lost through resignations without passing it down to current team members.

Spec creep is not allowed or procedures are in place to manage it throughout the project.

The management of change is critical.

The project managers ability to spot when things are going wrong and take steps to correct them/head them off.

The requirement must be developed to as mature a state as possible before commencing any delivery aspects. Processes must be put in place to effectively deal with any change requests following commitment to the project.

There needs to be a contingency plan or effective handover when key sponsor or project team members leave the project or organisation.

Were the implications or penalties for lateness/cost over runs/quality shortfall clearly understood? This information can be used to prioritise and lever escalation of risks and issues.

46. A further group of observations concerns alignment, clarity and definition of objectives and frequently correspond to 'goals and objectives' factors in the present framework:

Alignment of purpose and project aims.

Alignment of the project within a programme to ensure business alignment and stakeholder buy in - 'do the right project' then 'do the project right'.

An agreed "Definition of Done" where success criteria are clearly understood and only signed off if 100%.

Clarity around the programme, constraints, and how it will be managed, particularly across multiple tiers of suppliers.

Clarity of business vision is critical, so that the programme remains aligned with the objectives of the business, especially with multi-year transformation programmes.

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Clear and agreed requirements that were fixed and did not change during the project life cycle.

Defined scope.

Early definition to eliminate uncertainty.

Inclusion of customer representatives in project team, empowered and effective to ensure solution works in an end-to-end business process.

The clarity in the communication of the definition of success to the project team and stakeholders, including the project/programme manager and agreeing what success would be. I consider this to be the most important factor.

The conditions for success should be clearly articulated by the sponsor. It is not simply a matter of time, cost, and quality. The sponsor defines and keeps under review what success is and communicates it to all.

The project scope is fully communicated and understood by all parties at the outset of the project.

Well defined and approved customer requirements.

Well-defined requirements and a very clear understanding of the customer (end user) need.

47. Some respondents reflected on the importance of managing supplier relationships, and, particularly, on establishing effective contractual relationships. These comments add to the 'aligned supply chain' factors in the present framework. Examples are:

A good working relationship between the customer and supplier team members.

Ability to hold suppliers to account and for the client to project willingness to use leverage if required.

Clear and robust contract conditions with external suppliers.

Collaborative working ethos within the project team and the suppliers.

Commercial drivers through management team and supply chain need to be aligned. Shared risk and reward arrangements where possible with 'back to back' contractual arrangements, again where possible.

Contractual knowledge. So much is outsourced and if you can't contract correctly, you won't get the outcome, the price, or the schedule you want.

Understanding of the project contractual framework and management of the contract(s) that rule(s) the project.

48. There was also some focus on the value of good communications and on the use of networking skills to progress projects:

An effective network within an organisation to be able to discuss issues and challenges through informal channels as well as the formal reporting channels.

An understanding of both the formal and informal networks within the organisation which can be leveraged to achieve project objectives.

Constant, consistent and open communication between stakeholders, project team, and suppliers/vendors.

Continuous and clear dialog across and up and down the project team, particularly when it comes to changes.

Distributed development communication tools; tele/video conferencing; shared desktops; online requirements management tools; etc. Daily communication between the team and relevant stakeholders Regular ordering and re-ordering sessions.

Early identification of Interfaces and ownership of interfaces.

Having a friendly and good engagement with stakeholders and keep in touch every 2-4 weeks. Updating them with major updates will facilitate the liaison and obtaining faster approvals.

Honesty and clarity in communications; report the exceptions not the norms.

Honesty and clear communication.

Excellent communication skills are a main feature in any project.

Open communication and the willingness to hear bad news and address it rather than shooting the messenger.

Regular internal and joint project meetings to discuss relationship status between client and project team members. Team bonding exercises and co-location of client/team project members.

The success of all projects requires very good communication skills. There is no point putting together all the techniques recommended if communication skills are poor.

3.5 Key points

49. A first set of analyses of quantitative survey data suggests:

- Generally, project professionals were very likely to say that all the factors in APM's current framework of success factors are important. There was relatively little discrimination between the factors but broad or fundamental factors such as effective governance, effective definition and communication of goals and objectives, and competent project staffing scored a little higher than some more 'technical' factors. It might be reasonable to interpret these results as an endorsement of the framework by the profession.
- Within the profession, there were few significant differences between different groups in their scoring of items [perhaps the most consistent, but still relatively minor, difference being in the higher likelihood of project professionals in public sectors giving (marginally) higher scores to most factors.] It is reasonable to suggest that agreement with the framework is widespread across the profession and does not generate significantly lesser or greater agreement from different groups within it.
- Many respondents were able to add observations on the framework of success factors as presented to them. These largely overlapped in meaning with existing factors in the framework but added some refinement or slightly different emphases in many cases. It will be a matter for the APM and its stakeholders

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and partners to consider the extent to which their observations are valid and might (or might not) be used to adjust the framework in its format and wording.

4 Levels of success in recent projects

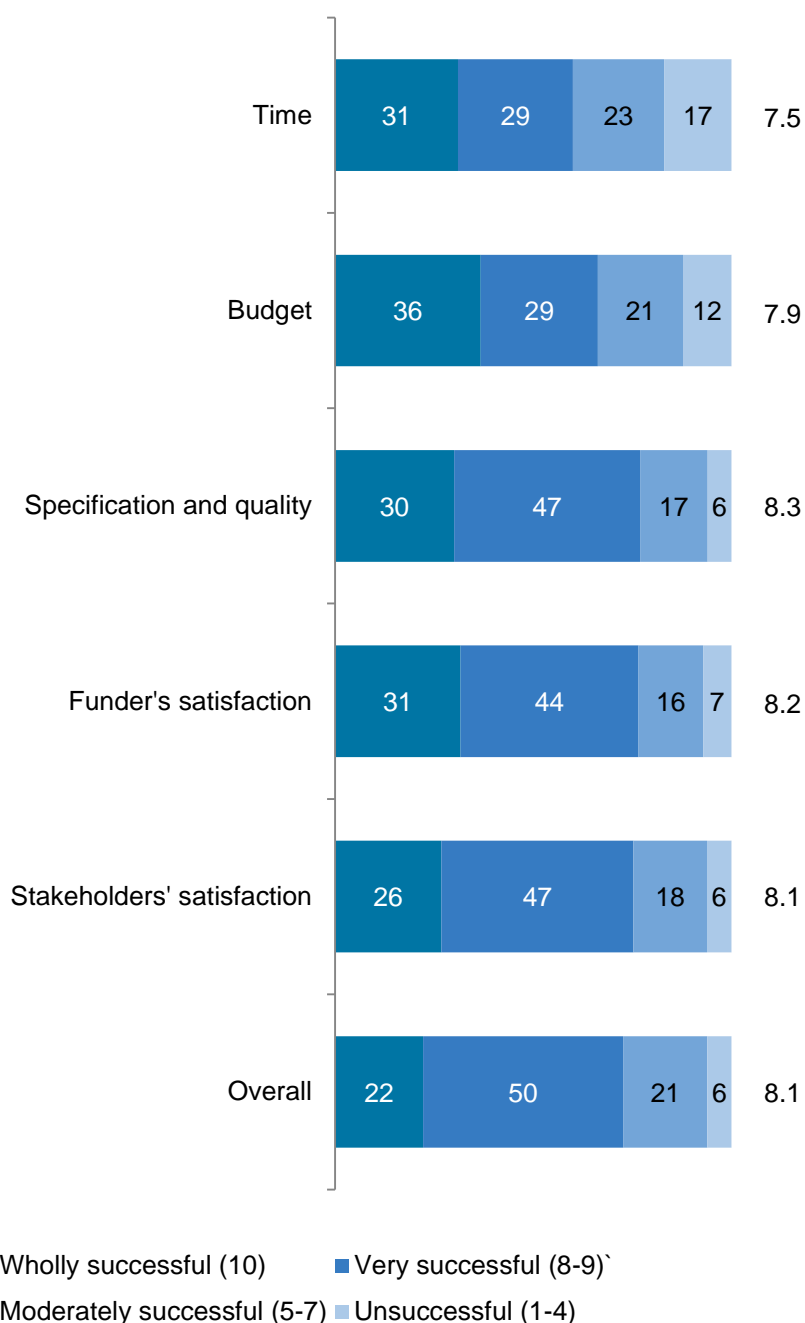
4.1 Introduction

50. As well as rating APM's success factors for their importance to the success of projects *in general*, survey respondents were asked:
- To report how successful, in each of several ways, their last completed project had been.
 - To report the status of each of the success factors in that same project.
51. This chapter describes project professionals' responses on these two matters and the relationships between them.

4.2 Benchmarks: the degree to which recent projects were successful

52. It was recognised that projects could be 'successful' in various ways:
- In delivery to time.
 - In delivery to or within budget.
 - In delivery to specification and an appropriate standard of quality.
 - In delivery to the funder's satisfaction.
 - In delivery to the key stakeholders' satisfaction.
 - And, overall.
53. The following figure provides a benchmark (based on a sample of 862 respondents' most recent project) of the current level of project success from the viewpoint of project professionals. Ratings were made on a 10-point scale in which 1 = wholly unsuccessful and 10 = wholly successful.

Figure 10: Levels of success of recent projects (ratings and average scores)



54. It can be seen that most benchmarks are a little above an average rating of 8. Respondents report delivery to specification and quality most highly at an average rating of 8.3. Overall success was rated, on average, at 8.1. Delivery within budget and to time were more problematical, with around 1 in 8 projects 'failing' on the 'budget' measure and around 1 in 6 failing on the 'time' measure, using the 1 to 4 range of ratings as an indicator of 'failure'. If, however, the strictest criterion of failure is used, the 'wholly unsuccessful' rating of 1, then the proportions giving this rating were very small (3% for 'time'; 3% for 'budget'; 1% for 'specification/quality'; 2% for 'funder's satisfaction'; 2% for stakeholders' satisfaction'; and 2% for 'overall success').

4.3 Variation in success by project type

55. The level of perceived success of projects according to their various characteristics can also be calculated. The characteristics in question are:

- Whether the project is ‘stand-alone’ or part of a wider programme.
- Project duration.
- Project value.
- Whether the client was external or internal.
- Nature of project (Asset creation, research, re-engineering, etc.)

56. The following table shows where, on each of the success measures, a statistically *significantly higher* average score was recorded for different sub-groups of projects. Each black spot indicates that the average score for a project’s characteristic was significantly higher than for the other characteristic(s) in the same set:

Table 3: Statistically significant relationships between project success measures and project characteristics

Project	Success measure					
	Time	Budget	Specification /quality	Funder satisfaction	Stakeholder satisfaction	Overall
Stand-alone		•	•	•	•	•
Part of programme						
<6 months	•	•		•		•
7-11 months						
1-2 years						
>2 years						
<£249k	•	•		•		•
£250k-£999k				•		
£1m-£5m						
£5m-£100m						
>£100m						
External client						
Internal client						

Project	Success measure					Overall
	Time	Budget	Specification /quality	Funder satisfaction	Stakeholder satisfaction	
Asset creation				•		
Research						•
Re-engineering			•			
Business and policy						
Organisational transformation		•				
Professional services						

57. It can be seen from this table that there were some associations between project types (asset creation, etc.) and success measures. However, these are not particularly consistent or, perhaps, particularly meaningful. However, other statistically significant relationships are more consistent and suggest that shorter, lower budget, stand-alone projects have a higher likelihood of being perceived as somewhat more successful than the larger, higher budget projects which are part of more substantial programmes (albeit within a context in which, as shown above in Figure 10, average success ratings are *generally* high).

4.4 Variation in success by respondent characteristics

58. It is also possible to examine the relationship between perceptions of project success and respondent characteristics. In this case, two factors may be in play: the nature of projects in which different groups of respondents are involved; and, perhaps, underlying additional or personality differences (say, between respondents of different ages) which dispose some groups to be more or less positive than other groups, even if the actual success of the projects in which the different groups were involved was not objectively different.

59. The following table identifies some groups of respondents which gave significantly higher average ratings on success measures than other groups. It should be noted, again, that because ratings were generally high, ‘significantly higher’ does not imply large absolute differences (for example, an average rating of 8.0 can be significantly higher than an average rating of 7.2):

Table 4: Respondent groups giving significantly higher ratings on success measures

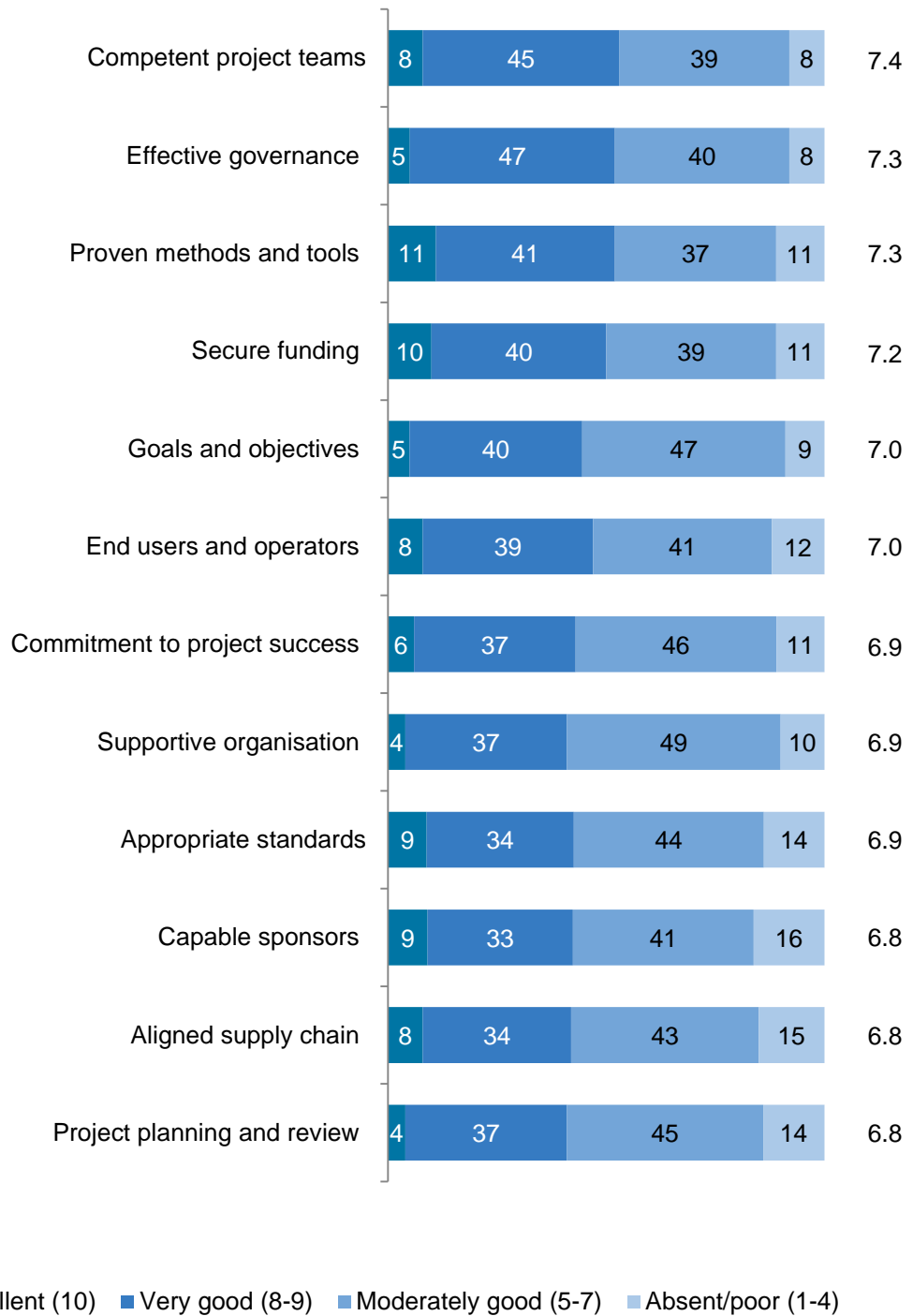
Success measure	Groups giving higher ratings
Delivery to time	Respondents aged 45-54 Respondents employed in service sectors Respondents in project leader roles
Delivery to budget	Respondents aged 45 or over Respondents employed in service sectors Respondents in project leader roles Respondents with 10 or more years' experience
Delivery to specification and quality	Respondents aged 45 or over Respondents in construction, civil engineering and the oil, gas and nuclear sectors Respondents with 10 or more years' experience
Delivery to funder' satisfaction	Respondents aged 45 or over Respondents in construction and civil engineering Respondents in project leader roles Respondents with 10 or more years' experience
Delivery to key stakeholders' satisfaction	Respondents aged 45 or over Respondents in project leader roles Respondents with 10 or more years' experience
Overall success	Respondents aged 45 or over Respondents in project leader roles Respondents with 10 or more years' experience

60. By their absence from the table, it can be recognised that there were no significant differences between employed and self-employed project professionals and between those employed in organisations of different sizes.
61. Beyond that, however, the most consistent difference is that older, more experienced professionals in project team leader roles (rather than team member roles) were more likely, on average, to perceive their last project as successful than were their younger, less senior counterparts. As above, whether this is an objective difference (as a result of differences in the kinds of project in which the groups of respondents were involved) or a subjective one (say, older respondents, through experience and maturity, having a marginally more relaxed view of what is possible in projects) is not known.
62. The other observable difference is that respondents in service sectors were more likely to report successful delivery to schedule and budget whereas those in primary industries and construction were more likely to report successful delivery to specification, quality, and to their funders' satisfaction.

4.5 Extent to which success factors are observable in respondents' most recent completed projects

63. Respondents were also asked to identify in respect of their most recent project, the status of each of the success factors in that project. A 10-point scale, from 1 = absent or extremely poor to 10 = excellent or best practice was used. Scores for the 'headline' success factors are set out in the following figure. It can be seen that the scores are reasonably high but below those awarded to the importance of the factors in general (as shown earlier in Figure 9) and that 'excellent' ratings were infrequent. It can also be seen that, perhaps with some contradiction, project teams and governance were scored most highly whilst project planning and review was, on average, scored lowest:

Figure 11: Respondents' perceptions of the extent to which main factors were in place in their most recent completed project (ratings and average scores)



64. The average scores for the subsidiary success factors are set out in the next table. The main point is, again, that the scores are positive but only moderately so, with a range between 6.1 (for post-project review) and 7.5 (for specification of overall goals):

Table 5: Respondents' perceptions of the extent to which subsidiary factors were in place in their most recent project (average scores)

	Average score
The project has a secure funding base at the point where the decision to start is taken	7.7
Project professionals heading up or forming a core team are fully committed	7.6
The overall goal of the project is clearly specified and recognised by all stakeholders involved in the project	7.5
There is regular and careful progress (time, scope, cost) monitoring and review throughout the project	7.5
The project has strong, clearly identified leadership	7.4
The project has clear and regular communications between all parties	7.4
Project leadership, particularly, has and maintains commitment and has the skills and resources to inspire commitment in others	7.4
The project has clear reporting lines	7.4
Project leadership has a clear vision of what project outcomes should be, maintains continuity of vision, and disseminates this vision to all involved in project delivery	7.3
All parties involved in the project are and remain committed to the project's success	7.3
The project team engages in positive behaviours which encourage success	7.3
The project team has the influencing skills to engage with necessary internal and external support	7.3
Good practice project management techniques are applied	7.3
Tight control of budgets is in place to ensure that the value of available funding is maximised	7.3
End users or operators are able and enabled to take on what the project has produced effectively and efficiently	7.2
Other team members are also fully competent in their roles	7.1
The project has named and active sponsors	7.1
The project has clarity as to how authority is distributed below the overall leadership level	7.0
Management tools, methods and techniques are applied in a way which maintains an effective balance between flexibility and robustness	7.0
The project environment provides sufficient resourcing (including financing) and access to stakeholders	6.9
End users or operators are engaged in the design and progress of the project	6.9
All direct and indirect suppliers are aware of project needs, schedules and quality standards	6.9

	Average score
Overall goals and subsidiary objectives are not in conflict	6.9
Quality standards are actively used to drive quality of outputs	6.9
The project has active risk management and is flexible enough to respond to unforeseen hazards and opportunities	6.8
Where end users or operators are reluctant to engage, the project team has the skills and techniques to increase and improve the quality of their engagement	6.8
The project has sponsors who have ultimate responsibility and accountability and are effective	6.7
The first, start-off, phase of the project is effective	6.7
Where there is any lack of commitment, this is clearly recognised and dealt with	6.7
The environment in which the project operates is project-friendly rather than project-hostile	6.7
Adherence to other standards is regularly monitored in order to ensure delivery is to best practice levels	6.7
Pre-project planning is thorough and considered	6.6
Any needs for contingency funding are recognised from the start	6.6
The project has sponsors who stay in role for the life-cycle of the project	6.6
The project has realistic time schedules	6.5
Subsidiary objectives are clearly specified and recognised by all stakeholders who need to be aware of them	6.5
The organisation provides embedded support for project activity	6.4
Higher and lower tiers of supply chains are co-ordinated	6.3
Post-project review is undertaken to learn lessons for the future	6.1

65. As in the case of 'importance' scores there was relatively little difference in the scores given by different groups of respondents, but again:

- Respondents whose most recent completed projects were lower value ones tended to give higher ratings for the presence of the success factors.
- Respondents who were employed in service sectors, particularly public services, tended to give higher ratings.
- More senior respondents, in some cases, gave higher ratings than younger ones.

4.6 Relationship between success measures and success factors

66. A final analysis in this chapter concerns the relationship between the extent to which APM's success factors were in place in respondent's most recent completed projects and their judgements of how successful in various ways those projects were judged to be. This analysis essentially tests whether the success factors as currently set out are meaningful in the real world – even if (as shown in Chapter 3) respondents said they were important in principle, this would have limited value if the success factors could not be linked to the actual delivery of successful projects.
67. The method of analysis used was to calculate the degree of statistical correlation⁵ between respondents' scores when asked to rate the status of each *success factor* in their last major project [on a 10-point scale from absent or extremely poor (1) to excellent or best practice (10)] and respondents' scores when asked to rate the varied *success measures* [on 10-point scales from wholly unsuccessful (1) to wholly successful (10)]. A more detailed explanation of the statistical approach used is included in Appendix II.
68. The correlations of the 'headline' factors with each of the success measures is shown in the table below. The table lists the headline factors in order, from that with the highest correlation to that with the lowest correlation. The actual correlation coefficients are shown in each case:

⁵ Polychoric correlation has been used here. This is a technique to estimate the correlation between two theorised continuous latent (unobserved) variables from two observed ordinal variables. It is more appropriate to variables measured as ordered categories than the Pearson *r* coefficient.

Table 5: Statistically significant relationships between project success measures and headline success factors

Success measure											
Delivery to time	Delivery to budget	Delivery to specification/ budget	Delivery to funder satisfaction	Delivery to stakeholder satisfaction	Overall project success						
Effective governance	.42	Project planning and review	.48	Goals and objectives	.45	Goals and objectives	.46	Goals and objectives	.48	Project planning and review	.51
Project planning and review	.42	Effective governance	.42	Effective governance	.43	Effective governance	.45	Project planning and review	.45	Goals and objectives	.50
Commitment to success	.41	Goals and objectives	.41	Project planning and review	.42	Commitment to success	.43	Effective governance	.44	Effective governance	.49
Goals and objectives	.40	Proven methods	.41	Competent project team	.40	Project planning and review	.43	Commitment to success	.43	Competent project team	.47
Supportive organisations	.38	Supportive organisations	.41	Appropriate standards	.40	Supportive organisations	.42	Competent project team	.43	Commitment to success	.46
Competent project teams	.37	Competent project teams	.40	Commitment to success	.40	Competent project team	.40	Supportive organisations	.41	Supportive organisations	.46
Proven methods	.35	Commitment to success	.39	End users	.38	End users	.38	End users	.38	End users	.43
Aligned supply chain	.32	End users	.38	Proven methods	.36	Proven methods	.38	Aligned supply chain	.37	Proven methods	.42
End users	.31	Secure funding	.37	Aligned supply chain	.36	Capable sponsors	.36	Appropriate standards	.37	Aligned supply chain	.41
Appropriate standards	.30	Aligned supply chain	.33	Supportive organisations	.36	Aligned supply chain	.35	Proven methods	.36	Appropriate standards	.40
Secure funding	.29	Capable sponsors	.32	Capable sponsors	.33	Secure funding	.34	Secure funding	.36	Secure funding	.38
Capable sponsors	.29	Appropriate standards	.31	Secure funding	.33	Appropriate standards	.34	Capable sponsors	.33	Capable sponsor	.37

69. This data (Table 5) suggests:

- All the success factors have association with the success measures – any correlation value above 0 (within a possible range from -1 to 1) implies that there is a positive relationship. Different authors provide differing thresholds to describe weak, moderate, fairly strong and strong correlations; Dancey & Reidy

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(2004)⁶, adopted here, describes a correlation coefficient below 0.4 as 'weak', between 0.4 and 0.6 as 'moderate', and above 0.6 as 'strong'.

- In this light, almost all the headline factors have a moderate association with actual, overall, project success and, therefore, it is reasonable to suggest that, collectively, the framework has 'real world' validity.
- In that context, it is also evident that a some factors have a consistently higher bearing on all the success measures – these include 'goals and objectives', 'project planning and review', and 'effective governance' which occupy at least two of the top three places on each of six success measures.
- Other 'headline' factors, such as 'capable sponsors', 'secure funding' and 'appropriate standards' tend to have a less strong relationship with the success measures.

70. Below the 'headline' level, the relationship of the *subsidiary* factors with success measures was also investigated. In these cases, the subsidiary factors were less strongly related (than the headline factors) with the success measures, many correlation co-efficients being in the 0.25-0.39 range. The following table, using the categorisation described above sets out the subsidiary factors which had at least a '*moderate*' correlation with the success measures, that is, correlation co-efficients had a value of at least 0.40:

⁶ Dancey, c. & Reidy, J. (2004). *Statistics without Maths for Psychology: using SPSS for Windows*, London: Prentice Hall

Table 6: Statistically significant relationships between project success measures and subsidiary success factors

Success measure																	
Delivery to time		Delivery to budget		Delivery to specification/ budget		Delivery to funder satisfaction		Delivery to stakeholder satisfaction		Overall project success							
The project has realistic time schedules		.45	The project has realistic time schedules		.45	Project leadership has a clear vision of what outcomes should be		.41	All parties involved in the project are and remain committed to the project's success		.41	The project has realistic time schedules		.42	The project has realistic time schedules		.50
			Tight control of budgets is in place to ensure that the value of available funding is maximised		.45				The project has strong, clearly identified leadership		.41	All parties involved in the project are and remain committed to the project's success		.42	Project leadership, particularly, has and maintains commitment and has the skills and resources to inspire commitment in others		.44
			The project has active risk management		.40				The overall goal of the project is clearly specified and recognised by all stakeholders involved in the project		.40	The overall goal of the project is clearly specified and recognised by all stakeholders involved in the project		.42	The project has strong, clearly identified leadership		.44
									The project has realistic time schedules		.40	Subsidiary objectives are clearly specified and recognised by all stakeholders who need to be aware of them		.42	Project leadership has a clear vision of what project outcomes should be, maintains continuity of vision, and disseminates this vision to all involved in project delivery		.44
												The project team engages in positive behaviours which encourage success		.42	The overall goal of the project is clearly specified and recognised by all stakeholders involved in the project		.43

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Success measure					
Delivery to time	Delivery to budget	Delivery to specification/ budget	Delivery to funder satisfaction	Delivery to stakeholder satisfaction	Overall project success
					The project has clarity as to how authority is distributed below the overall leadership level .42
					All parties involved in the project are and remain committed to the project's success .42
					Overall goals and subsidiary objectives are not in conflict .41
					Pre-project planning is thorough and considered .41
					Subsidiary objectives are clearly specified and recognised by all stakeholders who need to be aware of them .40
					The project has clear and regular communications between all parties .41
					There is regular and careful progress (time, scope, cost) monitoring and review throughout the project .41
					Other team members are also fully competent in their roles .41
					Good practice project management techniques are applied .40

Success measure					
Delivery to time	Delivery to budget	Delivery to specification/ budget	Delivery to funder satisfaction	Delivery to stakeholder satisfaction	Overall project success
					Project professionals heading up or forming a core team are fully competent .40
					Where there is any lack of commitment, this is clearly recognised and dealt with .40

71. This table shows that there are relatively few strong relationships between subsidiary success factors and the more particular success measures but that there are some obvious ones – for example, having realistic time schedules was associated with projects successfully running to time, having tight control of budgets was associated with delivery within budgets.
72. However, a much wider set of subsidiary success factors (particularly those within the ‘effective governance’, ‘goals and objectives’, ‘commitment to project success’, ‘competent project teams’, and ‘project planning and review’ headline factors) were clearly related to *overall* project success – if they were in place in projects then these projects were more likely to be reported as successful overall.

4.7 Relationship between success factors being in place and their perceived importance to project success

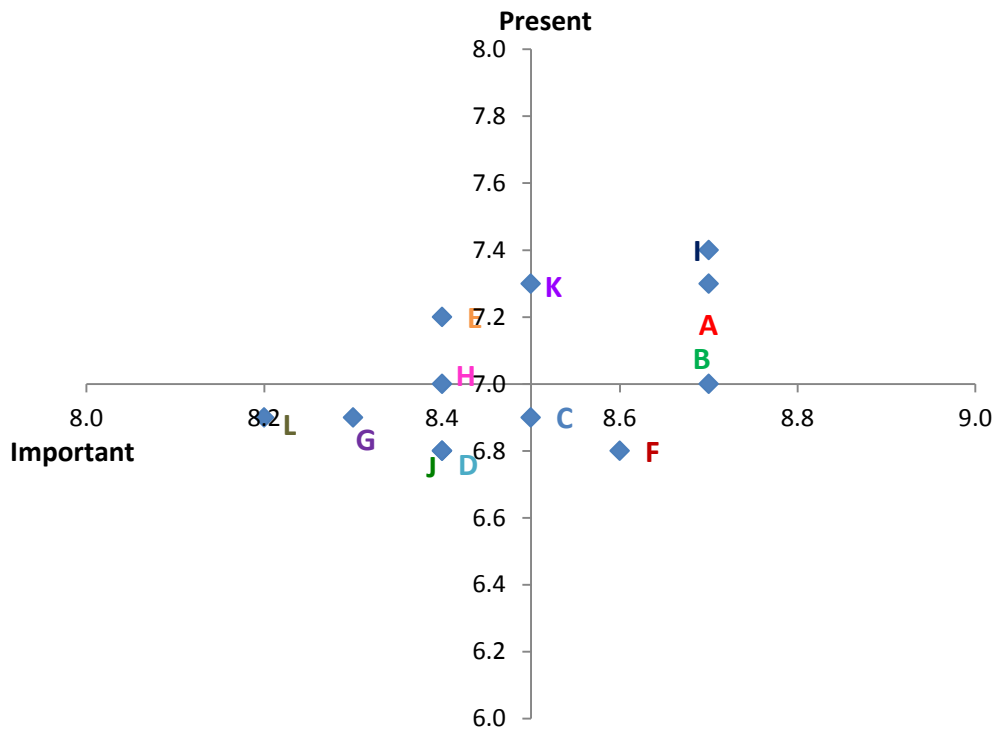
73. A further analysis concerns the relationship between the extent to which factors judged by respondents to be *important to project success* and the extent to which they were actually *in place* in their most recent projects. This relationship is shown in the next figure (Figure 12). The figure cross-relates the scores given on each of these two dimensions. Because the scores on both dimensions were compressed into fairly narrow ranges, most scores tend to group around the mid-point intersection of the two dimensions.
74. However, it can be seen that some factors are visibly more distant for example, and can be identified as:
 - **More likely than average to be important/more likely than average to be in place:** competent project teams; effective governance.
 - **More likely than average to be important/less likely than average to be in place:** project planning and review.

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- **Less likely than average to be important/more likely than average to be in place:** secure funding.
- **Less likely than average to be important/less likely than average to be in place:** aligned supply chain; capable sponsors.

75. The most significant group of this, in the sense that it might need most attention, may be the second one in which project planning and review is rated as one of the more important factors but is more likely to be given below average ratings for its quality in recent projects:

Figure 12: Average scores given to the importance of each main factor cross-related to the average scores given to the extent to which the factors were in place in recent projects



A	Effective governance
B	Goals and objectives
C	Commitment to project success
D	Capable sponsors
E	Secure funding
F	Project planning and review
G	Supportive organisation
H	End users and operators
I	Competent project teams
J	Aligned supply chain
K	Proven methods and tools
L	Appropriate standards

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76. A similar analysis for the subsidiary factors is set out in the next figure (Figure 13). Because there are many more subsidiary factors and because the scores on both dimensions have a wider range, there is more discrimination in this analysis.
77. There are no subsidiary factors which stray far from the intersection point in the 'below average importance/above average present' quadrant. However, the other three quadrants do have a range of entries:

More likely than average to be important/more likely than average to be in place

- E1 Secure funding base at start
- I1 Core team fully competent
- F3 Regular and careful progress monitoring
- B1 Overall goal clearly specified and recognised by all stakeholders
- A1 Strong, clearly identified leadership
- A4 Clear and regular communications
- B4 Clear leadership vision and dissemination of this
- C1 All parties are committed
- C3 Project leadership, particularly, is committed
- I3 Project team has positive behaviours which encourage success

Less likely than average to be important/less likely than average to be in place

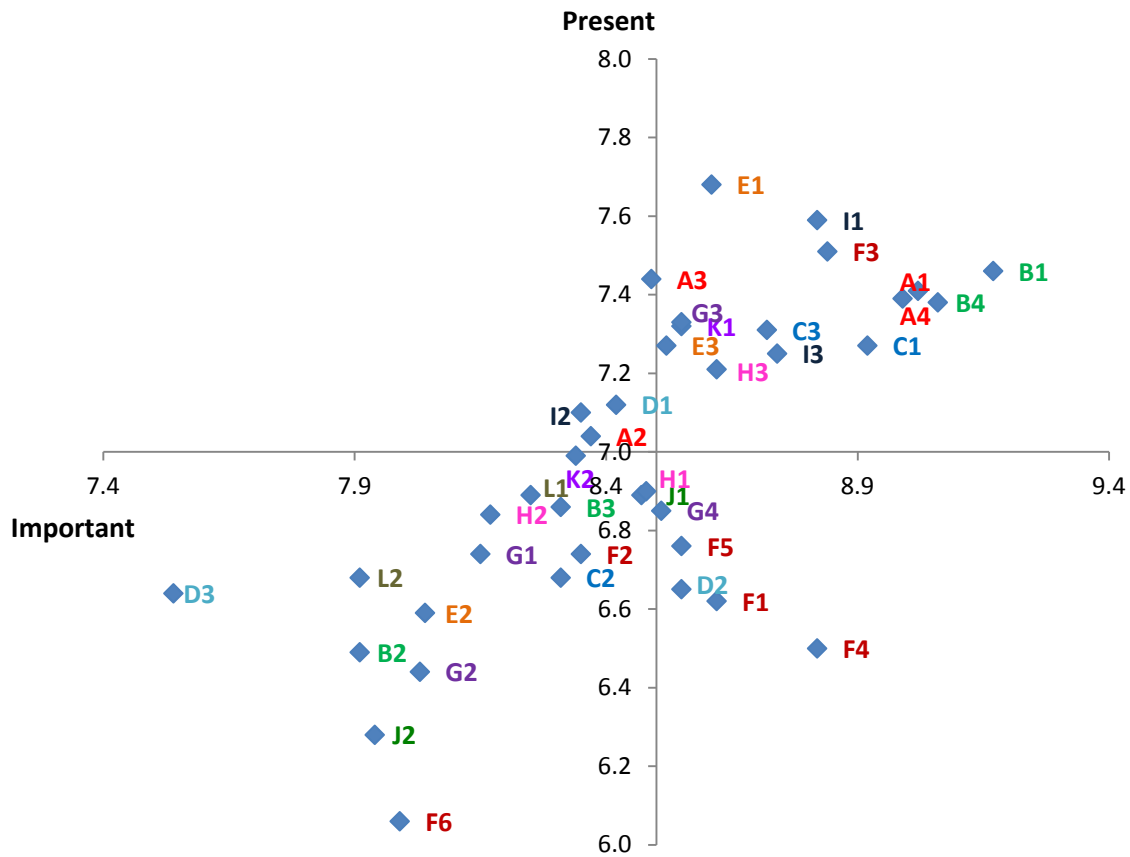
- D3 Sponsors strong in role throughout the project
- L2 Adherence to other (non-quality) standards is regularly monitored
- E2 Needs for contingency funding are recognised from the start
- B2 Subsidiary objectives are clearly recognised
- G2 The organisation provides embedded support for project activity
- J2 Higher and lower tiers of supply chains are co-ordinated
- F6 Post-project review is undertaken to learn lessons for the future

78. The third, possibly more concerning, group – ***more likely than average to be important/less likely than average to be in place*** – has fewer entries but these, most notably, include:

- F4 The project has realistic time schedules
- F1 Pre-project planning is thorough and considered

79. Figure 13 shows these inter-relationships:

Figure 13: Average scores given to the importance of each *subsidiary* factor cross-related to the average scores given to the extent to which the factors were in place in recent projects



A1	The project has strong, clearly identified leadership
A2	The project has clarity as to how authority is distributed below the overall leadership level
A3	The project has clear reporting lines
A4	The project has clear and regular communications between all parties
B1	The overall goal of the project is clearly specified and recognised by all stakeholders involved in the project
B2	Subsidiary objectives are clearly specified and recognised by all stakeholders who need to be aware of them
B3	Overall goals and subsidiary objectives are not in conflict
B4	Project leadership has a clear vision of what project outcomes should be, maintains continuity of vision, and disseminates this vision to all involved in project delivery
C1	All parties involved in the project are and remain committed to the project's success
C2	Where there is any lack of commitment this is clearly recognised and dealt with
C3	Project leadership, particularly, has and maintains commitment and has the skills and resources to inspire commitment in others

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D1	The project has named and active sponsors
D2	The project has sponsors who have ultimate responsibility and accountability and are effective
D3	The project has sponsors who stay in role for the life-cycle of the project
E1	The project has a secure funding base at the point where the decision to start is taken
E2	Any needs for contingency funding are recognised from the start
E3	Tight control of budgets is in place to ensure that the value of available funding is maximised
F1	Pre-project planning is thorough and considered
F2	The first, start-off, phase of the project is effective
F3	There is regular and careful progress monitoring
F4	The project has realistic time schedules
F5	The project has active risk management and is flexible enough to respond to unforeseen hazards and opportunities
F6	Post-project review is undertaken to learn lessons for the future
G1	The environment in which the project operates is project- friendly rather than project- hostile
G2	The organisation provides embedded support for project activity
G3	The project team has the influencing skills to engage with necessary internal and external support
G4	The project environment provides sufficient resourcing (including financing) and access to stakeholders
H1	End users or operators are engaged in the design and progress of the project
H2	Where end users or operators are reluctant to engage, the project team has the skills and techniques to increase and improve the quality of their engagement
H3	End users or operators are able and enabled to take on what the project has produced effectively and efficiently
I1	Project professionals heading up or forming a core team are fully competent
I2	Other team members are also fully competent in their roles
I3	The project team engages in positive behaviours which encourage success
J1	All direct and indirect suppliers are aware of project needs, schedules, and quality standards
J2	Higher and lower tiers of supply chains are co-ordinated
K1	Good practice project management techniques are applied
K2	Management tools, methods and techniques are applied in a way which maintains an effective balance between flexibility and robustness
L1	Quality standards are actively used to drive quality of outputs
L2	Adherence to other standards is regularly monitored in order to ensure delivery is to best practice levels

4.8 Key points

80. Further analysis of data from the quantitative survey reported in this chapter shows, in summary, that:

- A substantial sample of project professionals mainly reports their most recent projects as being successful on a series of measures. Around three-quarters of respondents give them a score of 8 out of 10 or higher on most measures.
- Delivery to time, and to or within budget, were the least successful aspects, with only 60% and 65% rating their most recent project at 8 out of 10 or higher on these measures respectively.
- Variations in success levels according to different types of project were relatively small but the data suggests that shorter, lower-budget, stand-alone projects were more frequently given higher success ratings than were longer, higher-value projects undertaken as part of wider programmes.
- Variations between different types of respondents in their perceptions of the success of their most recent projects were also quite small. However, the data suggests that older project professionals with more project experience and in project leader roles were more likely to see their most recent projects as successful than were their younger, more junior counterparts.
- All of the 'headline' success factors in the framework of success factors considered by respondents had a positive relationship with the ratings of success which respondents had given to their most recent projects.
- The factors with the strongest and most consistent relationship with all the success measures were 'goals and objectives', effective governance', and 'project planning and review'. More 'specialist' headline success factors (such as 'appropriate standards', 'capable sponsors', and 'secure funding') had weaker relationships.
- Below the 'headline' level, subsidiary success factors generally had weaker relationships with *particular* success measures (such as delivery to time or budget) unless they were clearly related to the measure. For example, a respondent's high rating to the success *factor* 'The project has realistic time schedules' being in place in their last project was associated with the respondent also giving a high rating to their last project on the success *measure* of delivery to time.
- However, a much larger number of subsidiary success factors were related to the *overall* project success measure – in the sense that the level at which the factor was in place in their last project was related to the level of overall success which they accorded to the project. Subsidiary success factors with the strongest relationships to overall project success included having realistic time schedules, strong leadership, clear goals, commitment from parties involved, good communications, regular progress monitoring, and competent project team leaders and members.
- Relationship of respondents' perceptions of the importance of success factors to their ratings of the extent to which they were in place in their recent projects

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suggests that some factors may be of particular concern in that they are seen as above averagely important but have a below average likelihood of being in place. At the main factor level, this particularly identifies 'project planning and review'. At the subsidiary factor level, 'the project has realistic time schedules' and 'pre-project planning is thorough and considered' are identified.

5 Overview

5.1 Introduction

81. APM has commissioned a programme of research with four underlying aims:
- To refine its existing set of project success factors.
 - To examine whether the project management profession endorses the resulting, refined, framework of success factors as an accurate and coherent statement of the factors which enable projects to be successfully instituted and delivered (in so far as any single, concise statement can capture the complex roots of success across very varied projects and project environments).
 - To establish benchmarks as to the success with which projects are currently delivered.
 - To validate the refined framework of success factors by examining the extent to which their presence or absence in actual projects is associated with the level of success of those projects.
82. These aims are considered in turn.

5.2 Refinement

83. Firstly, APM's initial list of 11 success factors was first examined in qualitative depth discussions with senior project professionals, either in practice or academia, and by literature review. These research elements recommended that the original success factors could usefully be expanded and given greater clarity by the insertion of additional 'headline' factors and of subsidiary or contributory success factors beneath each headline factor. APM and its stakeholders considered and broadly accepted this recommendation and a revised statement of project success factors was produced.

5.3 Endorsement

84. A quantitative survey was then undertaken of over eight hundred project professionals, mostly individuals with considerable project experience who had operated at senior levels in significant projects. These survey respondents were asked to rate the importance of success factors.
85. Almost all factors were awarded an average rating above eight on a 10-point scale and only tiny minorities (mainly of one or two per cent) gave a 'not important' rating of four or below to any of the items.
86. It was also observed that different groups of project professionals did not greatly or consistently differ in their levels of ratings of success factors and, hence, that endorsement (if that status is accepted) is profession-wide, not simply that of some part or parts of the profession.
87. Respondents were, however, also invited to say whether or not they thought the success factors needed adding to or clarifying. A substantial minority of respondents, a little less than 4 in 10, said this was the case, and a little more than a quarter of

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respondents made some suggestions. These suggestions, in many cases, were clearly ones which, in fact, simply gave further emphasis or nuance to the existing success factors. The main themes on which respondents made observations were those, in essence, concerning: teamwork and team building; engagement and commitment of the various parties involved in projects; risk and change management; clarity and alignment of objectives; management of suppliers; and project communications.

5.4 Benchmarks of project success

88. The study also sought to establish a set of benchmarks as to the condition of delivery of projects at the present time.
89. A first set of benchmarks concern the profession's view of the success of their recent projects on a range of measures (delivery to time, budget, specification and quality, funder's satisfaction, stakeholders' satisfaction and overall). These benchmarks (ranging from 7.5 to 8.3) indicate that projects are mostly reasonably successful but there were significant minority proportions where some under-performance was perceived (particularly in respect of delivery to time and budget).
90. A second set of benchmarks concern the extent to which the success factors in APM's framework were observed in respondents' most recent completed projects. These benchmarks, for the headline and subsidiary factors in the framework, are mostly a little lower, ranging from 6.1% to 7.5%.

5.5 Relationship between project success and the success factors

91. Examination of the relationship between respondents' perceptions of the level of success of their most recent completed project and of the extent to which the success factors were present in that project, show moderate association between many of the individual factors and the success of projects.

5.6 Key issues arising

92. The survey and its results raises a number of issues for the APM, its stakeholders, and the profession to consider:

'Endorsement' of the framework?

93. Average ratings which respondents gave to all the main success factors and to most of the subsidiary factors were high – almost all being in the 8 to 9 out of 10 range. This suggests that the profession (given that a majority of respondents to the survey had had senior project responsibility and that sponsors and stakeholders as well as project delivery team members and leaders were represented) gives a general endorsement to the framework.
94. Further, the elements of the framework associate with project success – the extent to which project professionals said the success factors were in place in their recent projects correlated positively with their assessments of how successful these projects were. This suggests that the framework has 'real world', not just hypothetical validity.
95. However, the correlations, whilst positive, would be described in statistical terms as moderate not strong. This might be expected – it would not, for example, be likely that any single success factor would constitute a magic ingredient which is universally and

especially associated with project success. It is, rather, more likely that specific *blends* of the factors, unique to each project, explain actual success – some factors being critical in some cases, less so in others.

96. The point is, perhaps, the obvious one that while the framework has been ‘endorsed’ – by the views of the profession in the survey as to the importance of its items and by its association with actual project success – its factors need to be as good as necessary in the circumstances of particular projects not paragons of text book excellence in all cases.

Are any factors missing?

97. Broadly, the framework contains factors which are basically consistent with the ‘project success’ literature and with the views of senior project professionals – literature review and the engagement of senior professionals both in qualitative research and in the deliberations of APM and its stakeholders ensured this. However, professionals consulted in the survey showed considerable interest in the survey in that many respondents suggested adjustments or additions to the framework’s content.
98. Many of these suggestions essentially emphasised or gave nuance to factors which are already in the framework. Some, however, perhaps suggest that additions to it might be made. Whilst there is clearly danger in over-elaboration of the framework into ever more intricate detail, review of these respondent comments might allow some valuable refinement of the framework which APM and its stakeholders may wish to consider. In this case, for example, more explicit recognition might be given to team-building and team ethos, managing changes in project parameters when they occur, and establishing a firm contractual base in managing supply chains.

A common view across sectors of projects?

99. A possibly surprising result of the survey was that, mainly, it did not reveal strong or consistent differences between the sectors in which projects were based in the extent to which success factors were viewed as important or to which projects were actually successful.
100. Interpretation of this broad equilibrium may be that ‘good projects’ have universal characteristics which are independent of their context – basically, ‘getting the basics right’ and doing routine good practice (rather, perhaps, than introducing unnecessary innovation into project delivery and management processes) is suggested by the survey as being the foundation of success.

But some emphases are apparent

101. However, whilst lack of variation characterised many comparisons of different groups on the various measures, there were *some* differences between groups. These differences between average ratings given by different groups, though statistically significant, were quite small in numerical terms, and do not, therefore conflict with a general perspective on survey findings that they show a general consensus as to the importance of the success factors amongst project professionals and a fairly even likelihood of project success occurring across sectors.
102. Some differences, which raise questions as to their origins, include:

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- A tendency for professionals in government, education and health sectors to give higher ratings to the importance of the success factors than those in other, commercial, sectors.
- Shorter, stand-alone projects, with lower-end budgets were reported as being more likely to be successful than their counterparts.
- Older, more senior and experienced professionals were more likely to rate their projects as successful than their counterparts.

103. The origins of these differences can only be speculative but, in the first case, higher average 'importance' ratings given by public sector project professionals might, hypothetically, reflect a different attitude to risk in the public sectors, greater risk aversion perhaps leading to higher valuations of formal project environments and delivery processes.

104. In the second case, shorter, stand-alone projects may be more often successful because of their inherently lesser demands on project control and organisation (and, perhaps, suggest that the more large projects can be compartmentalised, the more successful they may be).

105. In the last case, objective and/or subjective factors could be in play. Thus, older and more senior project professionals may actually have run projects more successfully than young ones. On the other hand, it may be an attitudinal factor in that, for example, older, senior professionals have a more realistic understanding of what projects can be expected to achieve and are more able or willing to recognise broad success of projects even if project delivery has not been flawless.

Why does 'secure funding' receive only a moderate 'importance' rating?

106. The survey observed that having secure funding, within the fairly narrow range of 'important to project success' ratings, was one which was allotted the lowest average ratings (at 8.6). Given that, intuitively, secure funding is a sine qua non of project success, a question of why this should be so is of interest. One reason may perhaps lie in respondents' perceptions that this is a 'hygiene' factor: so obvious or basic that, counter-intuitively, they did not bother to rate it highly – but, as with other questions raised above, this explanation is necessarily speculative.

The 'delivery to time' dimension

107. The survey also observed that, on the six success measures offered, the 'delivery to time' measure showed the least success. 23% of respondents said their last project was only moderately successful on this criterion (5-7 rating) and 17% said it was unsuccessful (a 1-4 rating). On another scale, the subsidiary success factor that 'the project has realistic time schedules' was one of those which was scored as having above-average importance but below-average likelihood of being in place in recent projects.

108. Again speculatively, one explanation of an apparent 'running to time' problem may be negative – that a substantial number of projects tend to have a mix of poor initial appreciation of the time which will be needed to complete them and/or are poor at keeping to initial schedules. A more benign explanation may be that projects start off with a strong focus on timescale but, as projects progress, an increasing focus on

quality and specification develops with scheduling becoming less significant than this latter factor.

Areas of particular concern?

109. Relationship of the perceived importance of factors to the extent to which they were in place in recent projects identifies a small group of factors which were of above-average importance but had below-average likelihood of being in place. These comprise, of the main factors, 'project planning and review', and, of the subsidiary factors, 'pre-project planning is thorough and considered' and (as above) 'the project has realistic time schedules'.
110. The suggestion is that these areas are ones which the profession, in seeking to develop, may particularly wish to give attention.

A moderate level of project delivery?

111. Interpreting rating scales and what average ratings mean are matters of judgement. In, say, customer satisfaction research, an average rating of a particular measure of satisfaction which falls below 8 is usually regarded as a matter of concern.
112. In this survey, respondents' average ratings of the success of their most recent projects ranged from 7.5 (for delivery to time) to 8.3 (for delivery to specification and quality). Their average rating of the extent to which success factors were in place in their most recent projects ranged from 7.7 to 6.1.
113. A final, perhaps key, point emerging from the study, is that ratings at this level are, perhaps, describable at best as 'reasonable' or 'modest' (and, less charitably, could be described as 'mediocre') – project environments, control, and delivery, in the eyes of the profession itself, show clear scope for significant improvement towards a position in which excellence is considerably more frequent.

Appendix I: Methodology

114. The survey was made available online and the APM's database of members and non-members was used as the sample frame. In total, 862 responses were received; 428 from APM members and 434 from non-APM members.

115. The APM database comprises approximately 160,000 contacts; c21,000 of which are APM members. The database structure is multi-dimensional and complex and the process of determining the number of unique contacts (removing duplicate entries) and profiling the member and non-member contacts by the variables deemed necessary took BMG several days.

116. The variables by which the contacts were profiled included:

- Size of the organisation in which they work;
- Industry sector in which the organisation in which they work operates.

117. The target number of online completes was 400 APM members and 400 non-APM members. Not all the contacts available included an email address and those that did not have an email address could not be invited to take part. Monitoring quotas were set based on the variables cited above and these were set based on all contacts, including those without an email address. The following table presents the profile of the APM database and the sample achieved.

Table 7: Database profile versus sample profile: APM members and non-APM members

	Members			Non-members		
	Population n.	Population %	Completes* %	Population n.	Population %	Completes* %
None	2387	11%	15%	100048	72%	9%
Oil, gas or nuclear industry, utilities	1414	7%	12%	4742	3%	10%
Mining/metals/forestry & paper	55	<0.5%	0%	194	<0.5%	<0.5%
Aerospace & defence	3477	16%	12%	4494	3%	9%
Civil engineering	1225	6%	5%	1265	1%	3%
Manufacturing	891	4%	1%	4822	3%	3%
IT hardware/software & services	1056	5%	5%	1416	1%	7%
Construction	2235	11%	12%	1962	1%	7%
Retail	113	1%	<0.5%	314	0%	1%
Transportation	1261	6%	5%	2493	2%	7%
Telecommunication services	814	4%	3%	966	1%	2%

	Members			Non-members		
	Population n.	Population %	Completes* %	Population n.	Population %	Completes* %
Financial services	697	3%	1%	3675	3%	6%
Business and professional services	501	2%	1%	923	1%	1%
Management consultancy	1839	9%	4%	1074	1%	3%
Education	308	1%	1%	769	1%	3%
Health	171	1%	2%	768	1%	4%
Government	1165	6%	10%	5242	4%	12%
Arts, recreation and leisure	92	<0.5%	<0.5%	363	<0.5%	<0.5%
Other	1392	7%	10%	2881	2%	10%
Total	21099	100%	100%	138383	100%	100%
	Members			Non-members		
	Population n.	Population %	Completes~ %	Population n.	Population %	Completes~ %
Unknown	6524	31%	25%	123311	89%	75%
1-99	2347	11%	9%	2066	1%	4%
100-999	2536	12%	12%	2848	2%	4%
1000+	9692	46%	53%	10158	7%	17%

*denotes based on survey responses ~denotes based on database information

118. Based on the sample profiles, which did not differ significantly from the population profiles (as far as they were known) and the extent to which key characteristics of non-APM members in particular were unknown, it was decided that the data would not be weighted.

Appendix II: Statistical Analysis

119. What follows is an explanation of the approach taken to calculating the degree of statistical correlation between headline and success factors:
120. Each section is composed of a headline indicator (e.g. 'effective governance') and a set of component measures (e.g. strong leadership, project clarity etc within effective governance). The headline indicators, both for importance and status have been derived through statistical modelling, namely Graded Response Models (GRM), which is a subset of Item Response Theory (IRT). In terms of outcome, IRT has similarities to factor analysis, in which we create an unobserved (latent) variable from a set of observed (manifest) variables. Manifest variables are those directly measured within the survey.
121. Each latent variable is defined to a greater or lesser extent by the original manifest components used to create it. Certain manifest variables have a greater impact in describing the resultant latent variable (called loadings); manifest variables that have minimal variation across respondents generally have a lower loading in the final calculation. IRT also accounts for variation within a respondent's set of answers (called discrimination). As a result of these calculations, each respondent is attributed a score for each latent variable - these scores are continuous, and usually range between +/-3 (although often closer to +/-1). Were a respondent to answer 10 for each of the components, then they will have the highest positive score, answering 1 for each component achieved the lowest negative score.
122. To convert these scores into a rating, we have then calculated 'anchor points' for each model; what is the IRT score if a respondent answers 10 to each manifest component, 9 to each, 8 to each etc (for combinations which were not present in the data, then it is possible through the IRT model to derive a 'what if' score). With these IRT to rating equivalences, we then derive a polynomial equation which allows us to predict what the IRT score would have to be to achieve thresholds of 9.5, 8.5, 7.5 etc. IRT equivalences of a 9.5+ rating are coded 10, 8.5+ as 9 etc.
123. An alternative approach would have been to add the numeric codes of the manifest variables, and divide by the total number of variables (so if there are four manifest variables, and the respondent answers 10, 10, 9, 9, then the mean would be 9.5, rounding to 10). This does not however take into consideration that different respondents have differing thresholds as to what might constitute 'critical' or 'excellent', and that respondents might assess the intervals between say 'very satisfied vs fairly satisfied' as opposed to 'fairly satisfied vs neither nor' as being different. This latter point is less of a consideration here given the ten-point scale, but discrimination in particular is useful in addressing the former.

Appendix III: Statement of Terms

Compliance with International Standards

BMG complies with the International Standard for Quality Management Systems requirements (ISO 9001:2008) and the International Standard for Market, opinion and social research service requirements (ISO 20252:2012) and The International Standard for Information Security Management (ISO 27001:2005).

Interpretation and publication of results

The interpretation of the results as reported in this document pertain to the research problem and are supported by the empirical findings of this research project and, where applicable, by other data. These interpretations and recommendations are based on empirical findings and are distinguishable from personal views and opinions.

BMG will not publish any part of these results without the written and informed consent of the client.

Ethical practice

BMG promotes ethical practice in research: We conduct our work responsibly and in light of the legal and moral codes of society.

We have a responsibility to maintain high scientific standards in the methods employed in the collection and dissemination of data, in the impartial assessment and dissemination of findings and in the maintenance of standards commensurate with professional integrity.

We recognise we have a duty of care to all those undertaking and participating in research and strive to protect subjects from undue harm arising as a consequence of their participation in research. This requires that subjects' participation should be as fully informed as possible and no group should be disadvantaged by routinely being excluded from consideration. All adequate steps shall be taken by both agency and client to ensure that the identity of each respondent participating in the research is protected.

