DEVELOPING A PERFORMANCE INDEX TO MEASURE SOFT SKILLS ON CONSTRUCTION PROJECTS: A DELPHI STUDY

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Thesis Summary

Title of Thesis:	**Developing a Performance Index to Measure Soft Skills on Construction Projects: A Delphi Study**
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Recent research suggests that project teams need to become more socially aware, particularly in how project professionals interact with one another, and that soft skills need to be assessed in the same way that the traditional 'iron triangle' of cost, time and quality are. At present they are either not measured at all or at best very poorly, despite being recognised for how important they are to project success.

Four relevant theories were reviewed to identify where this research could make a contribution to each of them. In professional practice, the development of a soft skills performance measurement index would allow professional bodies to formally acknowledge the importance of soft skills measurement in their technical guidance for becoming professionally qualified.

The research has a social constructionist ontology and primarily adopted an interpretivist epistemology. The methodology used a multi-phase mixed methods approach using the consensus-building research technique, the Delphi Method, collecting both qualitative and quantitative data in iterations. This approach enabled five soft skills (termed the 'performance pentagon') and a composite performance index (CPI) for construction projects to be derived. Mitigating actions were taken to keep participants engaged in each iteration, following the impact of the Covid-19 pandemic.

The synthesis and modification of existing theories led to the phenomenon of measured goal interest (MGI), an original contribution to the academic literature on the subject, the term "measured goal interest" never having been used previously. The fact that both a major client *and* major consultancy in the UK construction sector have since permanently adopted the 'performance pentagon' soft skills within their own performance measurement models shows how successful this study has already been in making a contribution to professional practice.

Key words: performance measurement, Delphi Method, composite performance index, measured goal interest, performance pentagon

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After spending much of the past 15 years working in performance measurement on construction projects, and observing the issues raised in this study, writing this thesis and the contributions it will make has been a real privilege - and at times felt like a selfish endeavour. My family have shown incredible patience and played a crucial part in this study, helping to provide motivation whenever it waned, particularly my wife. Our wedding and the birth of our two children have all happened whilst writing this study; I could not be more grateful for her support.

Finally, thank you to my grandmother who sadly is no longer with us, but always showed unwavering belief in me.

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List of Abbreviations

AFR	Accident Frequency Rate
APM	Association for Project Management
CEO	Chief Executive Officer
CIOB	Chartered Institute of Builders
CPI	Composite Performance Index
HR	Human Resources
KPI	Key Performance Indicator
MGI	Measured Goal Interest
PCT	Perceptual Control Theory
PMO	Project Management Office
PMS	Performance Measurement System
RICS	Royal Institute of Chartered Surveyors

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1.0 Introduction

In Autumn 2018 the UK's best read project management magazine for practitioners, 'Project' (Llewellyn, 2018), published one of its most recent articles on the issue of project teams needing to become more socially aware, with particular emphasis on how project participants connect and interact with one another. It suggests there is an underlying assumption that project participants will instinctively demonstrate the social skills needed to collaborate on projects, Llewellyn (2018) identifies this as an error that should not be left to chance so could be assessed just like the iron triangle (Toor and Ogunlana, 2010) of cost, time and quality. This study therefore proposes the problem that soft skills on construction projects are either not measured or are at best measured very poorly (Marr, 2007).

The solution proposed by this research will contribute to both the academic literature on the subject and professional practice. For the academic literature, it will look at opportunities to fill gaps that currently exist in four theories, in particular *agency theory*. Agency theory describes a model where measures are used to influence behaviours (Ross, 1973; Mitnick, 1975), using measures put in place by a *principal* (e.g. project client) to guide behaviours of an *agent* (e.g. project team participant) and consequently align their respective objectives. However, there is a gap here in that agency theory only applies if all significant areas of performance are measurable (Marr, 2007). In the UK construction industry there is no commonly agreed approach to the measurement, monitoring and reporting of soft skills performance, despite the importance of soft skills on projects now being recognised. The synthesis of existing research in relation to soft skills measurement to identify where the common themes and differences lie would fill this gap and add to the understanding of how both agency theory and the other three theories reviewed are interpreted. For practitioners, this research will provide project teams in the construction industry with a new soft skills index to reflect the performance of project participants' soft skills, allowing project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential issues. This would provide an audit trail to aid work allocation, determine appropriate resources for a project, and importantly an index to measure, monitor, and improve project performance whilst enabling comparisons to be drawn across frameworks, programmes and geographical regions.

After measuring the performance of individual project team members (via a 360-degree assessment) using a soft skills performance index, scores will be aggregated using the individuals' scores to reflect the performance of their organisations' teams on a project, and then for whole multi-organisational project teams. This is particularly useful on major frameworks where the performance of projects is under review, with the relevant detail available where required to assess each organisation's team (and individual). While these assessments reflect a 'snapshot' of individuals' performance at any one time,

if they are carried out at regular intervals (e.g. bi-monthly) they can allow trends in the scoring to be identified that provide early warning mechanisms for where intervention is required.

The overall aim of the study is to identify the soft skills considered most important when working as part of a project team in the construction industry, and to create a corresponding model to measure teams against. The three objectives for this research reflect these aims and are referred to consistently throughout the study to create a golden thread:

1. ***Develop a performance index that can be used to measure the performance of project participants' soft skills in the construction sector.***
   There is a clear need for a soft skills performance measurement model that will allow project participants' soft skills performance to be monitored and compared against participants in the same or other project teams. Ultimately, this will assist in providing greater certainty of achieving the project's intended outcomes.

2. ***Apply the new soft skills performance index to a live use case in the construction industry to confirm if it can be used successfully in the sector.***
   In order to establish that there has been a significant contribution of the research to **professional practice**, any performance index derived from this study will be tested in a live use case environment to confirm that it will work in practice.

3. ***Reflect on the theories relevant to the study and establish where the most significant contribution can be made.***
   The literature review recognises four theories relevant to the study that each have potential for further exploration to determine where there are opportunities to make a significant **theoretical contribution**.

The researcher's interest in this field is drawn from his own personal experience of more than 15 years spent working in project teams in the construction industry. Clients have increasingly sought alternative means of assessing projects beyond the conventional iron triangle (Toor and Ogunlana, 2010) during the life of a project to also assess soft skills, a trend that is not slowing. However, there is no recognition of this by the relevant professional bodies who could help equip both current and future construction project professionals with the necessary skills through the competencies required for professional qualifications. At present neither the mandatory nor the optional competencies assessed for professional membership recognise this trend, this is something that the researcher will seek to address through the

evidence provided by this research study. The ‘iron triangle’ may be extended and added to later in this thesis, or an alternative representation proposed, to also recognise the significance of soft skills.

In the next section, the literature on the subject has been reviewed to provide the academic context for the study. This will be followed by a Methodology chapter describing how both the quantitative and qualitative data is to be collected and analysed (a detailed timetable of the activities is in Appendix A). The subsequent Results and Data chapter brings together all of the evidence captured in implementing the Methodology. The two chapters that follow, Contribution to Professional Practice and Contribution to Theory, will analyse the evidence from the study and link back to the research objectives; the former setting out how the soft skills performance index represents a significant contribution to professional practice, the latter looking at how the findings represent the agreement/ disagreement/ extension of the relevant theories that were presented in the Literature Review. Finally, the Conclusion will bring together the reasoning for this important research into a final deduction.

2.0 Literature Review

2.1 Introduction

In this chapter the existing research relating to the research study will be explored in detail, reviewing the relevant theories to determine where a significant contribution can be made to the academic literature, and appraising the most commonly used soft skills measurement models to help identify which soft skills should be assessed according to the existing literature.

2.1.1 Research significance and background

There have been extensive studies relating to the measurement of performance since the mid-1990s, a period that Neely (1999) describes as having witnessed a revolution in the field with much of the research previously set within the context of financial services organisations. This revolutionary period also affected the construction sector after landmark state-of-the-industry reports were produced by Latham (1994) and Egan (1998), placing a spotlight on projects not comparing well with management practices from private manufacturing companies, suggesting there was much to be learned from measuring performance in project delivery. Prior to these reports this field was relatively new to the sector but has matured considerably in the c.25 years since, therefore this literature review predominantly covers this period.

Shortly after Egan's report (1998), 'Key Performance Indicators (KPIs) for Construction Firms' was launched by the Construction Best Practice Programme (Bassioni, Price, and Hassan, 2004), the sector's platform for driving change in the UK which has since become 'Constructing Excellence' (Constructing Excellence, 2018). These KPIs helped to advance the significance of KPIs in the UK construction sector, however they are still geared towards the traditional 'iron triangle' of project monitoring (Toor and Ogunlana, 2010): time, cost and quality. The assessment of intangible, soft elements of projects are critical for success yet their measurement and management are generally poor or non-existent (Marr, 2007); they can create improved project outcomes for many stakeholders on a project, not only for the individuals who are assessed but also for the organisations they represent and ultimately for the client.

2.2 Soft skills on Construction Projects

2.2.1 Definition of Soft Skills

The dictionary definitions for soft skills refer to them predominantly as the ability to communicate with other people (Cambridge Dictionary, 2022; Collins Dictionary, 2022), whereas text books on the topic vary more widely. Kamin (2013) considers the term to have evolved from the 1960's and 70's where it often referred to human relations and teambuilding, to now being defined differently by individual organisations depending on how they prioritise them. Phillips, Phillips and Ray (2020) align more with soft skills being defined as skills that are personal and interpersonal, as opposed to technical or profession-specific (hard skills). Tulgan (2015) generalises further in referring to them as non-technical skills, whereas Gladstone and Brown (2021) state

> "soft skills are about exercising influence and building trust with others",
> (Gladstone and Brown, p.227, 2021)

also indicating that they can be learned, studied and taught. The term "soft" indicates that they could be considered subjective or less tangible (Chan and Chan, 2004; Marr, 2007), such as collaboration and flexibility, however such intangibility may cause difficulty in how much they can be learned. A distinction needs to be made here between character traits and soft skills: character traits are innate and would not usually be considered learnable (e.g. kindness, loyalty) whereas this study will adopt the approach that soft skills *can be learned* (Gladstone and Brown, 2021; Phillips, Phillips and Ray, 2020), developed and enhanced further.

2.2.2 Systematic review of soft skills

A systematic review was undertaken of the soft skills considered most important within the existing relevant academic literature to ensure a transparent process and minimise bias. The review was undertaken in three stages as set out by Tranfield, Denyer and Smart (2003): planning the review, conducting a review, and reporting and dissemination.

In the 'planning the review' stage a review protocol was established to provide objectivity. The literature search was undertaken using the Aston University Library 'Smart Search' search engine to determine relevant studies, providing access to journal databases including Scopus and Web of Science. Search phrases included "soft skills", "construction", "project" and "performance OR measurement OR performance measurement OR performance indicator", this identified 66 articles for review. Several inclusion and exclusion criteria were subsequently set out, i.e,: they must have been published in the last 25 years (since Egan's (1998) state of the industry report), they must be written in English, and the literature source must be from a journal. This reduced the number of articles to five. Each of these articles were read in detail to identify the soft skills most prominent in the literature, this resulted in nine soft skills being recognised. The nine soft skills that emerged are: 'Effective communication',

'trust and respect', 'learning and growth', 'conflict management', 'leadership', 'innovation', 'collaboration', 'motivational' and 'flexibility'.

In the 'conducting a review' stage, and implementing the review protocol, five journals were found that could be incorporated into the review. The approach taken by the researcher differed slightly from that proposed by Tranfield, Denyer and Smart (2003) in that as a single researcher conducting a DBA study, there was not an expert review panel available to review what was ultimately included and excluded from the review and to direct the process. The study states that:

> "management researchers usually rely on the implicit quality rating of a particular journal, rather than formally applying any quality assessment criteria to the articles they include in their reviews".
> (Tranfield, Denyer and Smart, p216, 2003)

The quality ratings of the corresponding journals are as follows (Chartered Association of Business Schools, 2021a):

i). Dainty, Cheng and Moore (2003): *Construction Management and Economics*, 2 rating

ii). Edum-Fotwe and McCaffer (2000): *International Journal of Project Management*, 2 rating

iii). Hyvari (2006): *International Journal of Project Management.* 2 rating

iv). Hauschildt, Keim and Medcof (2000): *Project Management Journal*, 1 rating

v). Zuo et al (2018): *Engineering, Construction and Architectural Management*, 1 rating

While 3 and 4 ratings reflected higher standards of research, it is recognised that many 2 rating journals publish excellent practitioner-oriented articles (Chartered Association of Business Schools, 2021b) and that a 1 rating indicates a recognised, but more modest standard. A data extraction form was completed as each journal was reviewed. The form included the journal source (title, authors and publication details) and the details of the soft skills that emerged from each study. The findings were then synthesised to determine the emerging themes which make up the following section (2.2.3.1).

Finally, the 'reporting and dissemination' stage should provide a descriptive analysis of the field using a set of categories, this is set out below:

Author(s)	Origin of primary contribution	Age of article	Sector	Key field(s)	Soft skills identified from study
Dainty, Cheng and Moore	UK	19 years (2003)	Construction	Project management and expanding performance criteria beyond cost, programme and quality.	Teambuilding, Leadership, Trust and respect, Honesty, Communication, Learning, Self-efficacy.
Edum-Fotwe and McCaffer	UK	22 years (2000)	Construction	Project management and professional development in a changing business environment.	Leadership, Communication, Problem solving, Innovation, Teamworking, Motivation.
Hauschildt, Keim and Medcof	Germany	22 years (2000)	Manufacturing and industry	Project management and attributes of project managers to select them for appropriate projects where they can be successful.	Flexibility/adaptability, Leadership, Communication.
Hyvari	Finland	16 years (2006)	Mixed (Manufacturing; Engineering and Construction; Telecommunications services , software and IT; Public administration and communication)	Project management and characteristics of effective project managers, including organisation structures and technical competencies.	Problem-solving, Motivating, Teambuilding, Conflict management, Developing, Consulting, Informing.
Zuo, Zhao, Nguyan, Ma and Gao	Vietnam	4 years (2018)	Construction	Project management and soft skills' influence on project success factors.	Communication, Leadership, Conflict management, Achievement motivation, Teamwork and Collaboration.

Table 1: Descriptive analysis of research fields from a systematic review of soft skills

As a professional doctorate study, it is a premise of the research that the researcher will make a contribution to professional practice using the evidence from the study and is set out in Chapter 5, reflecting the 'dissemination' element of the final stage.

2.2.3 Soft skills performance measures in construction project management

2.2.3.1 Themes emerging from the systematic review of soft skills

It is clear some soft skills were identified more frequently than others in the literature (Table 1), albeit not with identical definitions. In identifying non-traditional performance criteria that encourage project success, Dainty, Cheng and Moore (2003) identify 'communication', which is considered more broadly to include all written, *and* oral communication. Edum-Fotwe and McCaffer (2000) also consider these both essential skills for construction project management, adopting the phrase "effective communication" to accommodate each element.

The literature reviewed also considered the skills that resonate most in a team environment, identifying the competencies that align with relationship management and emotional intelligence. One of these is 'leadership', which had varying definitions in the literature. Definitions for leadership included having influence and being able to align individuals as a collective to accomplish shared objectives (Hyvari,

2006), establishing a vision and developing corresponding strategies (Edum-Fotwe and McCaffer, 2000) and being able to delegate and assert oneself (Dainty, Cheng and Moore, 2003).

Collaboration is a term referenced in different ways within the literature, sometimes used alongside other terms such as teambuilding (Dainty, Cheng and Moore, 2003) or organising with cooperation (Hauschildt, Keim and Medcof, 2000) but always in the context of building positive working relationships. The term 'flexibility' is reflected in slightly different ways in the literature, but ultimately intended to reflect problem solving skills; these are defined in the systematic review as problem definition and decision making (Edum-Fotwe and McCaffer, 2000) and also as integrative thinking skills (Hauschildt, Keim and Medcof, 2000).

A common theme in all of the soft skills identified from the articles reviewed was that none provided the detail about how each should be measured, so there may be a lack of consistency in how these soft skills are measured on projects. This is discussed further in section 2.2.3.3 as an area where there is currently a knowledge gap in project management studies related to soft skills.

2.2.3.2 Soft skills measurement and impact on project success

Marr (2007) argues that a better term for soft skills 'measurement' should be *assessment*, in order to allow for non-quantitative performance evaluation as they may reflect opinion and personal judgement rather than mathematical calculations (Yeung et al, 2007). Crane et al (1999) define soft measures as *relationship* measures, and outlined 16 soft KPIs to track the effectiveness of teams in a partnering arrangement on a construction project. It is important that these measures are agreed right at the outset of the project, to set a standard that ensures everyone's attitudes and perceptions are aligned. Crane et al's (1999) list of 16 soft KPIs is more exhaustive than those outlined in other studies for construction projects (Chan and Chan, 2004; Toor and Ogunlana, 2010; Zhang and Fan, 2013), however none provide any evidence as to why these KPIs should be applied over any others. This will be taken into consideration in section 2.4 where assessment models are discussed in more detail.

There are inconsistencies in the studies conducted to date in identifying which performance indicators have the biggest impact on project success and should therefore be prioritised in deciding what to measure, however there are many studies rooted in the construction industry that have determined a significant impact on project success from assessing soft elements such as satisfaction of interpersonal relationships (Chan and Chan, 2004; Muzio et al, 2007; Zuo et al, 2018). The prioritisation of soft KPIs such as leadership, trust and communication have already been observed in studies in Saudi Arabia (Almahmoud, Doloi and Panuwatwanich, 2012), Hong Kong (Yeung et al, 2007) and Australia (Yeung, Chan and Chan, 2009).

Construction projects have special characteristics that require performance to be managed in a bespoke way (Yuan et al, 2009; Dainty, Cheng and Moore, 2003), therefore performance measurement criteria should be appropriate to the sector and place greater emphasis on participants' behaviours rather than measures of time, cost and quality to improve project outcomes (Dainty, Cheng and Moore, 2003; Zuo et al, 2018). The strength of some studies' findings have been weakened by having a small sample size, not validating findings, and through limited regional application (Dainty, Cheng and Moore, 2003; Zuo et al, 2018). This presents an opportunity for further study by gathering data in new regions from a larger sample, and undertaking a use case.

2.2.3.3 Knowledge gap in project management studies related to soft skills

Several studies have emphasised how soft skills can make a difference – to varying extents – to project success (see section 2.2.3.2), but without articulating the evidence that would be required to demonstrate the difference they make or if there has been any change in individuals' soft skills competence (Hassandoust and Andrade, 2020; Zuo et al, 2018). Fioravanti, Sena and Barbosa (2020) acknowledge there is a knowledge gap in the *development of soft skills capability* needed for project management, highlighting an approach where soft skills are evaluated before and after a project – but not during. This could prevent the collection of highly valuable information, as *after* a project it is too late to make an intervention rather than within the life of the project which might effect a change, albeit improvements were evidenced. However this was only based on self-assessment which is more prone to bias than a 360-degree review from project colleagues.

The term 'social intelligence' is used by Wasson (2020) to refer to the capacity of project managers to understand their skill level in managing interactions with others (unlike emotional intelligence which she considers more introspective). However, what is missing from this work is any reference to *measurement*, which is a common gap in the literature reviewed. It is not possible to baseline current ability level and monitor progress without measuring performance, instead proposing a series of exercises to help improve relationships (without any way of evidencing if there has been an improvement). Ahadzie, Proverbs and Olonolaiye (2008) also recognise that further work is needed to allow for more detailed analysis of soft performance factors, which will mean project managers' training requirements can be better understood for their personal development. Few studies have looked at the importance of measurement in relation to project managers' soft skills, it is often taken for granted that they will be measured in the same way regardless of who does it. However, there needs to be consistency in the approach to measurement being adopted, so that regardless of stakeholders' goals they are all assessed in the same way.

2.2.4 Responsibility for performance measurement on projects

The benefits of measuring, monitoring and reporting soft skills performance to facilitate improvements can only be realised where there is trust in the reliability of the outputs from the corresponding performance measurement system (PMS), therefore whoever takes responsibility for implementing the performance measurement system must be sufficiently trained and competent to implement it successfully. Three roles that would be well positioned to take responsibility for it are the project manager, the PMO (Project Management Office) function, or if neither are deemed appropriate the creation of a new role generated specifically for the purpose of managing performance on construction projects. Mir and Pinnington (2014) concluded that project management methods need to be developed so that *project managers* take responsibility for implementing the PMS, having found through an empirical study of project management professionals in the UAE that the *management* of KPIs is the single most significant variable affecting project success confirming the findings of Qureshi, Warraich and Hijazi (2009) – although a weakness of their study was the lack of any sector focus, hence to determine whether this is also true of the construction sector would require further research. However, Mir and Pinnington's (2014) findings contrast with those of Ling et al (2009) who found that for Singaporean firms working in China, *scope management* (including extent of and response to changes, claims or disputes) had the greatest effect on project performance; like most similar studies, the skills and practices tested did not include the practice of implementing the PMS itself as a variable, possibly due to the assumption that any error in implementation would not significantly impact the data. A properly maintained and monitored performance measurement system can have a significant impact on project success, yet there is a stark lack of research into how performance measurement systems are implemented in the construction industry and by whom, particularly in European countries.

The PMO function is still relatively immature and under-appreciated on construction projects compared with technology-based industries who have been much quicker to adopt them (Dai and Wells, 2004). This is confirmed by Liu and Yetton (2007) who observed that other industries are much better equipped than construction to take advantage of the information processing capabilities deployable through a PMO. Adopting the soft skills performance measurement role in the PMO would help raise the profile and significance of PMOs on construction projects; Kutsch et al (2015) suggested this would increase their visibility dramatically which would prevent them from having to constantly justify their existence, bringing them closer to the client and delivery team so they flourish rather than merely survive. This may risk a PMO becoming a 'catch-all' – where in other sectors its responsibilities are more formalised – hence there is much more development required from the relevant professional bodies to formalise the role of a PMO for construction projects. Dai and Wells (2004) undertook an empirical study in North America to determine the relationship between features of a PMO and their effect on project performance, finding that *project standards and methods* correlated most strongly to project

performance; however, their effectiveness in relation to implementing a PMS and soft skills in general were not amongst the features tested.

Research has been conducted in many countries around the world into identifying the soft skills required in construction project teams, most notably in Asia. However, there is a severe shortage of studies that draw international comparisons, hence it would add to the current academic literature to determine what, if any, regional variations exist in relation to soft skills capability as part of an international study.

2.2.5 Acknowledgement of soft skills measurement in the construction industry

The Association for Project Management (APM) is the Chartered body for project managers in the UK and internationally where recognised. The APM Body of Knowledge (APM, 2012) sets out the expected competencies for membership, but it only includes brief references to the need for performance measurement skills, mentioning nothing on the need to measure soft skills performance. There is no process outlined to ensure performance is measured accurately, or on how to write corrective action plans. Signposting and guidance is sorely needed here from the leading body for the profession, at the very least to state whether it should be part of the project manager's role. The Royal Institution of Chartered Surveyors also offers a professional qualification (RICS, 2015) for project managers to become Chartered in the construction industry, their requirements in relation to performance measurement are mainly set out in two optional competencies: *Project Audit* and *Development/ Project Briefs*, however these do not provide any supplementary guidance or signposting.

Constructing Excellence was established to drive change and transform performance in the in the UK construction industry, in 2018 they launched *SmartSite KPIs* (Constructing Excellence, 2018) an online tool accessed through a paid subscription to support construction professionals in measuring project performance. This is the best known external performance measurement system being applied in the UK construction industry. However, of the 14 KPIs on *SmartSite*, only two relate to soft skills: one for client satisfaction and one for contractor satisfaction, and all are predetermined in how the KPIs are configured and defined. The findings from the three significant professional bodies driving professional competence in the construction sector indicate that the guidance available to practitioners to measure soft skills performance is severely lacking. There is an urgent need for research to ensure that the construction sector can move forward in relation to how project teams address and develop their soft skills on projects. This research study will provide evidence to support professional bodies in giving much needed guidance to the sector.

2.3 Theories relevant to the research study

In this section, some of the most significant theories relating to the use of performance measurement on projects will be reviewed. Performance measurement is a subject of interest to many different sectors beyond construction (e.g. computing and finance) where trends and technical elements of delivery are concerned, as well as organisations' human resources departments. After a systematic review of the literature on the subject, the four prevailing theories were: Goal Setting Theory, Agency Theory, Control Theory, and Social Cognitive Theory. The approach taken is described below.

2.3.1 Systematic review of relevant theories

As with the soft skills in section 2.2.2, a systematic review was undertaken of the most important theories within the existing relevant academic literature, also adopting the three stages set out by Tranfield, Denyer and Smart (2003): planning the review, conducting a review, and reporting and dissemination.

A review protocol was established in the 'planning the review' stage, using the Aston University Library 'Smart Search' search engine to determine relevant studies, providing access to journal databases including Scopus and Web of Science. The search phrases have been broadened from those in the soft skills systematic review, as these would have resulted in zero articles for review. The search phrases included "soft skills", "performance", and "theory", this identified 11 articles for review. Inclusion and exclusion criteria were subsequently set out: they must have been published in the last 25 years (since Egan's (1998) state of the industry report), they must be written in English, the literature source must be from a journal, and reference must be made to a specific theory (such as 'agency theory', rather than 'theory' as a general term). This reduced the number of articles to four, these were used to identify the relevant theories identified in the literature and resulted in four theories being recognised. The four theories that emerged are: social cognitive theory, goal setting theory, control theory and agency theory.

In the 'conducting a review' stage, and implementing the review protocol, four journals were found that could be incorporated into the review. As in the soft skills systematic review, the approach taken by the researcher differed slightly from that proposed by Tranfield, Denyer and Smart (2003) in that as a single researcher conducting a DBA study, there was not an expert review panel available to review what was ultimately included and excluded from the review and to direct the process. The study states that management researchers tend to rely on the quality rating assigned to a journal in place of a quality assessment. The quality ratings of the four journals are below (Chartered Association of Business Schools, 2021a):

i). Maestrini et al (2018): *International Journal of Production Economics*, 3 rating

ii). Lauras, Lamothe and Pingaud (2011): *International Journal of Business Performance Management*, 1 rating

iii). Aryani et al (2021): *Education and Training*, 1 rating

iv). Schislyaeva and Saychenko (2022): *Social Sciences*, 1 rating

The 3-rated journal is well regarded, whilst the 1 ratings indicate recognised, but more modest standard of journals. As mentioned earlier the search terms were broadened to increase the number of articles for review, and this has resulted in these four articles being selected. As in the systematic review of soft skills, a data extraction form was completed as each journal was reviewed. The form included the journal source (title, authors and publication details) and the theories detailed in each study. The findings were then synthesised to determine any emerging themes, however no common themes could be determined given different theories were identified in each journal and all except two were rooted in different sectors and fields.

A descriptive analysis of the field has been prepared as part of the final 'reporting and dissemination' stage, this is set out below:

Author(s)	Origin of primary contribution	Age of article	Sector	Key field(s)	Theories identified from study
Maestrini et al	Italy	4 years (2018)	Manufacturing	Supply chain management and performance management.	Agency Theory
Laurus, Lamothe and Pingaud	France	11 years (2011)	Pharmaceutical	Supply chain management and performance management.	Control Theory
Aryani et al	Indonesia	1 year (2021)	Education	Professional development and career engagement.	Social Cognitive Theory
Schislyaeva and Saychenko	Russia	0 years (2022)	Technology	Economy and digitalisation.	Goal Setting Theory

Table 2: Descriptive analysis of research fields from a systematic review of relevant theories

The premise of this research as a professional doctorate study (DBA) is that the researcher will make a contribution to professional practice using the evidence gathered, this is set out in Chapter 5 and reflects the 'dissemination' element of the final stage. The subsequent sections 2.3.2 to 2.3.5 look at each of the four relevant theories in more detail to understand their origins, applications, key elements, and where there may be opportunities to explore them further in this research study.

2.3.2 Goal Setting Theory

2.3.2.1 Main idea of Goal Setting Theory

Goal Setting Theory addresses the effects of goal-setting on performance. The most significant research on this theory by Locke and Latham (2002) indicates that people who set goals that are difficult to achieve and specific will exhibit better performance than people who set goals that are non-specific and easier to achieve.

2.3.2.2 Origins and development of Goal Setting Theory

The original experimental studies in goal setting were conducted in 1935 by Cecil Alec Mace (Phillips, 1991; Locke and Latham, 2002). Goal-setting theory developed through three significant pieces of research: McClelland et al. (1953) determined that motivation to achieve goals lies in an individual's sub-consciousness; Ryan (1970) disagreed, stating that motivation and actions were based on conscious goals; Ryan had built upon Edwin Locke's first theoretical statements on goal setting from his doctoral dissertation in 1966 (Locke, 1966) where his research objective had been to determine

> "how the level of intended achievement is related to actual level of achievement".
> (Locke, 1966, p.60).

Locke determined that individuals who set specific, difficult goals performed better than those who set general, easy goals. Subsequent co-authored studies by Locke and Latham (1990; 2002; 2006) focused on the relationship between conscious goals for performance and the actual levels of performance achieved.

Locke and Latham (2002) looked at two areas: firstly, the relationship between goal difficulty and performance, and secondly, the effect that the difficulty of a specific goal has on what is achieved when individuals are asked simply to do their best. In the first research area, although 'goal difficulty' had not been measured previously it was determined that the most difficult goals produced the highest levels of effort and performance, performance only began to plateau or decrease when the limits of ability were reached or overly difficult goals had caused effort levels to drop. In the second area it was determined that setting *specific*, difficult goals resulted in better performance; asking individuals to do their best had no explicit reference point, it is held tacitly in an individual's own understanding hence could be perceived to have a range of values – setting specific goals therefore reduced the variation in the performance levels reached.

2.3.2.3 Applications for Goal Setting Theory

In business environments, goal setting can be applied in annual appraisals to ensure expectations are clear between both the line manager and employee, and preventing under-achievement from going unacknowledged. This is useful to reward employees who perform well in reaching their goals, or perhaps to put performance management plans in place if employees do not reach them (or determine any underlying issues). In a project environment where individuals from many organisations are involved (each with their own goals), this may mean the client or project manager needing to set goals that are applicable to the project team as a group not only individually.

In a sporting environment, goal setting provides a focus away from 'match days' when an audience is present, to help maintain motivation levels when training alone and away from the limelight. Secondary/ higher education is another sector where the theory could be applied to provide students with goals that would help them to achieve more.

2.3.2.4 Elements of Goal Setting Theory

There are five moderators (Locke and Latham, 2002) that must be considered carefully in applying goal-setting theory, these build on Locke and Latham's (1990) own five principles of goal setting (clarity, challenge, commitment, feedback, and task complexity). These are identified in the model below which illustrates how they form part of a high-performance cycle:

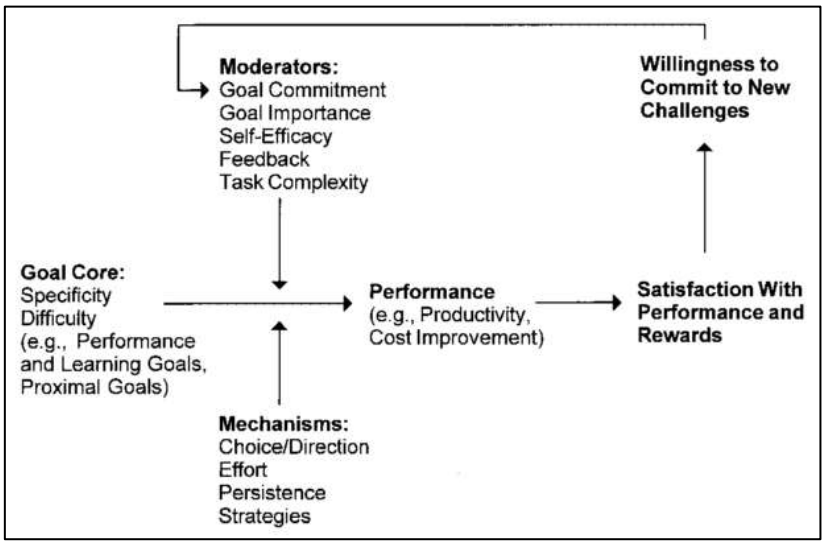


Figure 1: Essential Elements of Goal-Setting Theory and the High-Performance Cycle (Locke and Latham, 2002, p.714)

Performance measures such as the soft skills set out in the performance measurement models in section 2.4 provide the means by which to assess the performance element which will be an important part of the feedback moderator.

2.3.2.5 Opportunity to explore the theory further in this research study

Performance measures or Key Performance Indicators (KPIs) – such as those that would be applied to soft skills measurement – have an important role to play in implementing Goal Setting Theory as they can be used objectively to convey performance detail, providing the *feedback* moderator (see Figure 1) that allows decisions to be made in live project environments. Llewellyn (2015) identified that KPIs should also be agreed in advance to ensure buy-in from individuals, an example of Locke and Latham's (2002) explanation for another of the moderators: *goal importance*.

There is a shortcoming in the theory that in order for a feedback moderator to be applied, such as a KPI, that the goal being set needs to be measurable so that progress can be gauged in relation to the end goal. Without knowing their progress, it is not possible for an individual to adjust the direction or amount of effort required to meet the goal (Locke and Latham, 2002). At present there is no commonly agreed way of measuring soft skills performance on construction projects, therefore providing further definition of this would allow Goal Setting Theory to be applied more accurately where goals relate to soft skills.

2.3.3 Agency Theory

2.3.3.1 Main idea of Agency Theory

Agency theory describes how performance measurement models can be used to influence behaviours (Ross, 1973; Mitnick, 1975), using measures put in place by a *principal* (e.g. project client) to guide behaviours of an *agent* (e.g. project team participant) and consequently to align their respective objectives.

2.3.3.2 Origins and development of Agency Theory

Adam Smith (2012 [1776]) was the first author to recognise the agency issue, writing that if an organisation is managed by someone who is not the owner of that organisation, then they may not work for the benefit of the owner. Focusing on later research by Ross (1973) and Mitnick (1975), two alternative views have been taken on the theory (it is acknowledged these works do not cover the 200-year period in between, which were outside the scope of this study). Ross deemed incentivisation and

compensation significant in the principal-agent problem, whereas Mitnick's research concluded the issue lay with the way the organisation was structured and that it should be built around the agent, albeit the central themes are similar.

The agency relationship between principal and agent was defined by Jensen and Meckling (1976) as a contract, used by the principle(s) to limit divergence from their interests through incentivising the agent and incurring monitoring costs. Eisenhardt (1989) elaborated further that the focus of agency theory within organisations is on the contract that governs the relationship between the agent and the principal. She set out the human, organisational and information assumptions as to why the contract is a necessity for the theory to be implemented successfully; table 3 sets out the detail of Eisenhardt's assumptions which will be looked at in more detail in section 2.3.3.4.

Key idea	Principal-agent relationships should reflect efficient organisation of information and risk-bearing costs.
Unit of analysis	Contract between principal and agent.
Human assumptions	Self-interest; Bounded rationality, Risk aversion.
Organisational assumptions	Partial goal conflict among participants; Efficiency as the effectiveness criterion; Information asymmetry between principal and agent.
Information assumption	Information as a purchasable commodity.
Contracting problems	Agency (moral hazard and adverse selection); Risk sharing.
Problem domain	Relationships in which the principal and agent have partly differing goals and risk preferences (e.g. compensation, regulation, leadership, impression management, whistle-blowing, vertical integration, transfer pricing)

Table 3: Agency Theory Overview (Eisenhardt, 1989)

Jensen wrote that agency theory has developed in two directions, 'positivist' and 'principal-agent' (Jensen, 1983). Positivist agency theory is concerned with the governance mechanisms such as reporting procedures, performance measurement and Board of Directors reviews, it seeks alignment between the objectives of a principal and agent for example through an agent having equity ownership. Jensen (1983) proposes that information systems can inform the principal on the actual performance and achievements of the agent as to whether these objectives are being met, making it less likely that the agent will diverge from the principal's interests given the transparency created by the information

system. Principal-agent agency theory is more mathematical and is focused around determining the optimal contract and what may affect how this decision is made – whereas positivist agency theory may only provide different contract options (the two directions of the theory are complementary to one another).

2.3.3.3 Applications for Agency Theory

Agency theory has wide implications for corporate governance and has is reflected in how information is collected on staff performance (e.g. budget management, Microsoft analytics on working time vs internet time etc.). The theory has resulted in organisations making investments in new information systems that allow them to monitor staff activity.

The theory can be applied to scenarios where: opportunistic behaviour needs to be negated; incentives and sanctions are applied to lessen the impact from information asymmetry (where the agent holds more information about business performance than the principal does); contracts are used to address moral hazard (i.e. lack of effort on part of the agent); and goals needs to be aligned (Slyke, 2006).

A well-known example of where the theory should have been applied more robustly is the ENRON scandal (Heath, 2009) where the company's shareholders (i.e. principals) were let down by the organisation's senior leadership (i.e. agents) who failed to execute their regulatory role to the point of undertaking illegal activity. Whilst they had a legal duty to protect shareholder interests this may not have been reflected in how they were incentivised. An important use for agency theory is therefore in addressing corporate mismanagement and governance failings to ensure they are held to account.

2.3.3.4 Elements of Agency Theory

Eisenhardt (1989) set out a number of assumptions that apply in situations where Agency Theory is used:

A. Human assumptions:

1. *Self-interest*. The agent will act in a manner that is best for them.
2. *Bounded rationality*. There are limitations on the ability of the principal to be rational based on the information available.
3. *Risk aversion*. Difference in risk appetite. A more risk averse principal will find it more appealing to pass risk to the agent. As the agent becomes more risk averse, it becomes increasingly expensive to pass risk to them.

B. Organisational assumptions:

1. *Partial goal conflict among participants.* Opportunism on behalf of the agent is likely.
2. *Efficiency as the effectiveness criterion.* Efficient processing of information is a factor.
3. *Information asymmetry between principal and agent.* The agent typically holds more information about the business than the principal.

C. Information assumption:

1. *Information as a purchasable commodity.* Information is a commodity that can be purchased, providing it with an important role in formal information systems.

Snippert et al (2015) acknowledge many of the above elements in Figure 2 below, illustrating the cyclical nature of work delegated by the principal and work performed by the agent:

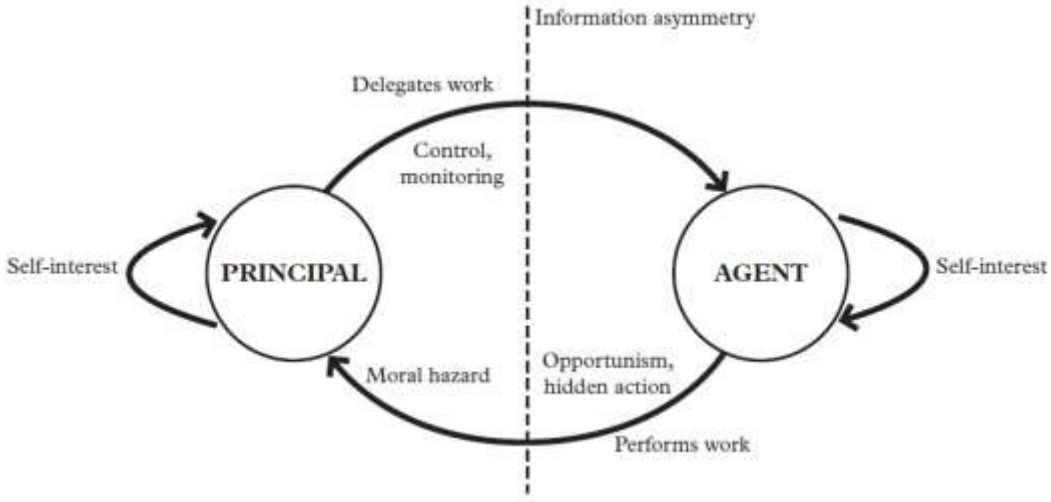


Figure 2: Agency theory and the assignment of work from principal to agent (Snippert et al, 2015)

2.3.3.5 Opportunity to explore the theory further in this research study

Agency theory assumes that the performance of the agent can actually be measured as part of a requisite information system, and becomes difficult to apply when what the agent is doing cannot be validated. There is a gap here in that it only applies if all significant areas of performance are measurable (Marr, 2007). If they are not measurable then a contract cannot be reasonably enforced and the principal cannot assess the performance of the agent. This would be the case in the assessment of soft skills for which there are no commonly agreed measures of performance in the construction industry. The development of a soft skills performance index from this study would therefore provide a significant contribution to agency theory in enabling it to be applicable where contracts require levels of soft skills performance to be achieved.

2.3.4 Control Theory

2.3.4.1 Main idea of Control Theory

Control Theory has its roots in engineering, with 'control systems' having been used to maintain a preselected state in mechanisms since ancient Greece (Mansell and Marken, 2015). Such mechanisms make an ongoing comparison between actual events and a standard to reduce the difference. A mechanism that is commonly understood in modern times is the domestic thermostat, which is used to keep a room at a predetermined temperature. Unlike Goal Setting Theory where the focus is on specifying a more challenging goal to raise performance – and feedback being of secondary importance as a moderator – Control Theory takes the reverse view where feedback plays the primary role in regulating performance (Carver and Scheier, 1981).

2.3.4.2 Origins and development of Control Theory

Control systems have been developed since ancient Greece when the inventor Ktesibios kept a water tank filled at the same level while water evaporated (Mansell and Marken, 2015), the first theory about how such systems work was developed by Harold S. Black in 1927 in relation to electrical engineering systems (Black, 1977). The theory has proven adaptable to wherever feedback occurs, and has been developed further for use in several sectors including linguistics, sociology and psychology. It can be applied to systems both living and mechanical.

Open and closed loop tasks became the focus of research in the 1940's when Norbert Wiener (Wiener, 1985) introduced their impact on cybernetics. The controlling action differs in each type of loop: in an open loop it is independent of a process output (e.g. when a heating boiler is switched on for an amount of time constantly regardless of room temperature), whereas in a closed loop it depends on the feedback from the process (in the boiler example, room temperature 'feedback' is provided against a pre-set temperature on a thermostat, switching the boiler on and off as needed).

2.3.4.3 Applications for Control Theory

The uses for control theory are huge and constantly evolving given the increased use of analytics for data-driven decision making. The example of heating systems has already been given above in relation to thermostat control which could similarly be applied to air conditioners, refrigerators and irons. Other common everyday uses include water tanks for bathroom toilets and the cruise control setting in cars.

In manufacturing and production the theory can be applied in control systems for quality management, robotics and automated transport systems.

Control theory has been applied extensively in psychology, resulting in further theory development that can be applied to human behaviour. William Powers' application of control theory to biological systems resulted in a further theory that became known as Perceptual Control Theory or "PCT" (Powers, 1973), where rather than a controlled variable being an output from a system (e.g. heat, water level, speed in some of the earlier examples) but instead it is the input. This allows individuals to transform their behaviour through conscious perceptions of their environment.

2.3.4.4 Elements of Control Theory

The component elements of control theory as applied in a closed loop system (Carver and Scheier, 1982) are illustrated in Figure 3:

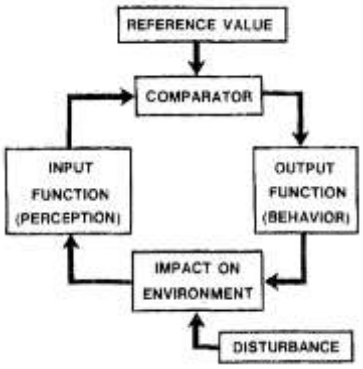


Figure 3: The Negative Feedback Loop (Carver and Scheier, 1982)

The elements of the system are: the 'input function' which provides feedback through sensing/perceiving the present state; the 'comparator' which determines any difference against a reference value to allow current performance to be regulated; where there is a difference, a 'behaviour' is actioned via an 'output function' (i.e. a corrective action). The behaviour impacts upon the environment to reduce the difference and then change the present state. The overarching purpose is therefore to maintain a steady state by reducing any discrepancies that arise.

2.3.4.5 Opportunity to explore the theory further in this research study

The soft skills performance measures determined in this research will provide project participants with feedback that can be used to change their behaviours in a way that will bring their scores closer to benchmark levels (i.e. the 'reference values' in Figure 3). However, the success of the output function/ behaviour is dependent on the ability of the individual to make the corrective change: it is not as

mechanical as programme or cost performance (hard performance measures) where the actions required are clearer. The theory assumes that if the feedback is being received that the individual will automatically be able to improve their performance, but this is not necessarily the case for soft skills and potentially requires individuals to undergo training and/or coaching to create the change needed in the present state. There is a gap here in the theory that the research could partially fill in providing soft skills performance feedback, however in order for control theory to be applied successfully to soft skills performance, it requires coaching/training to supplement the 'output function' to reduce any discrepancy which is not the main focus for this study.

2.3.5 Social Cognitive Theory

2.3.5.1 Main idea of Social Cognitive Theory

The theory considers why someone may exhibit a certain behaviour and what would lead them to changing their behaviour, emphasising the importance of individuals monitoring their own behaviour and the behaviours of others and making the change themselves. It is similar to Control Theory in this way, however it differs in that an individual's performance can be altered through self-efficacy (Bandura, 1997), i.e. their belief in their own ability to execute a behaviour and attain a certain level of performance.

2.3.5.2 Origins and development of Social Cognitive Theory

After extensive research, the work of Albert Bandura (1977; 1986; 1997) stood out as being most relevant in detailing the origins and development of this theory. Social Cognitive Theory is an extension from Bandura's Social Learning Theory (Bandura, 1977) where he wrote that there was a correlation between someone's own perceived self-efficacy and behavioural change, where expectations are based on information from four primary sources: performance accomplishments, vicarious experience, verbal persuasion, and physiological states. Bandura later expanded upon this and renamed it Social Cognitive Theory (Bandura, 1986), reflecting on the significant part that having cognisance of personal and environmental influences has on performing a behaviour, i.e. that observing a behaviour can influence a person's cognition, or way of thinking as can their environment.

2.3.5.3 Applications for Social Cognitive Theory

The theory can be applied in situations where motivation is a factor in changing approach to develop self-efficacy. Teaching is one example, where a teacher providing feedback allows the student to understand their level of expertise resulting in increased effort and attention. The same can be applied

in lifestyle/ health scenarios where changes such as weight-loss and improved fitness are desired. There are community applications too, such as using positive role models to encourage desirable behaviours and to facilitate social change in areas where there are high levels of youth crime, for example.

2.3.5.4 Elements of Social Cognitive Theory

Self-belief in an individual's own efficacy can be improved in four ways (Bandura, 1997): mastery experiences (knowing that perseverance will overcome obstacles through personal experience), social modelling (seeing similar people succeed through determination), social persuasion (being persuaded by people to overcome self-doubts), and an individual's physical and emotional state to respond. These beliefs pervade into the individual's motivation and resilience when faced with challenges.

2.3.5.5 Opportunity to explore the theory further in this research study

This research could support the future application of the Social Cognitive Theory in developing mastery experiences, social modelling and social persuasion in the construction sector by helping to calibrate the feedback provided to allow project professionals to understand their level of expertise. At present there is an absence of any commonly agreed measurement criteria or standards against which to assess soft skills performance on construction projects.

2.3.6 Summary of opportunities to make a theoretical contribution

On reviewing the four theories, they each have relevance to the research study and have opportunities to explore further through this research, examples of these are set out below:

- For **goal setting theory**, in order for the feedback moderator to be applied the goal needs to be measurable so that progress can be gauged and adjustments made, however at present there is no commonly agreed way of measuring soft skills on construction projects (despite recognition of their importance);
- For **agency theory**, if performance cannot be measured then this is a key omission in the principal-agent relationship, contracts cannot be reasonably enforced since the principal cannot assess the performance of the agent (as would be the case in the assessment of soft skills on UK construction projects);
- For **control theory** to be applied successfully, coaching/training is required to supplement soft skills performance feedback;
- Finally, **social cognitive theory** could benefit from this research through calibrating the feedback provided to understand one's level of expertise.

Synthesising the responses to each of these opportunities has the potential to make significant theoretical contributions, which are set out in detail in Chapter 6.

2.4 Soft skills performance measurement models

Intangible elements of performance are difficult if not impossible to quantify (Marr, 2007), therefore we often have to rely on less accurate proxy measures to provide an *indication* of likely performance. However, proxy measures can still provide project teams with valuable information on interaction effectiveness that can be used to make decisions about resources and development needs. Only a few authors and concepts have had a significant influence in this field (Marr and Schiuma, 2003), in part due to the broad range of disciplines and sectors that have an interest. Marr and Schiuma (2003) identified the Balanced Scorecard (Kaplan and Norton, 1996) and the Performance Prism (Neely, Adams and Crowe, 2001) as the dominating concepts in performance measurement. The performance pyramid (Cross and Lynch, 1988) and quality-based performance assessment models such as the European Foundation for Quality Management (EFQM, 2012) are two other widely recognised performance measurement frameworks that have been identified within the relevant literature (Marr and Schiuma, 2003; Bassioni, Price and Hassan, 2004).

The four models have been synthesised in this literature review to compare and contrast the areas that they assess, and their capability for soft skills assessment. All four of the models can be applied to project management practice (they are not project management tools per se). The synthesis of existing research in relation to these four approaches is unique and contributes to the academic research in this field.

2.4.1 The Balanced Scorecard

One of the most widely used models of performance measurement is the Balanced Scorecard (Kaplan and Norton, 1996), at the end of 2001 it was estimated to be used by 40% of 'Fortune 1000' companies (Bassioni, Price, and Hassan, 2004). It identifies measures through four different perspectives: *financial*, *customer*, *internal business processes* and *learning and growth* as illustrated in Figure 4. The four perspectives have been deemed insufficient in numerous studies (e.g. Neely and Bourne, 2000), and is limited in that it needs to be adapted when adding more complex project requirements, although its flexibility to do this could also be considered a strength; further perspectives that have been added in construction-focused research include *project* and *supplier* (Kagioglou, Cooper and Aouad, 2001). A further criticism is that there is no link established between the Balanced Scorecard and decision-making (Marr and Schiuma, 2003, Lueg and Vu, 2014). The Balanced Scorecard may therefore need to

be adapted further to include for the measurement of soft skills – which two of the perspectives in particular ('Customer' and 'Learning and Growth') lend themselves well to.

Users must build the scorecard for themselves depending on the content required from each 'perspective', and whilst it promotes the integration of lagging (outcome-based) and leading (performance-driven) indicators, the original premise for this was that that the Balanced Scorecard and its measurements would link directly to an organisation's strategy (Kaplan and Norton, 1996). However this presents a misalignment in the context of the study: firstly, few firms specify soft or similar skills as strategic requirements that could easily link to how a project is delivered; secondly, the application of the Balanced Scorecard may not be suited to project teams consisting of individuals from multiple organisations who have their own distinct strategic objectives (without adopting a Project Charter or equivalent which are not widely used in construction).

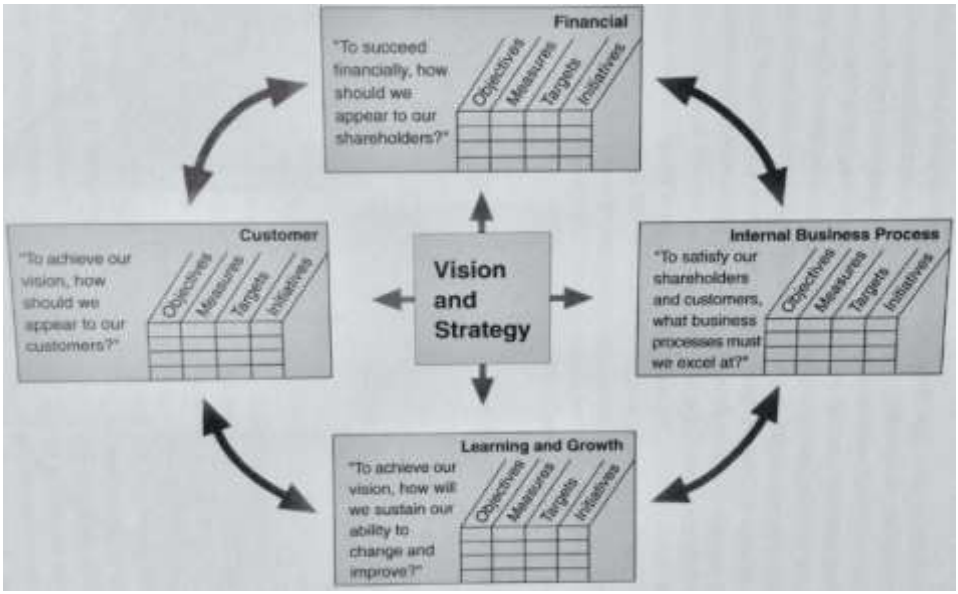


Figure 4: The Balanced Scorecard (Kaplan and Norton, 1996)

2.4.2 The Performance Pyramid

The performance pyramid (Cross and Lynch, 1988) illustrated in Figure 5 integrates financial and non-financial performance measures for review by managers, and provides a framework for a Strategic Measurement Analysis and Reporting Technique (SMART) system. The measures in the pyramid are prescribed indicators and offer little explanation as to how they can be adapted, if at all. Only two of the nine indicators could be considered soft skills measures (Customer Satisfaction and Flexibility), limiting the capability of the model for use in this research study.

Figure 5: The Performance Pyramid (Cross and Lynch, 1988)

2.4.3 European Foundation for Quality Management's Excellence Model

The European Foundation for Quality Management's Excellence Model (EFQM, 2012) was used by Qureshi, Warraich and Hijazi (2009) to determine that it was the *management* of KPIs - their measurement and how they were used - that had the greatest impact on project management performance. This is unusual as much of the research takes for granted that KPIs will be measured correctly and that the data they produce will be used effectively to make improvements, yet this study shows that if done incorrectly project performance could be severely affected. The model outlined in Figure 6 offers a non-prescriptive framework made up of *enablers* and *results* criteria, each is weighted by a pre-determined percentage from a 1991 consultation across Europe. A weakness of the EFQM Excellence Model is that the measurement criteria could be considered vague without detailed implementation guidance to adapt them as required (Bassioni, Price and Hassan, 2004). Whilst a number of KPIs are proposed under each category, it is not easy to adapt them to add bespoke KPIs given that they form part of an integrated assessment framework - and it is not intuitive as to where measures should be positioned between categories.

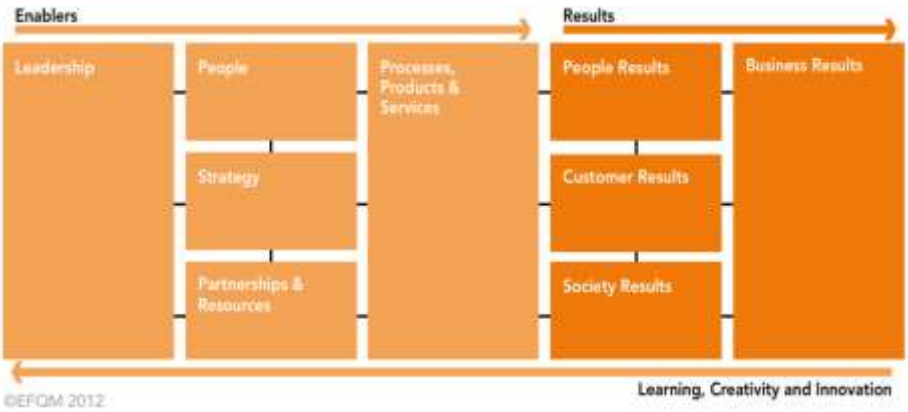


Figure 6: EFQM Excellence Model (EFQM, 2012)

2.4.4 The Performance Prism

The Performance Prism (Neely, Adams and Crowe, 2001) consists of five faces through which to view performance, described in Figure 7. The faces can be adapted to the needs of organisations, the principal appeal being the adjacency of the sides which implies inherent relationships between them and can be used to help select KPIs when designing a performance measurement system. This is not a prescriptive framework and the definition of 'stakeholder' is much broader than is offered in the Balanced Scorecard. It is well geared to asking better questions and a highly adaptable model for building new performance measures.

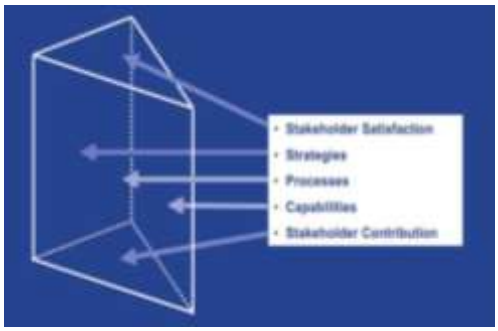


Figure 7: The Performance Prism (Neely, Adams and Crowe, 2001)

2.4.5 Out-of-scope fields for this study

The role of risk management as a discipline will be out of scope for this research. Most approaches to risk management follow a prescriptive body of knowledge (BoK) from a professional body necessitating the use of certain tools and techniques, many of which only focus on hard skills (Carvalho and Rabechini Junior, 2014; Raz and Michael, 2001) and ignore the importance of soft skills (Söderland and Maylor, 2012). So while there may be benefits to risk management professionals from undertaking this research – and it is recognised that there is a close relationship between risk management and project management – it is increasingly viewed as a distinct discipline on construction projects and it will be considered out of scope.

Performance Measurement Models	Identified by Marr and Sciuma, 2003		Identified in wider research as commonly used performance measurement models		
	Balanced Scorecard (Kaplan and Norton, 1996)	**Performance Pyramid (Cross and Lynch, 1988)**	**EFQM Excellence Model (EFQM, 2012)**	**Performance Prism (Neely, Adams and Crowe, 2001)**	**Constructing Excellence SmartSite KPIs (Constructing Excellence, 2018)**
a). Elements measured ('soft' elements in **bold/ underlined**)	1. Customer (e.g. satisfaction) 2. **Learning and Growth** (e.g. delivery team satisfaction) 3. Financial 4. Internal Business Process Users must build the scorecard themselves depending on the content required from each 'perspective', derived from the strategic objectives.	1. Market Measures 2. Financial Measures 3. Customer Satisfaction 4. **Flexibility** 5. Productivity 6. Quality 7. Delivery 8. Process time 9. Cost	1. Enablers - **Leadership** (develop vision and values, deliver improvements) - **People** (empowerment, recognition) - Strategy - **Partnerships and Resources** (resource allocation, use of technology) - Processes, Products and Services 2. Results - **People** (engagement, internal communications, training) - Customer (customer service, complaints handling) - Society - Business	1. Stakeholder satisfaction 2. Strategies 3. Processes **4. Capabilities** 5. Stakeholder contribution	1. Client Satisfaction - Product - Service - Value for Money 2. Contractor Satisfaction - Payment - **Provision of information** 3. Defects 4. Health and Safety 5. Predictability Cost - Construction; Design; Project 6. Predictability Time - Construction; Design; Project 7. Profitability 8. Productivity 9. Variance Cost - Construction; Design; Project 10. Variance Time - Construction; Design; Project 11. Energy Use (Process) 12. Mains Water Use (Process) 13. Construction Waste 14. Commercial Vehicle Movements
b). Adaptability for 'soft' measures	Balanced Scorecard measurements should link directly to an organisation's strategy, however soft skills are rarely specified as strategic requirements that could link easily to how a project is delivered. Only one of the four perspectives could be leant to soft skills definitions, but minimal guidance is provided as to how this should be done.	The measures in the pyramid are prescribed indicators and offer little by way of explanation as to how they can be adapted, if at all.	Whilst a number of detailed KPIs are proposed under each of the above categories, it is not easy to adapt them to add bespoke KPIs given that they form part of an integrated weighted assessment framework - and it is not particularly intuitive as to where measures should be positioned between categories.	This is not a prescriptive framework, and the definition of 'stakeholder' is much broader than is offered in the Balanced Scorecard. It is well geared to asking better questions and a highly adaptable model for building new performance measures.	The Constructing Excellence KPIs are entirely prescriptive and require a paid subscription as part of a commercial service to be adapted.

Table 4 Summary of Performance Measurement M

Soft Skill	Performance Measurement Models				Systematic review of academic literature					SmartSite KPIs (Constructing Excellence, 2018)	Total
	Balanced Scorecard (Kaplan and Norton, 1996)	Performance Pyramid (Cross and Lynch, 1988)	EFQM Excellence Model (EFQM, 2012)	Performance Prism (Neely, Adams and Crowe, 2001)	Dainty, Cheng and Moore, 2003	Edum-Fotwe and McCaffer, 2000	Hyvari, 2006	Hauschildt, Keim and Medcof, 2000	Zuo et al, 2018		
1. Effective communication Appropriate level of engagement with relevant stakeholders at all levels.			■		■	■	■		■	■	6
2. Trust and respect Seeks to build mutual trust and respect with project participants.					■						1
3. Learning and growth Show a willingness toward development of their own and team's capabilities.	■	■		■	■						4
4. Conflict management Ability to handle complaints or manage conflicts in the team as they arise.			■			■	■	■	■		5
5. Leadership Demonstrates mentoring skills, shows decisiveness and takes accountability.			■		■	■		■	■		5
6. Innovation Willingness to consider/ implement new ideas and continuously improve.						✓		■			2
7. Collaboration Demonstrating teamworking ethic and building positive working relationships.					■	■	■	■	■		5
8. Motivational Ability to exhibit positivity, assertiveness, active listening and seek compromise.					■	■	■		■		4
9. Flexibility Ability to problem solve and opennes to new and different ways of working.			■			■	■	■			4

Table 5: Literature Review Consolidated Performance

2.4.6 Consolidation of Performance Measures

After comparing each of the most widely recognised approaches to performance measurement in Table 4, the soft measures identified in the performance measurement models have been consolidated in Table 5 next to those recognised from the systematic review, omitting both repetitions and any duplication in meaning. The nine measures are: effective communication, trust and respect, learning and growth, conflict management, leadership, innovation, collaboration, motivational, and flexibility.

2.5 Research Objectives

Three clear objectives have emerged from this literature review for the research study to fulfil:

2.5.1 Objective 1

The literature review identified in sections 2.1 and 2.2 that there is a clear need for a soft skills performance measurement model that will allow project participants' soft skills performance to be monitored and compared against participants in the same or other project teams, and ultimately to provide greater certainty of achieving the project's intended outcomes. The first objective is therefore:

> ***Develop a performance index that can be used to measure the performance of project participants' soft skills in the construction sector.***

2.5.2 Objective 2

In order to establish that there has been a significant contribution of the research to professional practice, any performance index derived from this study will need to be tested in a live use case environment to confirm that it will work in practice and can justifiably stand alongside the performance measurement models reviewed in section 2.4. The second objective is therefore:

> ***Apply the new soft skills performance index to a live use case in the construction industry to confirm if it can be used successfully in the sector.***

2.5.3 Objective 3

The literature review recognised four theories relevant to the study that each have potential for further exploration to determine where there are opportunities to make a significant theoretical contribution. The third objective is therefore:

Reflect on the theories relevant to the study and establish where the most significant contribution can be made.

2.6 Summary of the Chapter

This chapter has set out the most significant theories relevant to the field of performance measurement and reviewed the most widely recognised performance measurement models for their applicability to soft skills measurement in the construction sector. The literature review has identified where this research can make a contribution to each of them. The synthesis of existing research to establish a set of consolidated soft KPIs is also unique and will provide a contribution to the academic literature.

It has been discussed that the successful application of a soft skills performance measurement index will provide a significant contribution to professional practice, and will allow professional bodies to formally acknowledge soft indicators' significance through their inclusion in the technical guidance they offer to become professionally qualified.

3. Methodology

3.1 Introduction to the Chapter

Meeting the three research objectives requires the appropriate research methodology to be carried out, supporting the overall aim of the study to identify the soft skills considered most important when working as part of a project team in the construction industry, and create a corresponding model to measure teams against. This chapter will provide the necessary consideration to the philosophical foundations of the research that inform the researcher's levels of thinking in decreasing order of abstraction (from ontology to epistemology, methods and techniques). Researchers bring their own beliefs and experiences to their research (Lee and Lings, 2008) whether intentional or not, therefore strong philosophical foundations are needed to underpin the methodology and bring credibility to how the objectives are met. The methodology will detail the most appropriate research design to achieve the research objectives, and how to ensure it is reliable, valid and ethical.

3.2 Research Problem

The nature of this research is that it is based on project professionals' direct experiences as opposed to abstract concepts. As such, there are several areas not yet understood in relation to this study:

- Firstly, how soft skills are perceived and understood, as they differ depending on the project professional observing them. Determining the soft skills that are most important to achieving successful project outcomes is a reflection of the experiences of each project professional, the projects they have worked on and people they have interacted with.
- Secondly, the study is rooted in the construction sector where few if any construction projects are identical, so the application of soft skills performance measurement cannot happen in exactly the same way on every project. Consistency in perception can vary from one project environment to another depending on the features unique to each project, these create their own variables (e.g. politics, supply chain, location environment, build complexity etc). Each soft skill assessment will have its own particular meaning to every project.
- Thirdly, the scores derived from the assessment of soft skills performance are not matters of fact / certain truths due to their intangibility (Marr, 2007). The perception of what each score means will differ in every individual's own mind.

It is evident that there are a number of diverse dimensions to this study that the researcher needs to account for in preparing this methodology, the sections that follow outline the approach taken to address them.

3.3 Ontological considerations

3.3.1 Introduction

Ontology refers to what someone believes to be the nature of reality (Lee and Lings, 2008) and is characterised by having many views through which it is seen and experienced (Creswell and Poth, 2016) depending on the individual, some of which will be detailed in this section which concludes by detailing the ontology appropriate for this research.

3.3.2 Types of ontological perspective

Saunders, Lewis and Thornhill (2016) described there being five major philosophies: positivism, critical realism, interpretivism, postmodernism and pragmatism, each of which provide the researcher a different perspective through which to conduct the research and are outlined in Table 6 overleaf. However, Lee and Lings (2008) consider there to be only two primary research philosophies, positivism and interpretivism, these are discussed further in this section.

3.3.2.1 Positivism

Positivism relates to a scientific philosophical position, using deductive logic to form and test hypotheses and derive conclusions often in the form of mathematical equations (Kivunja and Kuyini, 2017). A positivist gathers facts for hypothesis testing, remaining neutral and external to the data collection to avoid influencing the findings, a format positivists see as structured and reliable. Data collected provides certainty in the outcome, e.g. selecting from pre-prepared multiple choice answers can only derive certain answers, as opposed to interviews that necessitate the interviewer using their judgement in what to ask in order to gain as complete and relevant a response as possible (Saunders, Lewis and Thornhill, 2016). A disadvantage of positivist led research is that many constructs are not directly observable, such as motivation in an organisational or project setting (Lee and Lings, 2008)

3.3.2.2 Interpretivism

Interpretivists place an emphasis on understanding the individual as well as the world around them (Kivunja and Kuyini, 2017). They believe people of different backgrounds, experiences and at different times create different meanings (Saunders, Lewis and Thornhill, 2016) and are critical of the definite, narrow, generalised laws that can be applied universally. Interpretivist philosophy accounts for the diverse complexity of truths that can be formed by communities of practice, and considers reality to exist within individuals and groups in different contexts through their interactions with each other where

Ontology (nature of reality or being)	Epistemology (what constitutes acceptable knowledge)	Axiology (role of values)	Typical methods
Positivism			
Real, external, independent One true reality (universalism) Granular (things) Ordered	Scientific method Observable and measurable facts Law-like generalisations Numbers Causal explanation and prediction as contribution	Value-free research Researcher is detached, neutral and independent of what is researched Researcher maintains objective stance	Typically deductive, highly structured, large samples, measurement, typically quantitative methods of analysis, but a range of data can be analysed
Critical realism			
Stratified/layered (the empirical, the actual and the real) External, independent Intransient Objective structures Causal mechanisms	Epistemological relativism Knowledge historically situated and transient Facts are social constructions Historical causal explanation as contribution	Value-laden research Researcher acknowledges bias by world views, cultural experience and upbringing Researcher tries to minimise bias and errors Researcher is as objective as possible	Retroductive, in-depth historically situated analysis of pre-existing structures and emerging agency. Range of methods and data types to fit subject matter
Interpretivism			
Complex, rich Socially constructed through culture and language Multiple meanings, interpretations, realities Flux of processes, experiences, practices	Theories and concepts too simplistic Focus on narratives, stories, perceptions and interpretations New understandings and worldviews as contribution	Value-bound research Researchers are part of what is researched, subjective Researcher interpretations key to contribution Researcher reflexive	Typically inductive. Small samples, in-depth investigations, qualitative methods of analysis, but a range of data can be interpreted
Postmodernism			
Nominal Complex, rich Socially constructed through power relations Some meanings, interpretations, realities are dominated and silenced by others Flux of processes, experiences, practices	What counts as 'truth' and 'knowledge' is decided by dominant ideologies Focus on absences, silences and oppressed/ repressed meanings, interpretations and voices Exposure of power relations and challenge of dominant views as contribution	Value-constituted research Researcher and research embedded in power relations Some research narratives are repressed and silenced at the expense of others Researcher radically reflexive	Typically deconstructive – reading texts and realities against themselves In-depth investigations of anomalies, silences and absences Range of data types, typically qualitative methods of analysis
Pragmatism			
Complex, rich, external 'Reality' is the practical consequences of ideas Flux of processes, experiences and practices	Practical meaning of knowledge in specific contexts 'True' theories and knowledge are those that enable successful action Focus on problems, practices and relevance Problem solving and informed future practice as contribution	Value-driven research Research initiated and sustained by researcher's doubts and beliefs Researcher reflexive	Following research problem and research question Range of methods: mixed, multiple, qualitative, quantitative, action research Emphasis on practical solutions and outcomes

Table 6: Comparison of five research philosophies in business and management research

(Saunders, Lewis and Thornhill, 2016, p.112-113)

they bring their personal and cultural norms. This is termed ‘social constructionist’ ontology by Lee and Lings (2008) and underpins the majority of ‘interpretivist’ approaches. Creswell and Poth (2016) use the two terms interchangeably, adding that theory is developed inductively through the development of patterns of meaning in the research. The approach is weakened by the potential for bias from the researcher who cannot stand apart from the research like a positivist could, the researcher must be involved with the reality being studied (Lee and Lings, 2008). Furthermore, since the philosophy views reality as being socially constructed while people interact, it is considered subjective and ever-changing in nature.

3.3.3 Research context and adopted ontological perspective

The research problems outlined earlier in this chapter highlighted the context for the research, where shared experiences are created through project teams in the construction industry. The ontological perspective of this reality is concerned with how people perceive individuals’ soft skills performance on construction projects, and the soft skills that are most important for participants in construction project teams to work together successfully. The perceived reality is socially constructed within the project environment, with individuals bringing with them diverse experiences from different organisations, regions and past projects. There may be occasions when individuals have some familiarity with each other having worked together on previous projects, particularly if projects are procured as part of a framework where a fixed number of suppliers could work on multiple projects, but in general project teams consist of a broad range of sector expertise (e.g. architect, project manager, civil engineer, quantity surveyor) each of which brings their own culture from both their profession and the organisation they represent.

The subjective nature of how people experience soft skills performance, the social constructionist way with which new ideas develop in project teams, and the multi-discipline approach to construction all indicate that a social constructionist ontology should be adopted from an interpretivist philosophy. There are no definite or certain facts that can be observed that would make the positivist ontology appropriate for this research, hence it has not been adopted. There is a tension here with the theories and models relevant to performance measurement described in the literature review, some of which lean toward linear systems. This is recognised by the researcher, however the underlying ontology of the research and how reality is perceived by the participants of the study are considered to be socially constructed, albeit some of the relationships may adopt elements of positivism in how they are expressed.

Part of the researcher’s contribution to professional practice may ultimately be to present the research findings as a formula or general rule so that it can be more easily understood, remembered and applied

rather than being written as a sentence or paragraph which may not be recalled so easily. A social constructionist ontology still allows the researcher to interpret the research findings and present them as a general rule or formula as a way of effectively communicating research findings, as opposed to a mathematical formula that is derived from first principles which would align with a positivist ontology.

3.4 Epistemological considerations

The word 'epistemology' comes from the Greek 'episteme', which means knowledge, and 'logos' which means reason. It is concerned with assumptions about knowledge and how it should be communicated, and the researcher's own epistemological assumptions that govern what is considered legitimate for research (Saunders, Lewis and Thornhill, 2015). This depends on what the researcher believes about their experienced reality (Lee and Lings, 2008) and how claims about knowledge are justified.

The researcher takes an interpretivist epistemological position, accepting that knowledge is not accessed from observed, measurable facts (positivist approach) but from individuals' perceptions and experiences which will be reflected in the research methods and how data is collected. A positivist approach would not allow the researcher to understand a more complex view of organisational realities (Saunders, Lewis and Thornhill, 2015) or allow for major new understandings of the world, as might be possible through the interpretivist approach.

3.5 Quantitative and Qualitative Research Methods

3.5.1 Quantitative Research

Quantitative research uses data primarily in numerical form (e.g. from surveys and questionnaires), examining the relationship between variables through statistical techniques and often using probability sampling to ensure generalisable results (Saunders, Lewis and Thornhill, 2016). The researcher is considered independent from the respondents during the quantitative research process. Content analysis of text can also produce numerical data (e.g. coding interview transcripts), hence it is the nature of the data produced by the method that is significant (Denscombe, 2007). A core objective of quantitative research is to provide evidence that hypotheses can be tested against (Lee and Lings, 2008).

Quantitative research is generally associated with positivist philosophy, but there is a distinction between data about individuals' (or organisations') attributes and data based on opinions. The latter are referred to by Saunders, Lewis and Thornhill (2016) as 'qualitative numbers' since numbers assigned to the data can be used as part of qualitative research which will be explained in the next section. It is

common for quantitative research to be associated with a deductive approach where data is used to test theory, although there may be occasions when an inductive approach is taken (where theory is developed using data). Employing two philosophical positions for data collection can be undertaken as part of a mixed methods research design which combines both quantitative and qualitative techniques. Where this is carried out over multiple phases of data collection and analysis, it is called multi-phase design (Saunders, Lewis and Thornhill, 2016), which acknowledges interactive and iterative approaches to research (e.g. qualitative followed by quantitative, followed by qualitative) as illustrated in Figure 8 below. Relevant multi-phase techniques will be addressed in section 3.6.

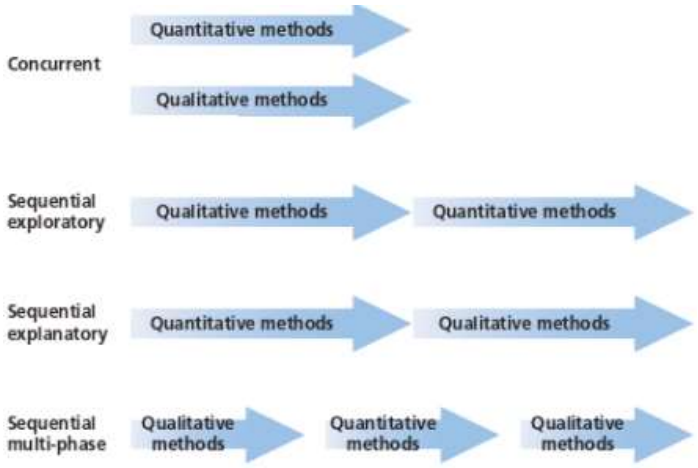


Figure 8: Mixed methods research designs
(Saunders, Lewis and Thornhill, 2016, p.170)

Advantages of quantitative research include that it lends itself well to statistical techniques, large volumes of data can be analysed quickly, and presentation styles can be more effective through graphs, tables etc. (Denscombe, 2007). There is a risk, however, that too many variables creates a data overload, and that too much emphasis is placed on statistical techniques of analysis drawing the focus away from the purpose of the research.

3.5.2 Qualitative Research

Qualitative data takes the form of words both written and spoken, or images observed. Meaning is derived from qualitative data through interpretation, making sense of socially constructed and subjective data; as such, qualitative research is generally associated with interpretivist philosophy (Saunders, Lewis and Thornhill, 2016). Interpretation of the data will likely involve coding (attaching numbers to the data), then categorising/ grouping the codes, identifying any themes that arise, and finally developing concepts (Denscombe, 2007). It is naturally more aligned to inductive logic (Lee and Lings, 2008; Silverman, 2013), where theory is created from the interpretation and analysis of the

data, albeit in practice an abductive approach to the development of theory is sometimes undertaken where both inductive and deductive reasoning occur iteratively.

The advantages of qualitative research are that they can give rise to multiple explanations of the data, potentially with richer detail to reflect the complexities of the focus of the research and there is tolerance toward any ambiguity or contradictions – conversely, this means analysis can take longer. Another disadvantage is that interpretation is linked to the researcher's own perspective (Denscombe, 2007) since the researcher is not separate to the data collection but closely involved with it. The success of the researcher in this role will rely partly on his ability to build a rapport with respondents so they allow access to data that they hold tacitly. There are also many risks involved in coding text, including oversimplification to fit a certain code and the full meaning of data being lost to fit a code or category.

3.6 Research Techniques

Multi-phase mixed methods are considered most appropriate for this research due to the relevant attributes of collecting data from both questionnaires and interviews (explained in section 3.7). It is desirable for this research to capture as many viewpoints as possible as part of the qualitative research to reduce the margin of error, particularly given the smaller body of theory available in the literature review, so a more consensus-based approach is preferred in order to capture a wide variety of experiences and identify where the overlaps exist. Two potential mixed methods based on group consensus are considered below.

3.6.1 Delphi Method

The Delphi Method was developed by the RAND Corporation in 1951 for the United States Air Force (Dalkey and Helmer, 1962). The method was devised to obtain a reliable consensus of opinion from a group of subject experts through a number of questionnaires interspersed with controlled opportunities for feedback. The Delphi Method has frequently been used in measuring the performance of construction projects in Asia through the selection of KPIs by consensus (Adnan and Morledge, 2003; Chan and Chan, 2012; Yeung et al, 2007), however is yet to be used to determine performance measures on live construction projects in the UK and many other countries and regions.

"Project Delphi" was the name of the original study at the RAND Corporation, it employed the technique that would become known as the "Delphi Method" (Dalkey and Helmer, 1962; Helmer, 1967). Project Delphi involved the repeated questioning of experts individually, avoiding direct confrontation with others in the group, this was considered more conducive to independent thought. After the first round of questioning, the experts with relatively extreme responses (compared with the

rest of the group) are asked to explain their responses through interviews, these are then summarised along with the rest of the results into a concise summary that is provided back to the expert group as part of the next round of questioning. Each round of questioning – either in person or by questionnaire – was intended to bring about a convergence in the answers, whereby the median of the responses was taken as the consensus (Helmer, 1967).

The Delphi Method is described by Linstone and Turoff (2002) as involving four distinct phases: the first explores the subject with each expert contributing their opinion; the second involves reaching an understanding on how they view the issue and in the terminology used; the third phase is used to explore any disagreements and possibly to use evaluation to measure these disagreements; the last phase is a final evaluation after initial analysis and consideration has been given to all the data. The four distinct phases provide researchers using the method with greater certainty in the number of rounds of questioning to apply. This certainty is useful in managing expectations of the high number of participants (the "Expert Group") that will be involved, not wishing them to drop out at any stage. As with the original format, to follow up any extreme results interviews follow the round one questionnaire (Helmer, 1967) as well as the round three questionnaire (Scheibe, Skutsch and Schofer, 1975).

In relation to the third and fourth phases outlined above, a study by Scheibe, Skutsch and Schofer (1975) looked at the way in which evaluation could be measured and the need to determine the degree to which each response is preferred, researching three methods as part of their study: simple ranking, a rating scale, and using pair comparisons. It was found that using a simple rating scale was the quickest and easiest to understand for participants, such as a Likert scale. The simple ranking method was considered limited as it prevented equal rankings from being assigned and forced allocating an order where it may not be desired, whereas the rating scale allowed relative importance to be assigned; pair comparisons were considered to be too time-consuming. Just as the first round requires extreme responses to be explored by interviews (Helmer, 1967), similarly the scoring awarded after the third phase should also be explored if any of the respondents submit extreme scores when compared with the rest of the group (Scheibe, Skutch and Schofer, 1975).

Interspersing iterative rounds of questionnaires with interview feedback aligns with the sequential multi-phase mixed method approach illustrated in Figure 8, where collecting quantitative data would take place in a separate phase from the collection of qualitative data. Using the Delphi Method the differences between respondents' opinions will diminish with each iteration of the procedure to reach a group consensus. Application of the Delphi Method is particularly suited where face to face contact is not possible (Donohoe and Needham, 2009) or if the problem would benefit from the contribution of subjective opinions on a collective basis (Linstone and Turoff, 2002); the method has been increasingly used for research in the construction sector where a consensus needs to be reached (Yeung et al, 2007).

The Delphi Method is an adaptable model that allows any subjective or intangible performance measure to be included and offers a tried and tested approach for determining reliable indicators of performance in relation to soft skills.

3.6.2 Nominal Group Technique

Another technique commonly used in aiding groups to make decisions is Nominal Group Technique (Foth et al, 2016) where a question is presented in person to a group, ideas are written down independently, and then these are shared as part of a facilitated group discussion of ideas which are finally voted on by group members in private. The technique emerged from Van De Ven and Delbecq's (1972) study:

> "The Nominal Group process is a structured meeting which seeks to provide an orderly procedure for obtaining qualitative information from target groups who are most closely associated with a problem area".
> (Van De Ven and Delbecq. 1972, p338)

According to the original Van de Ven and Delbecq (1972) approach, the members of the group who meet represent a sample of individuals that have the experience, expertise or perceptions that are relevant to the issue being explored. When the group is brought together they are divided into groups of eight (five to eight is accepted) either in one large room or in several separate locations, split by predetermined characteristics such as age. Problems are proposed by each participant separately, and the discussion proceeds slowly one problem at a time. Participants then propose a top 10 most critical items in a vote, ranking them by priority, after which another discussion ensues and participants are asked to re-rank their initial proposal. After this they are asked to provide a rating of 0-100 (with 100 going to the highest priority) to get an appreciation of the relative difference between the other nine. These final ratings are collated by the researcher, all of the groups then meet together and the results of the vote are shared.

There are advantages to Nominal Group Technique (NGT) in that subjects that lack consensus can be debated within the group and ideas that are more robust can emerge (Humphrey-Murto et al, 2017). It can also limit the influence of the researcher and help to pinpoint areas that warrant the greatest attention, and identify areas that should be considered for further research (Olsen, 2019). However, the technique also has significant limitations: it requires small groups of participants to meet and communicate with each other face-to-face, which would not be possible for this study given the geographic locations of the participants and the high number of participants that are envisaged. A dominant individual may also have undue influence over a group discussion in person.

3.6.3 Adoption of a consensus-based approach

Section 3.6 has set out an overview and discussion of the primary consensus-based approaches. While the approach of adopting a survey with a single questionnaire and/or single interview would provide more convenience than the multiple rounds described in the Delphi Method, each additional round allows any anomalous responses to be identified and interrogated further, thus providing greater confidence in the findings of the research (Dalkey and Helmer. 1962).

Since participants in the study will be based in different offices internationally, participation in person is not possible, therefore the Delphi Method is more appropriate than NGT which requires groups to meet in person. Linstone and Turoff (2002) describe a four-phase approach to the Delphi Method which provides certainty both to the researcher and participants about its duration, helping to ensure their sustained involvement. The third and fourth of these phases adopt a simple rating scale providing a quick and easy to understand approach for participants.

It is worth noting that a different approach with a single stage, large-scale questionnaire would require a statistical analysis of the data to determine the correlations and variations that exist within it. However, the Delphi Method as described by Helmer (1967) does not require statistical analysis to be undertaken. It could be drawn from this that the numerous rounds of voting and rating were considered to represent a comparable way of undertaking data analysis, eliminating outliers in a similar way to how a coefficient would otherwise demonstrate the variance in the data, albeit the latter could be more accurate.

3.7 Research Design

3.7.1. Interviews

The research will focus on the importance of soft skills in project environments, so interviewees' responses may not necessarily state the facts around events objectively and are more likely to represent observations from their own experience (Converse and Presser, 1986). Interviewees have flexibility in their responses, but there is potential for interviewer bias, hence the researcher must be self-aware to remain impartial. An advantage of interviews is that response rates are more likely to be higher than with questionnaires given that it is a more personable process where assurances can be given about data usage (Bell, 2005); any responses that are unclear can be immediately clarified thus improving the relevance and quality of the data. Results can be explored in greater depth by questioning further into individuals' experiences using open-ended questions, helping to confirm the reasons for trends and any anomalies in the data.

The disadvantages of interviews, however, include that they can involve a very time-consuming process: issuing a covering note, arranging a time and date to meet, seeking permission to record the interview, travel to and from a venue, typing up the transcription, obtaining verification from the interviewee that the transcription is a true record, and any revisits that might be necessary. A more accurate estimate for time taken when designing the programme could be determined through undertaking a pilot and paying for transcriptions of interview recordings given the time implication (although this may present a significant cost). Interviewees may also be unwilling to broach or record sensitive issues (Davis, Golicic and Boerstler, 2010).

3.7.2 Focus groups

Focus groups provide an efficient way to engage with a large group in person. If facilitated effectively, a dynamic group can generate new ideas and identify key themes that can further develop the responses received from a questionnaire. They allow for a breadth of different views to be raised and challenged by the group and areas of consensus to be observed, albeit sensitive facilitation is important to ensure everyone feels comfortable contributing their genuine views and that no one feels inhibited from doing so (Krueger and Casey, 2000). It is therefore important to ensure those attending have similar status and backgrounds if possible to prevent such inhibitions. The way the invitation to participate is distributed and worded also needs to be considered carefully: if it is received from a superior within the business it may be considered an instruction and contributions could show bias, therefore an independent facilitator would be recommended. A group size of six to eight people is recommended (Lee and Lings, 2008), as more than this might make interactions too complex and dominant personalities to emerge, but less than this may not elicit sufficient social interaction. A further advantage of using focus groups is that if there is a particular topic that the researcher is unfamiliar with or is perhaps hypothetical in its nature, it can help the researcher to gain familiarity with the subject without being exposed by a lack of knowledge that might enable more useful questions to be asked.

However, a significant disadvantage is that focus group members would need to be present in person in order to be facilitated effectively. A facilitated group approach in person is not practical for this research given the geographical locations of the Expert Group, therefore this method will not be used.

3.7.3 Questionnaires

An efficient way of collecting responses is through questionnaires, particularly where a large sample is required using the same set of questions. If sent electronically they are low cost without the need to be posted or completed through an interview, survey websites offer a wide variety of question formats and allow huge volumes of data to be collected very quickly, potentially from any location. Questionnaires can be an easily anonymised form of data collection, even if they are interviewer-completed by telephone (although electronic questionnaires give a better sense of anonymity). Without a time limit or an interviewer waiting for a response, electronic/email and posted questionnaires remove the time pressure that might be felt and therefore allow fuller responses to be submitted.

There are a number of disadvantages too, for instance the design of a questionnaire can be a challenging and time-consuming process to ensure that all of the data required is captured. Social desirability bias (Dillman, 2007) may be an issue in the honesty of the responses submitted and could therefore affect their validity. Response rates and the quality of responses received can also be a challenge, this can be helped to an extent by the length and simplicity of the design. Useful data can also go uncollected in the lack of face-to-face interaction, such as body language and emotional response – the lack of personalisation may put off potential respondents, particularly if it is seen to be voluntary, therefore communications need to be clear and personalised wherever possible.

3.7.4 Adopting multiple methods of data collection

The advantages and disadvantages of different qualitative research methods have been outlined in section 3.5. The results will be stronger if the findings are triangulated using multiple methods (Davis, Golicic and Boerstler, 2010), focusing on two to three primary data sources such as questionnaires followed by interviews and/or focus groups to explore the results in more depth. The conclusions drawn should ultimately be more comprehensive and convincing, giving a holistic view of the results. A multiple methods approach may also compensate for a single research method that renders poor results or has errors in its implementation. Whilst multiple qualitative methods present a number of benefits, there are challenges that could result in a mono method qualitative study being preferred: multiple method research requires more resources in terms of time, money, and skillsets (e.g. for additional resources such as introducing an independent facilitator or in upskilling the researcher to gain proficiency in understanding and implementing different research methods). However, as focus groups will not be utilised and travel costs are expected to be minimal, these challenges are not expected to present significant issues.

The data collected from the questionnaire has been extensively coded and categorised to align responses to the correct soft skills, as such it could be said this data has been treated quantitatively. The interviews that followed to explore the results in more depth reflect qualitative research methods, therefore the researchers approach is best described as a sequential multi-phase mixed methods research design.

3.7.5 Ensuring the research is Valid, Reliable and Ethical

3.7.5.1 Research Reliability

The reliability of the research refers to how consistent the research instrument is in its application (Denscombe, 2007) and if the same results would be produced if repeated on different occasions (Lee and Lings, 2008). In qualitative research, given the close involvement of the researcher in the data collection process, the reliability is also a question of whether the same results would be achieved by someone else in the researcher's role. The researcher is an employee of the organisation where the research has been conducted, this is beneficial in that the researcher knows the organisational context very well, however this status may pose a difficulty to interviews: interactions may be inhibited with more senior or more junior colleagues. Ensuring the reliability of the data collected is not straightforward and requires rigour to prevent error and bias from the researcher and participants (Saunders, Lewis and Thornhill, 2016). The research process must therefore be well prepared and thought through without incorrect assumptions, including: when and where the research is undertaken (which could affect participant bias and error); the researcher's own interpretation from personal preparation and experience (which could affect researcher error); and the clarity of the instructions provided to replicate the study (which could affect researcher bias).

Other mitigations against potential variations include: providing definitions in full of any soft skills where scoring is required so that there is no change in perceived meaning; and conducting a peer review of how interview transcripts have been interpreted to confirm the data is consistently categorised in the same way. The peer review was conducted by a colleague of the researcher who was not one of the participants in the main study.

3.7.5.2 Research Validity

The validity of the research refers to the accuracy of the data (Lee and Lings, 2008) and how appropriate it is in relation to the research objectives, i.e. has data been measured correctly and is it the right type of data for the investigation. Lincoln and Guba (1985) use the term 'credibility' rather than 'validity' as they felt qualitative researchers cannot prove they are absolutely correct, but that they should take steps to ensure data accuracy is reasonably likely (albeit without any guarantee).

Denscombe (2007) identifies three approaches to ensure validity: triangulation, respondent validation and grounded data. Triangulation will be applied through using different data sources to increase confidence; respondent validation will be applied by holding interviews with participants who return anomalous responses to ensure no inaccurate assumptions are made and that their intentions are fully understood; finally the data will be collected empirically in grounded field work. A high response rate is targeted in the empirical collection of data to ensure strong representation and high confidence in the results, this will be achieved by: conducting a pilot to identify potential issues, sending reminders before return deadlines, and engaging participants' leadership teams to introduce the researcher and add credibility/ weight to both the researcher and the research itself. A use case will also be undertaken on a live construction project which will further demonstrate that the data can be collected accurately.

3.7.5.3 Ethical Issues

There are several principles to guiding the research in an ethical way (Denscombe, 2007): firstly, the participant's interests should be protected and they should not suffer in any way as a consequence of their involvement; secondly, researchers should avoid any deception or misrepresentation; thirdly, participants should give informed consent. Each of these principles has been met; in order to progress to the data collection phase of the research, the researcher had to complete an Ethics Statement and Participant Briefing document and await approval from the university's Ethics Committee – these documents covered each of the above principles.

As part of the participant briefing information for questionnaires and requests for interviews, participants have been assured that their responses and identities are kept confidential and anonymous. In seeking the consent of the researcher's organisation and the individual participants, each has been fully informed of the purpose of the research. Permission has also been sought from each interview participant that the interview can be recorded (Tone, Skitmore and Wong, 2009). Interviewees will be provided with a copy of the transcript afterwards to ensure that they are happy with the information they have provided for the research, and that an accurate account is used in the analysis. No vulnerable groups have been included in the participant population from which the sample of experts is selected.

3.8 Application of the Delphi Method

3.8.1 Selecting the Expert Group

The Expert Group is expected to have a high level of relevant knowledge and experience of working on construction projects, therefore the study required that participants had worked in construction project

teams at a professional level for a minimum of three years in the country where they are based. All the participants selected have been drawn from the organisation's project management service line to control the 'project role' variable in the responses received. Approximately 200 potential participants have been sourced from the global business of the researcher's organisation to allow international comparisons to be drawn. The sample size aims to ensure at least 15-20 national representatives will participate from each of three different continents: the UK, USA and India offices have been selected representing Europe, North America and Asia respectively. Approval to engage with the business has been sought from the UK Managing Director of the researcher's organisation to gain access to leaders across the global business; the firm's global office base is detailed in Table 7. For ease of distribution, collection and analysis, the questionnaire is issued electronically to the selected experts.

Region	Country	City	Region	Country	City
North America	USA	Atlanta	Europe	Portugal	Lisbon
		Charlotte		Czech Republic	Prague
		Chicago		France	Paris
		Los Angeles		Germany	Braunschweig
		Nashville			Dusseldorf
		New York			Frankfurt
		San Francisco			Hamburg
Middle East	Qatar	Doha			Munich
	UAE	Abu Dhabi		Hungary	Budapest
		Dubai		Poland	Cracow
Africa	Egypt	Cairo			Gdansk
Asia Pacific	Australia	Brisbane			Katowice
		Gold Coast			Lodz
		Perth			Poznan
	China	Chengdu			Warsaw
		Guangzhou			Wroclaw
		Shanghai		Romania	Bucharest
		Tianjin		Slovakia	Bratislava
	Hong Kong	Hong Kong		Spain	Barcelona
	India	Bangalore			Madrid
		Delhi			Malaga
		Mumbai		Ukraine	Kiev
		Pune			

Table 7: International office locations of researcher's organisation

3.8.2 Delphi Method Round 1: Selecting the KPIs

During the first round of the Delphi Method a questionnaire will be distributed by electronic link within an email invitation (due to the efficient and cheap way they can be used with an internationally based Expert Group). The Expert Group will be asked to identify the five to ten soft skills that they consider most important for participants in construction project teams to work together successfully. The aims of the research, definition of a soft skill, and number of rounds of Delphi questionnaires will be explained within the invitation and Participant Briefing Information document.

Response rates will be managed through careful stakeholder management with the leadership teams where the data is being collected, mitigating one of the primary disadvantages. The questionnaires will be used for qualitative data collection in Round 1 of the Delphi Method in asking respondents to identify soft skills, and for quantitative data collection in undertaking the re-evaluation and rating exercises in Delphi Rounds 2, 3 and 4 to follow (with qualitative elements where interviews are required to understand any responses in more detail).

The soft skills identified by the experts in round one will be tabulated together with the below information to provide an indication of the relative significance of each soft skill submitted by the respondents, and allow for the identification of any new KPIs that had not been identified in the literature review.

i). **Frequency**, the total number of experts who selected the soft skill;
ii). **Percentage**, frequency as a percentage of the total number of experts who responded;
iii). **Rank**, the overall ranking of the soft skill's frequency in order (from highest to lowest).

The KPIs that have been selected by at least 50% of experts will be identified in the above tabulated results for further consideration (Chan et al, 2001; Yeung, Chan and Chan, 2009). 50% is the median point that was considered to represent the closest thing to a group consensus (Helmer, 1967).

In line with the correct application of the technique, interviews will be held with each of the experts whose responses were considered anomalous when compared with the rest of the group's responses (Helmer, 1967). The interviews will enable the researcher to fully understand the intentions behind their selections, making it possible to confirm the reasons for trends and any anomalies in the scoring whilst also potentially opening up different directions for research that were not previously considered. The terminology used to express the soft skills in round one may be very different between respondents – albeit the intentions may be the same – this will be clarified through semi-structured, one-to-one interviews asking open-ended questions that will seek to obtain greater depth in the responses than those obtained in the questionnaires. To prevent any researcher bias, the interviews will be transcribed and peer reviews of the transcriptions undertaken to determine whether others come to similar conclusions.

Questionnaires have not required translating as English is an official language in each of the countries selected. Surveys have been tested through a pilot with a small group prior to being distributed to allow any adjustments to be made.

3.8.3 Delphi Method Round 2: Re-evaluating the KPIs selected

In the second round, a questionnaire will again be distributed to respondents but this time together with a copy of the consolidated table of all the results collected from round 1. Respondents will be asked whether they would change their original choices, and to again select between five and ten soft skills that will have the greatest impact on project success. The responses from this second round will then be tabulated in the same format as in round 1 to determine whether there has been any movement, i.e. do any other soft skills now satisfy the 50% requirement and are there any ranking changes.

3.8.4 Delphi Method Round 3: Experts rate the KPIs

The soft skills from round 2 that have met the 50% minimum requirement will be presented back to the experts who will be asked to provide a rating on each KPI using a Likert Scale (Scheibe, Skutch and Schofer, 1975) whereby '1 = Not Important, 2 = Low Importance, 3 = Moderate Importance, 4 = Important and '5 = Very Important'. These results will be tabulated together with the below information:

- Mean average rating;
- Rating rank;
- KPI weighting.

A statistical analysis will be undertaken on the responses received, providing weightings to each soft skill based on the mean average ratings received. The use of weightings has been considered from the earliest applications of the Delphi Method (Helmer, 1967) to reflect the relative significance of different responses. Each soft skill weighting in this study will be calculated using an approach successfully applied in similar studies (Chan et al, 2001; Yeung at al, 2007) whereby a soft skill's mean rating is divided by the sum of all the soft skills' mean ratings.

3.8.5 Delphi Method Round 4: Re-evaluating the KPI ratings

The round 4 questionnaire will present back to participants the results from round 3: the mean ratings for each soft skill together with the expert's own ratings. The experts will be asked to reconsider whether they would adjust their ratings to provide different scores in light of the mean ratings. The composite performance index (CPI) formula (Yeung et al, 2007) will be established using the new weightings. The composite performance index is calculated through the following formula (Yeung et al, 2007):

$$CPI = \Sigma (KPI_n \times Weighting_n)$$

The Composite Performance Index (CPI) for soft skills measurement is the sum of multiplying each soft skill by its weighting. The CPI will therefore be composed of each of the soft skills identified in the Round 3 and 4 questionnaires, and assumes that each soft skill key performance indicator uses the same scoring model (e.g. a score out of 10).

3.9 Use Case: Implementation on Live Construction Projects

In order to confirm the applicability of the CPI established in section 3.8.5 to measure soft skills on construction projects, a real use case has been examined by distributing a new questionnaire to the primary project participants to assess the five soft skills determined after Delphi Round 2. The use case information will determine whether the CPI score correlates with project performance in the other hard areas such as cost, time and quality which are also assessed.

Permission has been given by an existing client of the researcher to use the soft skill KPIs identified as part of a trial assessment - confirmation of this permission is provided in an email from the Director of the client organisation in Appendix C. The client currently uses a performance measurement system comprising both hard and soft KPIs to assess all active projects on its framework on a quarterly basis, meaning that anywhere from 30-80 projects can be assessed by the system every quarter. The client has agreed to amend the soft KPIs in its real life performance measurement system as part of a "one-off" trial to include the five soft skill KPIs determined after Delphi Round 2 and corresponding assessment criteria. This provides the researcher with confirmatory use case data from up to 80 projects.

The confirmatory use case involves creating a Composite Performance Index (CPI) for the client's data on each project using the formula and weightings derived in section 3.8.5. Where the CPI is performing well, it will be determined whether the hard indicators are also performing well as would be expected (and where it is not performing well that the hard indicators are also not performing well). This will help to answer the second research objective and confirm whether the CPI works in practice in assessing the soft skills of project participants on construction projects.

3.10 Summary of the Chapter

This chapter has described that the research has a social constructionist ontology, since it considers reality to exist within individuals and groups in different contexts through their interactions with each other through the medium of construction projects. It primarily adopts an interpretivist philosophy,

which is evident in the research epistemology where acceptable knowledge includes individuals' perceptions and experiences. The methodology employs a multi-phase mixed methods approach, collecting both qualitative and quantitative data through the iterative consensus-building research technique known as the Delphi Method. The Delphi Method has enabled a composite performance index for soft skills measurement to be derived for construction projects.

It has been recognised that the quality of data collected through iterative surveys and interviews will be highly dependent on the Expert Group selected to participate, as they not only need the right experience but also the necessary commitment to engage in the four Delphi survey rounds and interviews proposed. Any drop-outs or delays would be very undesirable, hence mitigating actions are set out in the Risk Assessment in Appendix B to address this. Finally, a live use case project will be used to trial the composite performance index to confirm that it can be successfully applied. A methodological framework diagram summarising this chapter is shown in Figure 9 overleaf.

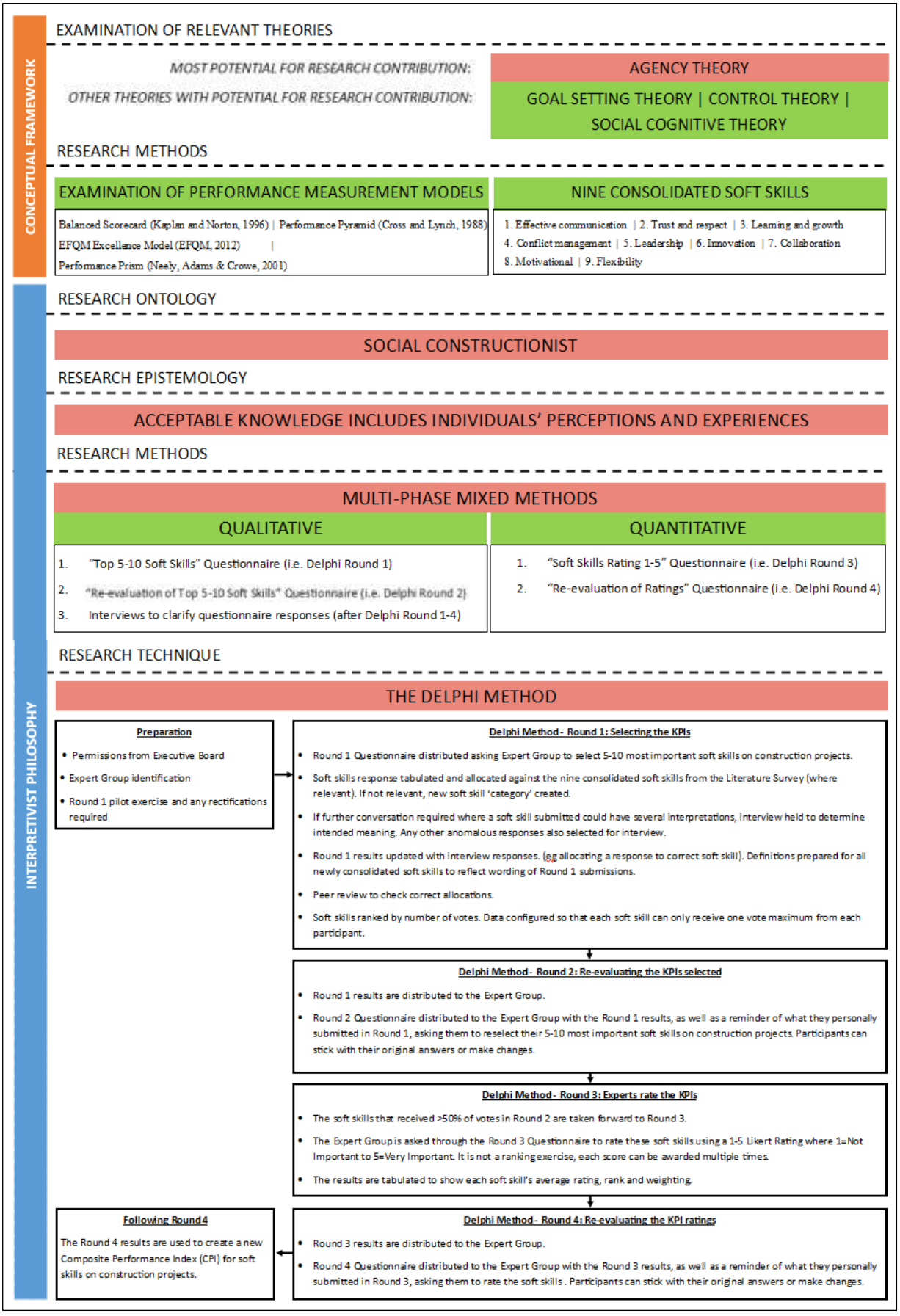


Figure 9: Methodological Framework

4.0 Results and Data

4.1 Introduction to the Chapter

In the previous chapter the researcher set out the process by which the empirical evidence would be obtained. This chapter gives a description of the process that was actually used and the evidence collected in achieving the aims of the study (to identify the soft skills considered most important when working as part of a project team in the construction industry and to create a corresponding model to measure teams against). Explanations are provided for any deviations from what was previously set out.

4.2 Permission and Support

It was important to first seek approval from the researcher's organisation to engage with employees in the countries required for circulating the questionnaire. There were significant sensitivities associated with the wide distribution of surveys at the time of the research given recent restructures in the business and changes in the Main Board of the company, hence getting the necessary permissions was crucial – this would prove to be very worthwhile once the Covid-19 pandemic took hold. Only a month into the data collection process, the entire global business was instructed to work from home and many company-wide communications were issued by the Main Board and HR in a short space of time. If permissions had not been sought early and from the right people, there could have been significant delays to being able to use the researcher's organisation as the basis for the data collection phase.

In order for data collection to commence a number of approvals needed to be obtained, therefore a detailed stakeholder management process began. This started with a briefing to the UK Managing Director both in person and in writing who in turn sought approval from the Global HR Director (who the researcher was also asked to brief in writing) before being allowed to approach the individual Country Directors. After receiving the Global HR Director's support, a covering email was sent to the individual Country Directors outlining corporate support for the research. This allowed the researcher to liaise directly with the relevant country leaders who held the roles of "CEO Americas", "Managing Director India", and "UK Head of Project and Programme Management" (the latter being designated responsibility for liaising with the researcher by the UK Managing Director).

Approvals from each of the firm's leaders above allowed the researcher access to create the Expert Group. Engaging with the firm's leaders directly also helped to ensure a high return rate through: 1) supplementary communications they provided adding their support after my questionnaires were issued; and 2) helping to 'chase' respondents if any had been non-responsive or slow to respond. All of the

relevant correspondence emails used to seek and gain permissions – including permissions from country leaders in the UK, USA and India – are included in Appendix D. The messaging alongside each of the questionnaires when distributed were planned carefully to get the best response possible, e.g. through also engaging with the most senior tier of leaders responsible for project management services in a country before surveys were distributed, so line managers could chase and support their teams where relevant.

4.3 Identification of the Expert Group

The Expert Group was determined through a classification system, isolating the following variables:

- Service discipline: Only project management personnel were included;
- Experience and professional background: Only project management personnel with a minimum of three years' experience within the country where they were based were included;
- Seniority: Project management personnel working at senior manager grade or higher were included.

There is a significant difference in the number of project management professionals in each of the countries selected for the study, as the company also delivers a number of other services globally (e.g. quantity surveying, building surveying, management consulting) and each country will have a different service focus depending on their market. The approach to selecting the relevant people in the Expert Group was discussed with each Country Leader resulting in two different methods to selecting them: 1) Country Leaders pre-selecting participants based on the Expert Group criteria and mandating that they take part; 2) Distributing the Round 1 questionnaire to everyone matching the Expert Group criteria and giving recipients the option to take part based on the information provided in the Participant Briefing Information pack. The number of participants for the latter would only be known after the questionnaire was issued and the deadline reached.

The UK has by far the largest population of project managers globally in the researcher's organisation that fit the Expert Group criteria (168 in total), and the UK Head of Project and Programme Management asked that the second approach be taken, including all 168 UK-based staff in the Round 1 questionnaire. On reviewing the responses to the Round 1 questionnaire, 56 people accepted this request to participate and submitted a completed questionnaire (33% of the population). The front sheet of the questionnaire included questions to classify Expert Group members, so that only their responses could be carried forward when received and filtered accordingly.

In India and the USA the population of project managers in the researcher's organisation is much smaller than in the UK, so each country's Managing Director and CEO respectively chose to adopt the

first method to select the Expert Group. This resulted in 16 staff from India and 17 staff from the USA being selected for the study. These individuals were instructed that they would be participating for the duration of the study and it would not be optional to take part in Round 1, as in the UK.

The Expert Group therefore consisted of 89 people at Round 1 of the Delphi study: 56 from the UK, 17 from the USA, and 16 from India. Given the smaller number of participants from India and the USA, it was imperative that there were few if any 'drop offs' throughout the course of the four rounds of the Delphi study from these countries. It was clear that communication and participant engagement would therefore play an important part in the study.

4.4 Delphi Round 1

4.4.1 Primary data collection: Questionnaire

4.4.1.1 Constructing the questionnaire

The first page of the questionnaire contained the Participant Consent Form in line with the ethics statement provided to the researcher's university, to reduce the administration for both the participant and the researcher rather than requesting that participants complete a separate form. All questionnaires were issued electronically using the online tool 'Survey Monkey' to allow rapid responses through each of the four rounds of the Delphi method, via a link on an email to the relevant participants. Three separate emails were issued to each of the three countries participants to make the request feel more personal (Appendix E) and aim to get a higher response rate; these emails also included the Participant Briefing Information (Appendix F) as an attachment.

The second page of the questionnaire contained questions to classify respondents in line with the Expert Group criteria and office/region of origin to allow responses to be filtered or configured if required to identify trends (e.g. nationality, office location, years of experience in the construction industry, and years of experience in the country where they are based).

The Round 1 questionnaire asked only one question: "Please list below the 5-10 soft skills that you consider to be of greatest importance when working as part of a project team in the construction industry. *Note: Soft skills are the personal attributes, behavioural and interpersonal skills required to be successful in a particular role*".

4.4.1.2 Conducting the pilot

For the pilot exercise, the researcher issued the Round 1 questionnaire to six colleagues in his immediate team who would not be part of the Expert Group when finally distributed. Two important lessons were learned from this exercise:

i). One of the respondents provided answers that appeared task specific; when asked why this was, he replied that he had understood the phrase "in a particular role" in the question note to mean his particular role internally within the researcher's organisation, i.e. not when working externally in a project environment. The note in the question was subsequently amended to read: "*Note: Soft skills are the personal attributes, behavioural and interpersonal skills required to be successful in a particular role* ***within a project team****",* boldening the additional text for emphasis on the particular role that should be considered in the context of the question.

ii). The deadline for responses was stated as three days after the date the questionnaire was issued, but it was only once the deadline had passed and a chase email was issued that all the responses came back. This was for no other reason than it had been forgotten, and shortly after the replies were received very quickly. This experience was used to build additional time into the data collection timetable, planning the response deadline request to be a few days before I actually needed it, to allow time to chase either in person or with support from the Country Directors.

4.4.1.3 Delphi Round 1 Responses

The number of responses from each country are illustrated below:

Country	No. Delphi Round 1 Questionnaire Recipients	No. Delphi Round 1 Responses (the 'Expert Group')	Response Rate
UK	168	56	N/A
India	16	16	100%
USA	17	17	100%
Total	**201**	**89**	**N/A**

Table 8: Delphi Round 1 Response Rate

The variation in terminology by the 89 respondents to express the 5-10 soft skills they proposed meant that a consolidation exercise needed to be conducted in presenting the results from the Round 1 questionnaire. When reviewing each of the responses individually, each suggested soft skill was aligned

to one of the nine consolidated soft skills from the literature review. If they could not be aligned to one of these nine soft skills and it was clear there was no overlap, a new soft skill category was created. After reviewing all of the responses, 11 new soft skill categories had been created, meaning there were 20 soft skills in all to align the responses against as illustrated in Table 9. Each of the soft skills were then colour coded as follows (see Appendix G):

- GREEN: Response aligns to either: a) one of the nine Consolidated Soft Skills from the Literature Survey; or b) one of the 11 New Soft Skill Trends that emerged from this Round 1 questionnaire.
- YELLOW: Response requires further consideration before aligning to either a) one of the nine Consolidated Soft Skills from the Literature Survey, or b) one of the 11 New Soft Skill Trends that emerged from this Round 1 questionnaire. This will likely require an interview with the respondent to understand the meaning intended when submitting the response.
- RED: Response is not considered a soft skill as defined in the questionnaire.

Consolidated Soft Skills from Literature Survey			New Soft Skills trends from Delphi Round 1		
No.	**Key Word**	**Soft Skill Brief Description**	**No.**	**Key Word**	**Soft Skill Brief Description**
1	Communication	**1. Effective Communication** Appropriate engagement with relevant stakeholders at all levels, both written and verbal.	10	Enthusiasm	**10 Enthusiasm and proactiveness** Demonstrate a strong work ethic and an attitude to persevere, drive the project forward and add value.
2	Trust	**2. Trust and Respect** Seeks to build mutual trust and respect, being open with project participants.	11	Resilience	**11. Resilience** Ability to manage stress and show a 'thick skin'.
3	Learning	**3. Learning and Growth** Show a willingness toward development of their own and team's capabilities.	12	Empathetic	**12. Empathetic** Shows compassion, emotional intelligence and an understanding of others' roles and needs.
4	Conflict Mgmt	**4. Conflict Management and Negotiation** Ability to handle complaints or manage conflicts in the team as they arise.	13	Listening	**13. Active listening** Listen to understand and respond appropriately, interpret what has been said, and demonstrate a desire to give and seek feedback.
5	Leadership	**5. Leadership** Demonstrates mentoring skills, shows decisiveness and takes accountability.	14	Reliability	**14. Reliability** Consistently dependable and punctual.
6	Innovation	**6. Innovation** Willingness to consider/ implement new ideas and continuously improve.	15	Delegation	**15. Delegation and empowerment** Appreciate own limitations and delegate effectively with appropriate personnel.
7	Collaboration	**7. Collaboration** Demonstrating teamworking ethic and building positive working relationships.	16	Composure	**16. Composure** Ability to stay calm, patient and tolerate delays / problems without showing anxiety or frustration.
8	Motivational	**8. Motivational** Ability to exhibit positivity, assertiveness, seek compromise, get the best out of the team and encourage others to have the bravery to speak openly.	17	Confidence	**17. Confidence** Clarity of purpose in the goal and vision for the project, having faith in own ability and judgement, exuding confidence and inspiring it in others.
9	Flexibility	**9. Flexibility** Ability to problem solve and adaptability to new and different ways of working.	18	Self-organised	**18. Well-organised** Able to show strong self-discipline and personal organisation to coordinate tasks and manage own time effectively.
			19	Personability	**19. Personability** Comes across as personable and good humoured, giving a sense of being approachable and sociable.
			20	Detail-oriented	**20. Detail-oriented** Thoroughness, diligence and attention to detail when required.

Table 9: Preliminary soft skills and definitions derived following Round 1 of Delphi Method

The soft skill that was assigned to each individual response is indicated in an adjacent column for transparency. These results are shown in full in Appendix G. Where a participant had two or more responses marked in yellow for further clarification, the participant was asked to take part in an interview to understand their responses more fully. These participants are indicated with their text displayed in red, i.e. 4 of 16 from India, 13 of 56 from UK, and 4 of 17 from USA, so 21 respondents were selected for interview after Round 1. All 4 potential interviewees from India accepted an interview request, all but one from the USA accepted (the individual who did not had been put on furlough leave shortly after completing the questionnaire due to the coronavirus pandemic), and in the UK all but two accepted an interview due to having been put on furlough leave during the coronavirus pandemic.

4.4.2 Primary Data Collection: Interviews

4.4.2.1 Establishing the interview format

Participant responses were clarified where required through semi-structured, one-to-one interviews asking open-ended questions to better understand the respondent's intentions. All interviews from Round 1 took place through Microsoft Teams video call software. Questions would typically include the interviewee being asked to explain their responses and what they had meant by particular responses, however where it was clear they were struggling to articulate a meaning, the interviewer asked contextual questions to instigate a fuller response so it was clear what the intention had been.

While the coronavirus pandemic meant that meeting people in person was no longer permitted due to corporate protocols introduced at the time, it did mean that the whole business almost instantly had to familiarise itself with how to use video calling software – this was very beneficial to the researcher, especially when meeting with the India and USA based participants. It reduced travel time between meetings, increasing participants' availability and willingness to meet 'virtually' – also reducing the costs the researcher could have incurred in traveling to meet them.

4.4.2.2 Scheduling the interviews

A meeting duration of 15 minutes per response needing to be queried was requested, so if two responses were being queried the meeting duration requested would be 30 minutes (three responses 45 minutes, four responses an hour). Most interviews were 30 minutes in duration, only one participant had three responses to query and one participant had four responses to query. All participants were very accommodating in offering their time to meet. In total 11 participants were interviewed from the UK, four from India, and three from the USA.

4.4.2.3 Transcribing the interviews

Permission was requested from each participant to record the interviews, which they each accepted. Once an interview is recorded within Microsoft Teams, it is uploaded and stored onto the Microsoft Streams website through which it is possible to create a caption file consisting of the entire transcription of the interview. It produces this file in ".vtt" format which is illegible and would normally require specific software or an online paid subscription service to translate into a more commonly used file type for legibility in Word. Fortunately Microsoft Streams created a ".vtt to text" converter for free, the researcher was able to copy and paste the unformatted transcription text (i.e. no punctuation or paragraph breaks) to be manually formatted by the researcher for improved legibility. This provided an inexpensive approach, albeit much more time consuming than simply sending a link to the Microsoft Stream site to a professional transcriber to create the transcription on the researcher's behalf. All round one transcriptions are included in Appendix H.

4.4.2.4 Peer review

Each transcription was reviewed to make a judgement as to which of the 20 consolidated soft skills the response queried best aligned to, whether a new soft skill category needed to be created, or whether it was in fact a soft skill at all. To prevent any bias in this judgement, a colleague from within the researcher's team was asked to provide a peer review and independent review of each transcription and make the same judgement as the researcher. The researcher's peer agreed with each of the judgements made by the researcher with the exception of two, the interviews 15 and 17.

In some instances two or more variations in wording of the same soft skill were stated by a participant, so to prevent double counting the responses were further configured to ensure that each participant could only state a (variation in wording of a) soft skill once. This was particularly important when adding together the number of 'votes' received for each of the 20 consolidated soft skills.

In both interview 15 and 17 there was disagreement between the researcher and the researcher's peer on which of two different soft skills best aligned to the description of the soft skills stated. However, in both interviews the selection of one of the soft skills would have 'double counted' with a soft skill already selected in the participant's questionnaire submission so would have been 'expunged' anyway to only count for a single selection – therefore the approach adopted was to take forward the alternative soft skill not already stated within the participant's submission.

4.4.2.5 Anonymising participants

All participants are identified simply by a number preceded by the first two letters of their country (e.g. UK1, IN1, US1), removing any reference that might make it possible to identify a contributor to this research study.

4.4.3 Consolidated Round 1 Results

After consolidating the findings from the interviews together with the results already configured with the changes required, table 10 reflects the updated results for Delphi Round 1. The definitions of the 20 consolidated soft skills were also amended slightly to reflect the interview feedback, the updated version is provided in Table 11.

Consolidated Results from all responses across UK/USA/India	Rank	Frequency (No. votes)	Percentage of Respondents
Effective Communication	1	79	88.76%
Flexibility	2	49	55.06%
Collaboration	3	49	55.06%
Leadership	4	46	51.69%
Trust & Respect	5	37	41.57%
Empathetic	6	35	39.33%
Conflict Management & Negotiation	7	30	33.71%
Active Listening	8	29	32.58%
Personability	9	27	30.34%
Motivational	10	27	30.34%
Enthusiasm & Proactiveness	11	26	29.21%
Self-organised	12	25	28.09%
Confidence	13	16	17.98%
Reliability	14	15	16.85%
Innovation	15	10	11.24%
Learning & Growth	16	8	8.99%
Delegation & Empowerment	17	8	8.99%
Composure	18	8	8.99%
Detail-oriented	19	8	8.99%
Resilience	20	6	6.74%

Table 10: Consolidated Delphi Round 1 Results

After Round 1 it can be seen that four soft skills were proposed by >50% of participants.

Consolidated Soft Skills from Literature Survey			New Soft Skills trends from Delphi Round 1		
No.	**Key Word**	**Soft Skill Brief Description**	**No.**	**Key Word**	**Soft Skill Brief Description**
1	**Communication**	**1. Effective Communication** Appropriate engagement with relevant stakeholders at all levels including written, verbal and body language (including presentation).	**10**	**Enthusiasm**	**10 Enthusiasm and proactiveness** Demonstrate a strong work ethic and an attitude to persevere, drive the project forward and add value.
2	**Trust**	**2. Trust and Respect** Seeks to build mutual trust and respect, being open with project participants.	**11**	**Resilience**	**11. Resilience** Ability to manage stress and show a 'thick skin'.
3	**Learning**	**3. Learning and Growth** Show a willingness toward development of their own and team's capabilities.	**12**	**Empathetic**	**12. Empathetic** Shows compassion, emotional intelligence and an appreciation of others' roles and needs.
4	**Conflict Mgmt**	**4. Conflict Management and Negotiation** Ability to handle complaints or manage conflicts in the team as they arise.	**13**	**Listening**	**13. Active listening** Listen to understand and respond appropriately, interpret what has been said, and demonstrate a desire to give and seek feedback.
5	**Leadership**	**5. Leadership** Demonstrates mentoring skills, shows decisiveness and takes accountability.	**14**	**Reliability**	**14. Reliability** Consistently dependable and punctual.
6	**Innovation**	**6. Innovation** Willingness to consider/ implement new ideas and continuously improve.	**15**	**Delegation**	**15. Delegation and empowerment** Appreciate own limitations and delegate effectively with appropriate personnel.
7	**Collaboration**	**7. Collaboration** Demonstrating teamworking ethic and building positive working relationships.	**16**	**Composure**	**16. Composure** Ability to stay calm, patient and tolerate delays / problems without showing anxiety or frustration.
8	**Motivational**	**8. Motivational** Ability to exhibit positivity, assertiveness, seek compromise, get the best out of the team and encourage others to have the bravery to speak openly.	**17**	**Confidence**	**17. Confidence** Clarity of purpose in the goal and vision for the project, having faith in own ability and judgement, exuding confidence and inspiring it in others.
9	**Flexibility**	**9. Flexibility** Ability to problem solve and adaptability to new and different ways of working.	**18**	**Self-organised**	**18. Self-organised** Able to show strong self-discipline and personal organisation to manage own time and coordinate/ prioritise tasks effectively.
			19	**Personability**	**19. Personability** Comes across as personable and good humoured, giving a sense of being approachable and sociable.
			20	**Detail-oriented**	**20. Detail-oriented** Thoroughness, diligence and attention to detail when required.

Table 11: Final soft skills and definitions derived following Round 1 of Delphi Method

4.5 Delphi Round 2

4.5.1 Primary data collection: Questionnaire

4.5.1.1 Constructing the questionnaire

A personalised individual email was sent to all 89 respondents of the first questionnaire in round two. This email contained the actual soft skills that were suggested by the respondent in their first submission, together with the consolidated results shown in Table 10 and corresponding definitions in Table 11. An example email is shown in Appendix I with the questionnaire that was issued. The questionnaire stated:

"This survey follows the Round 1 questionnaire two months ago where you provided a list of the 5-10 soft skills that you considered most important when working as part of a project team in the construction

industry. The consolidated results from all responses across the UK, USA and India businesses have been provided to you in an email showing the 20 soft skills suggested in total, along with the corresponding definitions. Please take a couple of minutes to read through this list and the corresponding definitions sheet. In the boxes below, please reconsider whether you would change any of the soft skills you originally submitted in Round 1, and list a minimum of 5 to a maximum of 10 soft skills that you feel are most important when working as part of a project team in the construction industry".

4.5.1.2 Delphi Round 2 Responses

The number of responses from each country are illustrated below:

Country	No. Delphi Round 1 Questionnaire Recipients, i.e. the 'Expert Group' (excluding furlough / redundancy / maternity leave)	No. Delphi Round 2 Reponses	Response Rate compared to Round 1 (excluding furlough / redundancy / maternity leave)
UK	56 (52)	42	75% (81%)
India	16 (15)	13	81% (87%)
USA	17 (15)	14	82% (93%)
Total	**89 (82)**	**69**	**78% (84%)**

Table 12: Delphi Round 2 Response Rate

The reduction in responses from 89 to 69 is attributable to a number of causes, i.e. furlough leave during the Covid-19 pandemic (four participants), redundancy (two participants), maternity leave (one participant) as well as those who simply did not respond by the deadline (13 participants). It was therefore possible for the number to improve in the remaining two rounds assuming no further redundancies/furlough, some employees returning to work from furlough absence/ maternity leave, and an overall improvement in responsiveness. These results are shown in Appendix J.

4.5.2 Consolidated Round 2 Results

Consolidated across UK/USA/India	Rank	Frequency (No. votes)	Percentage of Respondents
Effective Communication	**1**	**65**	**94.20%**
Leadership	**2**	**49**	**71.01%**
Collaboration	**3**	**48**	**69.57%**
Flexibility	**4**	**43**	**62.32%**
Trust & Respect	**5**	**41**	**59.42%**
Conflict Management & Negotiation	**6**	31	**44.93%**
Active Listening	**7**	31	**44.93%**
Empathetic	**8**	26	**37.68%**
Self-organised	**9**	26	**37.68%**
Reliability	**10**	24	**34.78%**
Motivational	**11**	22	**31.88%**
Personability	**12**	20	**28.99%**
Enthusiasm & Proactiveness	**13**	18	**26.09%**
Confidence	**14**	18	**26.09%**
Composure	**15**	12	**17.39%**
Detail-oriented	**16**	12	**17.39%**
Learning & Growth	**17**	11	**15.94%**
Resilience	**18**	11	**15.94%**
Delegation & Empowerment	**19**	10	**14.49%**
Innovation	**20**	7	**10.14%**

Table 13: Consolidated Delphi Round 2 Results

After Round 2 it can be seen that five soft skills are now proposed by >50% of participants: Effective Communication, Leadership, Collaboration, Flexibility, and 'Trust and Respect'. These five soft skills were carried forward into Delphi Round 3.

4.6 Delphi Round 3

4.6.1 Primary data collection: Questionnaire

4.6.1.1 Constructing the questionnaire

A covering email was sent to the 89 participants that made up the Expert Group in Round 1, thanking them for their continued involvement and providing words of encouragement and motivation to stay involved. Three separate emails were drafted (one for each country), by doing this I was able to show all the names of those in the Expert Group from each country within the email address bar, helping to apply some peer pressure to complete the survey on time as they were names they would be familiar with. An example email is shown in Appendix K together with the questionnaire that was issued. The questionnaire stated:

"Please provide a rating score from 1-5 on the following soft skills and their definitions based on how important you feel they are when working as part of a project team in the construction industry. The rating scores 1-5 are as follows: 5 = Very important, 4 = Important, 3 = Moderate importance, 2 = Low importance, 1 = Not important. Note: You can award each score to more than one soft skill if you wish, or not at all.

a) Effective Communication: Appropriate engagement with relevant stakeholders at all levels including written, verbal and body language (including presentation).
b) Leadership: Demonstrates mentoring skills, shows decisiveness and takes accountability.
c) Collaboration: Demonstrates teamworking ethic and building positive working relationships.
d) Flexibility: Ability to problem solve and adaptability to new and different ways of working.
e) Trust & Respect: Seeks to build mutual trust and respect, being open with project participants."

4.6.1.2 Conducting the pilot

For the pilot exercise, the researcher issued the Round 3 questionnaire to six colleagues in his immediate team who would not be part of the Expert Group when finally distributed. The researcher had placed particular emphasis in the questionnaire to explain that participants were to apply a *rating* of 1-5, not a *ranking* of 1-5. All responses answered this element correctly, replying with a '4' or '5' to each of the soft skills reflecting a strong level of agreement with the five soft skills carried forward from Round 2. The lesson learned from the Round 1 pilot in phrasing the question to reflect participants'' *project team role* was also applied to this question, so there were no errors from this either.

4.6.1.3 Delphi Round 3 Responses

The number of responses from each country are illustrated below:

Country	No. Delphi Round 1 Questionnaire Recipients, i.e. the 'Expert Group' (excluding furlough/ redundancy/ maternity leave)	No. Delphi Round 3 Responses	Response Rate compared to Round 1 (excluding furlough/ redundancy/ maternity leave)
UK	56 (52)	44	79% (85%)
India	16 (15)	14	88% (93%)
USA	17 (15)	14	82% (93%)
Total	**89 (82)**	**72**	**81% (88%)**

Table 14: Delphi Round 3 Response Rate

The responses summarised in Table 14 are shown in full in Appendix L. Where a participant submitted "extreme responses", i.e. a score that was submitted by <5% of the group response (less than 4 people for a group of 72), the participant was asked to take part in an interview to understand the reasons behind their scoring. This resulted in selecting 1 of 14 from India, 6 of 44 from UK, and 1 of 14 from USA, so 8 respondents were selected for interview after Round 3. Only one participant – UK47 – was unavailable for interview due to maternity leave.

4.6.2 Primary Data Collection: Interviews

All interviews from Round 3 took place via telephone; after several months of working from home owing to the Covid-19 pandemic, there was a clear sense of fatigue from Microsoft Teams meetings across the UK business with calendars getting booked for the entire working day several weeks in advance. Meeting by telephone became the preference as it meant meeting requests could be sent to UK-based participants (5 of the 7 interviews) to call back in a timeframe when they were available, and specific timeframes to call back offered to the two participants based in the USA and India respectively. Participant responses were clarified through semi-structured, one-to-one interviews asking open-ended questions to better understand the respondent's intentions – this occasionally resulted in the participant changing their scoring once they talked it through, or through scoring dispassionately if there was something that caused them to score in a particular way when they completed the questionnaire. The interview transcripts are in Appendix M.

4.6.3 Consolidated Round 3 Results

After consolidating any changes in scoring from the interviews together with the results already configured, the following table reflects the updated results for Delphi Round 3.

Soft Skill	Average Rating (1-5)
a) Effective Communication	4.92
b) Leadership	4.26
c) Collaboration	4.63
d) Flexibility	4.26
e) Trust and Respect	4.58

Table 15: Consolidated Delphi Round 3 Results

4.7 Delphi Round 4

4.7.1 Primary data collection: Questionnaire

4.7.1.1 Constructing the questionnaire

A personalised individual email was sent to all 72 respondents to the third questionnaire in round four. This email contained the actual ratings that were given by the respondent in their submission, together with the consolidated results shown in Table 15. An example email is shown in Appendix N with the questionnaire that was issued. The questionnaire stated:

"This survey follows the Round 3 questionnaire where you provided a rating score from 1-5 on the following soft skills and their definitions, based on how important you feel they are when working as part of a project team in the construction industry. The consolidated average scores from all responses across the UK, USA and India businesses have been provided to you in an email. Please take a moment to review these scores. In the drop-down lists below, please reconsider whether you would change any of the ratings you previously provided in Round 3, and again enter a rating score of 1-5 for each soft skill using the following definitions: 5 = Very important; 4 = Important; 3 = Moderate importance; 2 = Low importance; 1 = Not important. Note: You can award each score to more than one soft skill if you wish, or not at all."

4.7.1.2 Delphi Round 4 Responses

The number of responses from each country are illustrated below:

Country	No. Delphi Round 1 Questionnaire Recipients, i.e. the 'Expert Group' (excluding furlough / redundancy / maternity leave)	No. Delphi Round 4 Reponses	Response Rate compared to Round 1 (excluding furlough / redundancy / maternity leave)
UK	56 (52)	39	70% (75%)
India	16 (15)	14	88% (93%)
USA	17 (15)	13	76% (87%)
Total	**89 (82)**	**66**	**74% (80%)**

Table 16: Delphi Round 4 Response Rate

The number of participants to have completed all four rounds of the Delphi method is 66, representing 74% of the original Expert Group. However, when considering the number of people who were not able to respond due to furlough leave, redundancy or maternity leave, the final response rate is higher at 80%.

4.7.2 Primary Data Collection: Interviews

All interviews from Round 4 took place via telephone for the same reasons as in Round 3. Table 15 shows that the average ratings shared with the Expert Group in round 4 were all between '4' (out of 5) and '5' (out of 5). It was expected that anyone who changed their scoring in round 4 that originally provided a rating of '4' or less in round 3 would only be increasing their score, to align with the majority. This was the case for most changes made, and any decreases in scoring were generally from '5' to '4'. However, there were five participants who chose to reduce their scores despite seeing that the average scores were higher than they had originally rated them. These five participants were selected for a short interview to explore their thoughts further. Appendix O shows the analysis used to select these interviewees.

Participant responses were clarified through semi-structured, one-to-one interviews asking open-ended questions to better understand the respondent's intentions – this resulted in one participant changing their scoring once they talked it through, away from the context of the time they originally completed it, however the other participants chose to stick with their scores. The interview transcripts are in Appendix P.

4.7.3 Consolidated Round 4 Results

Soft Skill	Round 3 Average Rating	Round 4 Average Rating	Difference
a) Effective Communication	4.92	4.95	**+0.03**
b) Leadership	4.26	4.44	**+0.18**
c) Collaboration	4.63	4.65	**+0.02**
d) Flexibility	4.26	4.30	**+0.04**
e) Trust and Respect	4.58	4.64	**+0.06**

Table 17: Consolidated Delphi Round 4 Results

The Composite Performance Index (CPI) for measuring soft skills performance on construction projects can therefore be determined following the Round 4 results as follows:

Soft Skill	**Average Rating**	Weighting
a) Effective Communication	4.95	0.216
b) Leadership	4.44	0.193
c) Collaboration	4.65	0.202
d) Flexibility	4.30	0.187
e) Trust and Respect	4.64	0.202
	Total	1

Table 18: Soft Skill CPI Weightings

CPI = Σ (KPI_n x $Weighting_n$)

= Effective Communication x 0.216
+ Leadership x 0.193
+ Collaboration x 0.202
+ Flexibility x 0.187
+ Trust and Respect x 0.202

Figure 10: Composite Performance Index (CPI) Formula

4.8 Summary of the Chapter

A mix of qualitative and quantitative data was collected following the research undertaken using both questionnaires and interviews. Data collection was structured to reflect the progression through each of the four rounds of the Delphi Method, culminating in establishing a Composite Performance Index from the data. The primary difficulties encountered stemmed from the Covid-19 pandemic which resulted in the organisation's entire global workforce being told to work from home for an extended period.

Navigating survey requests alongside multiple global communications from the business' leaders was challenging, requiring a change management approach to engaging the right stakeholders in the organisation which proved essential to ensuring continued 'buy-in' from the organisation and the Expert Group. Continuous, meaningful engagement with the Expert Group helped to motivate them to stay with the study through all four rounds, evident in the 80% response rate (Table 16) from available participants (given the dropouts from furlough leave and redundancy across the business during the data

collection period). It was essential to take advantage of video conferencing software, primarily Microsoft Teams, which the whole business had to quickly familiarise itself for business continuity.

5. Contribution to Professional Practice

5.1 Introduction to the Chapter

In this chapter the significance and implications of the findings from the Results and Data chapter will initially be discussed and linked back to the research objectives that were first set out in this study. The findings will be compared against existing research from the Literature Review chapter to look at where there may be any contrasts and how these can be explained.

The soft skills performance index represents a significant contribution to professional practice, its potential applications will be set out in this chapter. As a reminder, the three objectives of this research study are as follows:

Objective 1: **Develop a performance index that can be used to measure the performance of project participants' soft skills in the construction sector.**
The literature review has identified that there is a clear need for such an index to be available that will allow project participants' soft skills performance to be monitored and compared against participants in other project teams, and ultimately to provide greater certainty of achieving the project's intended outcomes.

Objective 2: **Apply the new soft skills performance index to a live use case in the construction industry to confirm if it can be used successfully in the sector.**
The objective will test whether the soft skills index will work in practice, this will establish a significant contribution of the research to professional practice.

Objective 3: **Reflect on the theories relevant to the study and establish where the most significant contribution can be made.**
The literature review recognised four theories relevant to the study that each have potential for further exploration to determine where there are opportunities to make a significant theoretical contribution.

Objectives 1 and 2 are both central to this chapter, i.e. the contribution that this study will make to professional practice. Objective 3 will be discussed in the next chapter.

5.2 Achievement of Objective 1: Development of a soft skills performance index on projects

5.2.1 Delphi Round 1 – Discussion of findings

The performance measurement models reviewed in Chapter 2 allowed nine soft skills performance measures to be consolidated: effective communication, trust and respect, learning and growth, conflict management, leadership, innovation, collaboration, motivational, and flexibility. The expectation from the literature review had been that these nine soft skills would prove to be the most significant when asking the Expert Group which soft skills they considered to be of greatest importance when working as part of a project team in the construction industry. Table 19 below shows the consolidated results after Delphi Round 1 from the 89 respondents in the Expert Group, with these nine soft skills identified in the literature review highlighted and asterisked.

Consolidated Results from all responses across UK/USA/India	Rank	Frequency (No. votes)	Percentage of Respondents
Effective Communication*	1	79	88.76%
Flexibility*	2	49	55.06%
Collaboration*	3	49	55.06%
Leadership*	4	46	51.69%
Trust & Respect*	5	37	41.57%
Empathetic	6	35	39.33%
Conflict Management & Negotiation*	7	30	33.71%
Active Listening	8	29	32.58%
Personability	9	27	30.34%
Motivational*	10	27	30.34%
Enthusiasm & Proactiveness	11	26	29.21%
Self-organised	12	25	28.09%
Confidence	13	16	17.98%
Reliability	14	15	16.85%
Innovation*	15	10	11.24%
Learning & Growth*	16	8	8.99%
Delegation & Empowerment	17	8	8.99%
Composure	18	8	8.99%
Detail-oriented	19	8	8.99%
Resilience	20	6	6.74%

Table 19: Asterisked Delphi Round 1 Results

Five of the nine soft skills identified in the literature review – effective communication, flexibility, collaboration, leadership, and trust and respect – form the top five most popular responses after Delphi Round 1, showing a strong alignment with the academic literature. Effective communication received by far the broadest agreement with 89% of respondents selecting it, over 30% more than the second ranked soft skill. However, four of the nine soft skills identified in the literature review fall further down the rankings, most notably 'innovation' and 'learning and growth' which fell in 15th and 16th place

respectively. In total, 11 new soft skill categories were created from the responses received, creating 20 in total. This suggests that while there is strong agreement with the academic literature on the top five soft skills identified, it has not yet acknowledged the wider range of soft skills that project management professionals working on construction projects should be assessed against.

The Round 1 results indicate that the role of a project manager is therefore more socially complex than the literature might indicate, and despite professional bodies failing to formally recognise soft skills competencies in how they award chartership, the project managers who formed the Expert Group clearly recognise the importance of them in working as part of a project team.

5.2.2 Delphi Round 2 – Discussion of findings

Consolidated across UK/USA/India	Rank	Frequency (No. votes)	Percentage of Respondents
Effective Communication*	1	65	94.20%
Leadership*	2	49	71.01%
Collaboration*	3	48	69.57%
Flexibility*	4	43	62.32%
Trust & Respect*	5	41	59.42%
Conflict Management & Negotiation*	6	31	44.93%
Active Listening	7	31	44.93%
Empathetic	8	26	37.68%
Self-organised	9	26	37.68%
Reliability	10	24	34.78%
Motivational*	11	22	31.88%
Personability	12	20	28.99%
Enthusiasm & Proactiveness	13	18	26.09%
Confidence	14	18	26.09%
Composure	15	12	17.39%
Detail-oriented	16	12	17.39%
Learning & Growth*	17	11	15.94%
Resilience	18	11	15.94%
Delegation & Empowerment	19	10	14.49%
Innovation*	20	7	10.14%

Table 20: Asterisked Delphi Round 2 Results

Table 20 above shows the consolidated results after Delphi Round 2 from the 69 members of the Expert Group who responded, with the nine soft skills identified in the literature review highlighted and asterisked. After Delphi Round 2 it can be seen that there is now a strong alignment between the top

six soft skills presented in the data by the Expert Group and the literature review, with 'Conflict Management and Negotiation' joining the previous top five. However, the other three soft skills have fallen further adrift, with 'innovation' coming 20th out of the 20 soft skills put forward by the Expert Group.

The results from Round 2 suggest that interaction-based soft skills that can more instantly be recognised (e.g. 'communication' and 'collaboration') are more likely to be considered of greater importance to teams working on construction projects than soft skills that may take longer to demonstrate (e.g. 'learning and growth' and 'innovation'). It may also demonstrate a preference towards action-based skills that directly contribute towards 'getting the job done'.

5.2.3 Delphi Round 3 – Discussion of findings

Soft Skill	Average Rating (1-5)
Effective Communication	4.92
Leadership	4.26
Collaboration	4.63
Flexibility	4.26
Trust and Respect	4.58

Table 15: Consolidated Delphi Round 3 Results

The results above suggest that there has been broad agreement in the importance of each soft skill based on the 72 responses from the Expert Group. They provided an average rating of above 4 ("Important"), for each of the categories selected. However, the ranking does not align with the frequency with which they were voted for in Round 2, as illustrated below.

Soft Skill	Rank based on Round 2 voting frequency	Rank based on Round 3 Rating
Effective Communication	1	1
Leadership	2	=4
Collaboration	3	2
Flexibility	4	=4
Trust and Respect	5	3

Table 21: Comparing Round 2 and Round 3 Rankings

The above table indicates that respondents who had not voted for these five soft skills in their top 10 in Round 2, who are being presented with only these five soft skills to provide a rating, show a different

preference towards these soft skills than those who had voted for them in their top 10 previously. While 'communication' remains the most important, 'leadership moves from 2nd to joint 4th. 'Trust and respect' previously ranked 5th out of the five soft skills after Round 2, but in Round 3 has moved to 3rd. 'Flexibility' remains 4th, and 'collaboration' moves up from 3rd to 2nd.

On reviewing the transcripts of interviews that were carried out with respondents who provided extreme results (Appendix M), two respondents provided a rating of only '1' for Leadership, which would have had some bearing on the average causing the ranking to drop, albeit minor given the high number of respondents. Expert Group member UK43 relayed their disagreement that Leadership was an important soft skill in the context provided, even disagreeing that it should be considered a soft skill at all. Expert Group member UK52 felt that showing leadership can be disruptive and counterproductive in working as part of a project team, but acknowledged this was not the case everywhere.

5.2.4 Delphi Round 4 – Discussion of findings

Soft Skill	Round 3 Average Rating	Round 4 Average Rating	Difference
a) Effective Communication	4.92	4.95	**+0.03**
b) Leadership	4.26	4.44	**+0.18**
c) Collaboration	4.63	4.65	**+0.02**
d) Flexibility	4.26	4.30	**+0.04**
e) Trust and Respect	4.58	4.64	**+0.06**

Table 17: Consolidated Delphi Round 4 Results

After Delphi Round 4 – when Round 3 results were presented back to the Expert Group and they were asked to rate the five soft skills again – it is clear that there is even stronger agreement across the Expert Group in the importance placed on each soft skill, with all five soft skills increasing their average score. There has been some minor movement in how the ratings are ranked as illustrated in table 22, where 'leadership' and 'flexibility' are no longer ranked joint 4th, but 4th and 5th respectively. The other rankings remain the same, albeit the margin between 'collaboration' and 'trust and respect' has closed to being almost equal in 2nd and 3rd respectively. The leadership average score increased significantly from 4.26 to 4.44.

On reviewing the transcripts of interviews carried out with respondents who had extreme results, four people provided ratings below 4 for each of 'collaboration' and 'flexibility'. The time that elapsed between the Round 3 and Round 4 surveys fell during the Covid-19 pandemic when all staff in the

business had been instructed to work from home and schools were closed, this was clearly having an effect on relationships and behaviours on projects in the case of these respondents.

Soft Skill	Rank based on Round 2 voting frequency	Rank based on Round 3 Rating	Rank based on Round 4 Rating
Effective Communication	1	1	1
Leadership	2	=4	4
Collaboration	3	2	2
Flexibility	4	=4	5
Trust and Respect	5	3	3

Table 22: Comparing Round 2 Rankings with Rounds 3 and 4

Expert Group member UK50 reduced their scores for both of these soft skills, reflecting that they could no longer rely on collaboration as a means to get things done, the personal commitments of their team in light of the pandemic had led to them having to work more independently and with greater self-reliance. This also transpired in their reasoning for the 'flexibility' score, reflecting that outputs were viewed in a more relaxed way due to the pressures some felt from working from home with young families etc. – in fact they felt that greater rigidity was needed. These are reasons why, perhaps, the ratings for these soft skills did not rise by more in Round 4.

5.2.5 Determining the Composite Performance Index (CPI)

The Composite Performance Index has been derived in the Results and Data chapter by determining the weightings for each soft skill, and multiplying these by the soft skill KPI score. The table and resulting formula are repeated below for ease of reference. It should be noted that the weightings for 'collaboration' and 'trust and respect' appear the same due to rounding, the difference would be clearer if there were four decimal places (in which case they would be 0.2024 and 0.2017 respectively). A reminder that the five soft skills were identified having been proposed by >50% of respondents after Delphi Round 2, this is the median point considered to represent group consensus (Helmer, 1967).

Soft Skill	Average Rating	Weighting
Effective Communication	4.95	0.216
Leadership	4.44	0.193
Collaboration	4.65	0.202
Flexibility	4.30	0.187
Trust and Respect	4.64	0.202
	Total	1

Table 18: Soft Skill CPI Weightings

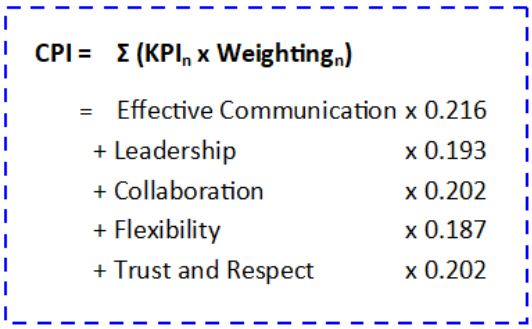


Figure 10: Composite Performance Index (CPI) Formula

5.2.6 Extent to which Objective 1 has been achieved

In producing the CPI formula in Figure 10, there is evidence that this study has produced a performance index as required by Objective 1. However, a fuller explanation is required regarding the extent to which the objective has been achieved. A reminder that Objective 1 stated "Develop a performance index that can be used to measure the performance of project participants' soft skills in the construction sector". Firstly, the Expert Group consisted entirely of project management professionals from the researcher's organisation. Therefore, the CPI cannot be said to apply to all project participants as it was created only with input from a single discipline (it could be argued each person representing their organisation on a project team is a project manager for their individual discipline, but not for the project as a whole).

Secondly, the construction sector consists of a wide range of sub-sectors that each have their own cultures and characteristics (e.g. healthcare, education, infrastructure etc.) that will be reflected in their project teams. Therefore, as the data collected in this study is reflective only of the sub-sectors in which the Expert Group predominantly work, the CPI cannot be said to reflect all of construction. The researcher's organisation does work across all of the primary sub-sectors, so it is expected that the Expert Group provides a very good representation of them, but this has not been confirmed (noting that the Expert Group themselves will also have worked across multiple sub-sectors and not only in one sub-sector).

Thirdly, the scoring system implemented to measure soft skills performance and produce the CPI has not been prescribed, however it will be in the next section. While the absence of a scoring system leaves the user flexibility for the context where it is being applied, there is a risk it will not be applied correctly and undermine the study. Therefore in the next section the scoring system and assessment criteria to accompany the CPI are set out in detail (see 5.3.2) to ensure there is consistency in how it is produced.

5.3 Achievement of Objective 2: The CPI trialled on live use case projects

5.3.1 The use case organisation

A client of the researcher agreed to trial the five soft skill KPIs that were arrived at after Round 4 (Appendix C), and to establish the corresponding CPI. The client is a large public sector emergency services organisation with a significant estate spread across Greater London. At the time of the study, they are in the fourth year of a four-year construction framework that is used for refurbishment and new build contracts, varying in value from small projects at £100,000 up to major new builds costing £200,000,000. Throughout the framework a performance measurement system has been used to assess the performance of all parties involved in their projects including contractors, consultants, and the client itself.

As part of the trial, the client agreed to a one-off performance measurement exercise of the five soft skills across all of their 38 live projects in July 2020. Assessments were conducted through an online Survey Monkey form being issued to all project participants, where they were asked to score their project colleagues on each of the five soft skills.

5.3.2 Assessment criteria and scoring system

The following assessment criteria have been developed to accompany the CPI formula, reflecting the requirements of the five soft skills in line with the definitions consolidated for round 3 (using the responses provided by the Expert Group after round 1 – see table 11). The assessment criteria and scoring system are described below, and were applied in the use case:

i. **Collaboration**: Assessment of how much each member of the team shows a willingness to support others and an appreciation of the roles they fulfil on your current project.
    a. ***Teamworking***: Demonstrates a teamworking ethic;
    b. ***Building relationships***: Consistently works toward building positive relationships.
ii. **Communication:** Assessment of the quality of interaction between team members on your current project.
    a. ***Stakeholder Engagement***: Appropriate engagement at all levels as required (e.g. *format, frequency, attendees);*
    b. ***Written Communication***: Clarity and precision of emails, reports, drawings etc.;

c. ***Verbal Communication***: Clear and concise in presenting position and debate;

d. ***Body language***: Approachable, open and empathetic in nature.

iii. **Leadership**: Assessment of the quality of leadership shown by all project participants.

a. ***Mentoring Skills***: Support evident in developing own team members and in offering guidance and help toward other project team members;
b. ***Decision-making***: Showing decisiveness and keeping well informed;
c. ***Accountability***: Extent to which team members make themselves accountable for their role and deliverables.

iv. **Flexibility.** Assessment of the ability to problem solve and adapt to new ways of working.

a. ***Problem solving***: Ability to provide solutions to challenging situations and requirements;
b. ***Adaptability***: Ability to work within different teams and adapt to new and varied ways of working.

v. **Trust and respect**: Assessment of the desire to build trust and respect between project team members.

a. ***Trust***: Desire to build mutual trust and openness with project colleagues;
b. ***Respect***: Demonstrates respect in interactions and managing relationships with project participants,

Each assessment stipulated the following rating definitions:

10 = Totally satisfied: All expectations exceeded;
9 = Totally satisfied: All expectations met in full;
8 = Satisfied: Expectations generally met with very minimal, non-urgent items to address;
7 = Satisfied: Expectations generally met with several, non-urgent items to address;
6 = Neutral: Many expectations met, but with some urgent items to address;
5 = Neutral: Many expectations met, but with several urgent items to address;
4 = Dissatisfied: Some expectations met, generally below required standard;
3 = Dissatisfied: Some expectations met, but all below required standard;
2 = Totally dissatisfied: Few expectations met, significant cause for concern;
1 = Totally dissatisfied: No expectations met, significant cause for concern.

Usually the scoring outcomes would be configured for the client by project role, so that specific feedback could be provided to each project member based on the comments received from their project colleagues. However for the purpose of this study the data was configured by project. The Composite

Performance Index could be used for either purpose: to provide a project participant with an indicator of their ***individual*** soft skills performance, or to allocate against the whole project team to provide an indicator of the ***team's*** performance. Both provide useful insights, the latter in particular on major frameworks where lessons learned opportunities are continuously being looked for.

5.3.3 Use case project profiles

Five projects A-E have been chosen through a stratified sample from the population of projects based on the "lots" the frameworks used to procure the project. Suppliers who fell in Lot 1 were used for projects with a contract value under £500 thousand, in Lot 2 between £500 thousand and £5 million, and Lot 3 for over £5 million. These five projects were all from Lot 1 suppliers due to the contract value of the projects that were live at the time of the use case. These projects have shorter programmes of typically 6-12 months with less contingency in their budgets, less room for error, and teams needing to 'gel' quicker in moving through Tuckman's (1965) forming-storming-norming-performing model. It is therefore preferable to the client that organisations are selected through the tender process that have worked together before and have greater familiarity with one another and how they each work.

All projects had a total contract value of over £100,000 but less than £2,000,000. A brief description of each project is provided below:

- Project A: Installation of new lighting at a police dog training centre;
- Project B: Refurbishment of toilet areas at an 18-storey mixed-use premises;
- Project C: Replacement of roofing at a police station;
- Project D: Refurbishment of police boat yard offices;
- Project E: Refurbishment of a police station's shower and toilet areas.

5.3.4 Use case hard KPI assessment

Projects A-E listed above were also being assessed using seven "hard" KPIs as part of the pre-existing performance measurement system, the definitions of which are provided below as set by the client:

- **Quality of Service**: Assessment of the client's satisfaction with the contractor's delivery during the Construction Stage of a project, applying the rating definitions from "10 = Totally satisfied: All expectations exceeded" to "1 = Totally dissatisfied: No expectations met, significant cause for concern"
- **Current Cost Certainty**: Measures the accuracy of cost forecasts against the initial budget allowing for all agreed variations.

- **Original Cost Certainty**: Measures the accuracy of cost forecasts against the initial budget exclusive of any variations.
- **Current Programme Certainty**: Measures the accuracy of actual durations against the initial programme allowing for all agreed extensions of time.
- **Original Programme Certainty**: Measures the accuracy of actual durations against the initial programme excluding any extensions of time.
- **Health and Safety**: Based on the accident frequency rate (AFR) and converted to a score out of 10.
- **Waste Diverted from Landfill**: Percentage (converted to a score out of 10) of construction, demolition and excavation materials recovered and diverted from going to landfill.

The hard KPI scores will be compared with the soft skills Composite Performance Index (CPI) for the same projects, the expectation being that a high soft skills CPI score should also be reflected in a high score for the hard KPIs – the 'iron triangle' hard KPIs are those that reflect cost, quality and time (Toor and Ogunlana, 2010).

For ease of comparison, the hard KPI scores taken at the same time as the soft KPIs have been given as a score out of 10. All KPIs in Table 23 except Health and Safety were originally a percentage, but have been divided by 10 to provide a score out of 10. The Accident Frequency Rate that is used for the Health and Safety score was previously zero (to reflect no RIDDOR accidents on all projects), this has been inverted to a '10' for each project to reflect the standard of performance. All original data from the use case can be found in Appendix Q.

Project	Quality of Service	Current Cost Certainty	Original Cost Certainty	Current Programme Certainty	Original Programme Certainty	Health and Safety	Waste Diverted from Landfill
A	7.8	10	10	7.5	7.5	10	10
B	8.2	10	10	10	10	10	10
C	7.8	10	8.1	10	7.1	10	10
D	7.2	10	10	10	2.5	10	10
E	8.5	10	8.9	10	-16.7	10	10

Table 23: Hard KPI scores assessed in the Use Case trial

While the 'Current Cost Certainty' and 'Current Programme Certainty' KPI scores are all high, these KPIs allow for agreed variations and extensions of time. A better reflection of performance would be the 'Original Cost Certainty' and 'Original Programme Certainty' scores that exclude these. However, the significant delays caused by the Covid-19 lockdown and subsequent productivity limitations placed by social distancing rules meant that some projects have been affected for reasons outside of their control (Project E in particular which scored -16.7, or 167% over its programme).

5.3.5 The use case soft skills CPI scores

Table 24 shows the soft KPI results for projects A-E, with the resulting CPI scores in the final column:

Project	Collaboration	Communication	Leadership	Flexibility	Trust & Respect	CPI
A	8.54	8.46	8.44	8.38	8.54	**8.47**
B	8.33	8.48	8.61	8.06	8.11	**8.32**
C	8.50	7.72	7.67	8.15	8.10	**8.02**
D	8.04	7.79	7.64	8.68	8.55	**8.13**
E	8.56	8.81	8.52	8.79	8.86	**8.71**

Table 24: Soft KPI scores assessed in the Use Case trial

These results compare the soft skills CPI scores of five projects, but they could equally compare individuals within a project, or a project against its own past performance, or to identify regional differences between projects and programmes over a large geographical area.

All scores for projects A-E are based on data collected in July 2020 when the UK was emerging from two months of lockdown due the Covid-19 pandemic, and social distancing was being enforced in England. The client for these projects gave contractors and consultants the option at this time of whether to return to site or not, depending on each organisation's own policy. This had an effect on all the KPIs, making it far from ideal to accurately compare scores given the unique circumstances at the time.

The soft KPI scores are based on a 360-degree assessment: all project participants were given the same survey and asked to score one another on the same project, including the client. This has the benefit of developing trust between project colleagues and allows any behavioural concerns to be addressed quickly. However, this does also mean that occasionally there are individuals who do not give the same level of thoroughness to completing the survey, or are perhaps more harsh or more generous in their scoring. When comparing a project against its own previous performance and that of its participants this is rarely an issue as the scoring approach is consistent, but this can cause issues when comparing separate projects against each other as the scorers are often different. These issues would normally be mitigated by addressing directly with the survey respondents as needed, to ask that scoring is given greater attention and more accurately uses the scoring definitions provided.

5.3.6 Comparing the use case 'iron triangle' hard KPIs with the soft skills CPIs

The below table ranks the CPI for each project next to the 'iron triangle' performance measures, however the programme certainty elements have been omitted due to the huge effect on programme by

the Covid-19 lockdown in Spring 2020 and productivity limitations placed by social distancing rules. It is evident that the rank of projects A, C and D are the same, which would indicate that the soft skill measures do perform in line with the hard iron triangle measures' results as would be expected.

Project	CPI	Rank	Average of 'Quality of Service' and 'Original Cost Certainty' Scores	Rank
A	**8.47**	2	8.92	2
B	**8.32**	3	9.08	1
C	**8.02**	5	7.97	5
D	**8.13**	4	8.58	4
E	**8.71**	1	8.70	3

Table 25: Comparing soft skill CPI scores and traditional 'iron triangle' hard KPI scores and rankings

Projects B and E have given somewhat anomalous results between the rankings with Project B ranking 3rd in the soft skills CPI and 1st for the iron triangle scores, and Project E ranking 1st for the soft skills KPI and 3rd for the iron triangle scores. Project E suffered devastating delays of 167% over programme, this in turn has had a significant effect on Cost Certainty with the cost of equipment hire and resources all increasing with the delays, which explain the lower than expected rank. Despite these circumstances, the soft skills CPI on Project E ranks 1st – this suggests that even with the circumstances beyond the control of the project participants, the soft skills are still strongly in evidence with 'communication' in particular standing out with an average score of 8.81, contributing toward the CPI of 8.71. This bodes very well for the project as working on site returns to normal and the project gets back on track.

Project B received much lower scores for 'flexibility' (ranked 5th) and 'trust and respect' (ranked 4th) than expected in contributing to the lower soft skills CPI score and ranking. On looking at this project in more detail and some of the comments received, the contractor placed several staff on leave via the UK government's furlough scheme that was available to many workers following the Covid-19 pandemic. The decision to place these staff on furlough was made at late notice just as works were about to recommence on site. This has clearly affected the 'flexibility' scores that were awarded (i.e. ability to problem solve and adapt to new ways of working) and likely affected the 'trust and respect' score as well.

5.3.7 Extent to which Objective 2 has been achieved

Objective 2 stated "Apply the new soft skills performance index to a live use case in the construction industry to confirm if it can be used successfully in the sector". In applying the CPI formula in Figure 10 to a live use case at a client of the researcher, there is evidence that the index has been successfully

applied as required by Objective 2. However, a more detailed explanation is required here about the extent to which it has been achieved.

The CPI was established through measuring the five soft skills KPIs after round 4, and applying the formula in figure 10. The assessment criteria and scoring system created to measure the five soft skills (see section 5.3.2) are based on the definitions of the soft skills that were consolidated for round 3, using the 89 responses provided by the Expert Group after round 1 (see Table 11). The definitions, and consequently the assessment criteria, represent a close as possible 'best fit', although not necessarily the detail of every response meaning that there may be a small number of participants who would disagree with these definitions and assessment criteria.

The use case was only applied with a single client organisation – across five projects – so the objective can only said to have been met and the index successfully used within the organisation's sub-sector, i.e. emergency services, and within an urban, populous environment since the organisation only operates across Greater London. While the organisation procures projects from small scale repairs up to major new builds costing £200,000,000, the five projects forming the basis for the use case were all refurbishment projects with a total contract value under £2,000,000, therefore the objective can only be said to be met on projects with a total contract value up to this amount.

5.4 Contribution of the CPI in professional practice

The 'iron triangle' (Toor and Ogunlana, 2010) performance measures in project management are widely recognised, however they consist only of hard metrics and (as explained in section 2.1) do not reflect the needs of project management in construction today. This study proposes that an alternative representation is required to also recognise soft skills which are missing from the iron triangle. The five soft skills derived from this study after four rounds of the Delphi Method – considered the most crucial soft skills for performance measurement in construction projects by the Expert Group – could be used to form the sides of a new shape to better illustrate them and make them more recognisable. The five-sided pentagon has been created for this purpose; the proposed Performance Pentagon for Project Soft Skills is illustrated in figure 11.

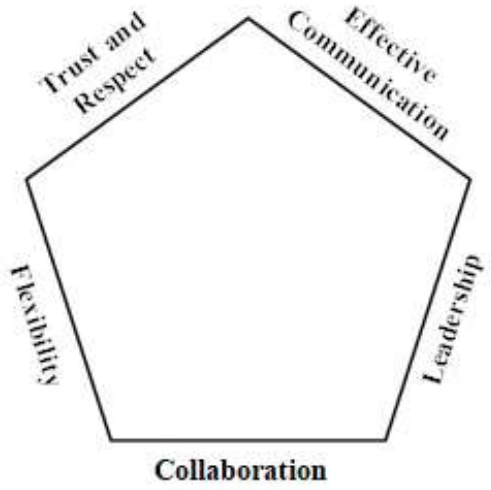


Figure 11: The Performance Pentagon for Project Soft Skills

The soft skills composite performance index (CPI) derived from this research has many benefits for UK construction projects. Seven further contributions of the model for UK construction projects are set out below:

- **Quality of soft skills performance measurement of project managers will improve on certain projects in the UK construction industry**

  Specialists and consultants who provide a performance measurement service specifically in relation to soft skills on construction projects currently do not use a commonly recognised measurement standard (certainly not one that is endorsed or mandated by central or local government, or by a professional body). This allows both independent freelance consultants and large organisations to offer their own versions of a performance measurement model, and to offer these as being "best practice". They have been able to speak with authority and sell their services in relation to a subject for which there is no professional standard. The introduction of a well-researched and well-tested soft skills CPI will fill that gap in the industry; clients will be able to demand the "Performance Pentagon CPI" as the basis for assessment.

  It should be noted that the CPI was created with the input from a single discipline, project managers, who made up the entirety of the Expert Group, therefore it can only be stated that the performance measurement of this discipline would improve. The use case for the study took place with a client organisation of the researcher in the emergency services sub-sector, so it can only be said with any evidence that it has been successfully applied in this sub-sector and cannot be generalised as being applicable for the whole of the construction sector.

- **Exceeds the applicability of the currently best-known performance measurement model in relation to soft skills in the UK construction industry**

  The most widely used performance measurement system on UK construction projects is SmartSite KPIs (Constructing Excellence, 2018), which predominantly uses hard measures. The authors, Constructing Excellence, are a knowledge leadership body who are part government-funded and part-commercially funded, created to drive performance standards. SmartSite KPIs was written by a large international consultancy without detailed research of industry practice hence why soft skills are not well reflected (the same consultancy also profits through charging clients to assist in assessing projects against it). SmartSite KPIs requires a paid subscription so can only have a limited impact in assisting the industry. The Performance Pentagon CPI will provide a performance measurement model that requires no subscription, and stands on a body of research that goes well beyond SmartSite KPIs in relation to soft skills.

  The assessment criteria used to measure the five soft skills in producing the CPI represent a 'best fit' of the soft skills definitions after consolidating the 89 responses from the Expert Group after Delphi round 1. However, there may be a small number of participants who would disagree with the final consolidation so the assessment cannot be considered 100% accurate to the Expert Group's requirements (albeit the closest possible fit based on their responses). While not perfect, it still exceeds the applicability of SmartSite KPIs in relation to soft skills, which are largely overlooked.

- **Less reliance on who facilitates the implementation of the performance measurement system**

  Through making the Performance Pentagon CPI available to construction project practitioners without a subscription paywall, there is greater transparency of the assessment model for clients rather than requiring unregulated specialist opinion, and greater trust can be placed in the reliability of the outputs.

- **Opportunity for professional bodies to adopt a new soft skills assessment model without the cost of research**

  No professional body in the construction industry has recognised soft skills performance as a formal competency to obtain chartership through them. This research will provide professional bodies such as the Association for Project Management (APM), Royal Institute for Chartered

Surveyors (RICS) and Chartered Institute of Builders (CIOB) with a well-researched performance measurement model for soft skills that has already been adopted by both a major consultancy (the researcher's employer) and a major client (the use case client).

- **Adoption of the composite performance index by a major consultancy**

  The researcher's employer has adopted the composite performance index as its recommended performance measurement model for the assessment of soft skills with all of its clients. As one of the 'Big 5' consultancies in the sector who work with some of the industry's biggest clients, this represents a significant change.

- **Adoption of the composite performance index by a major client**

  The client organisation that permitted the live use case to be undertaken is the largest 'blue light' (i.e. emergency services) client in the UK and employs around 44,000 people. On completion of the use case, the client confirmed that the Performance Pentagon assessment model will be permanently applied across the client's whole framework of projects, valued at £86m. This is the best evidence that the researcher could present that the model will make a contribution to professional practice: it has already been adopted by a major client organisation and is currently being used to assess teams working on a wide variety of projects.

- **Consolidated definitions of 20 project soft skills produced for industry reference**

  Definitions for 20 soft skills have been consolidated from 89 respondents after Delphi Round 1, which included 18 interviews (produced to aid Delphi Round 2 respondents in making their selection). These definitions can be used as a reference guide by construction project professionals for consistency in how they are applied within the industry. The definitions provided for effective communication, flexibility, collaboration, leadership, and trust and respect also support the implementation of the soft skills CPI assessment model derived from this research, having been used in developing the assessment criteria and scoring system that accompany the CPI.

  It should also be noted that these definitions represent a 'best fit' of all the responses received and there may be a small number of participants who would disagree with one or more of these definitions.

5.5 Summary of the Chapter

This chapter has described how Objectives 1 and 2, set out at the start of the study, have been achieved and the extent to which they have been achieved. In describing the achievement of Objective 1, the results from all four rounds of the Delphi Method have been discussed, and any differences identified when compared with the literature review. Interview transcripts from the data collection phase have been reviewed in detail to confirm any reasons for anomalous results, in some cases reflecting the impact of the Covid-19 pandemic on projects. In explaining how Objective 2 was achieved, the CPI was trialled on five live projects at a client of the researcher. The trial was considered so successful that the five soft skills assessed as part of the CPI calculation have been permanently implemented within their performance measurement system. Finally, seven significant contributions of the research to professional practice have been set out.

6. Contribution to Theory

6.1 Introduction to the Chapter

In this chapter, as with Chapter 5, the findings from the Results and Data chapter will be discussed and linked back to the research objectives first set out in this study. Chapter 5 has already provided a detailed explanation about how the first and second objectives were achieved, this chapter will therefore seek to do the same for the third objective which is repeated below:

Objective 3: **Reflect on the theories relevant to the study and establish where the most significant contribution can be made.**
The literature review recognised four theories relevant to the study that each have potential for further exploration to determine where there are opportunities to make a significant theoretical contribution.

The five soft skills that were arrived at after four rounds of the Delphi Method – and illustrated in the Performance Pentagon in Chapter 5 – represent a significant contribution to the academic literature on this subject, as does the Composite Performance Index that was derived for their assessment on UK construction projects. This chapter will look at how these findings represent the agreement, disagreement, or extension of the four relevant theories that were presented in the Literature Review chapter.

6.2 Achievement of Objective 3: Establish theoretical contribution

6.2.1 Goal Setting Theory

The literature survey set out in section 2.3.2 that Goal Setting Theory addresses the effects of goal setting on performance, the main idea being that people who set goals that are difficult to achieve and specific will exhibit better performance than people who set goals that are non-specific and easier to achieve (Locke and Latham, 2002).

While the origins of the theory looked at the link between motivation and sub-conscious / conscious goals (McClelland et al, 1953; Ryan, 1970), the most significant research was conducted by Locke and Latham (1990; 2002; 2006) who focused on the relationship between conscious goals for performance and the actual levels of performance. The key elements of the theory are illustrated in the high performance cycle (Locke and Latham, 2002) in Figure 1, repeated overleaf.

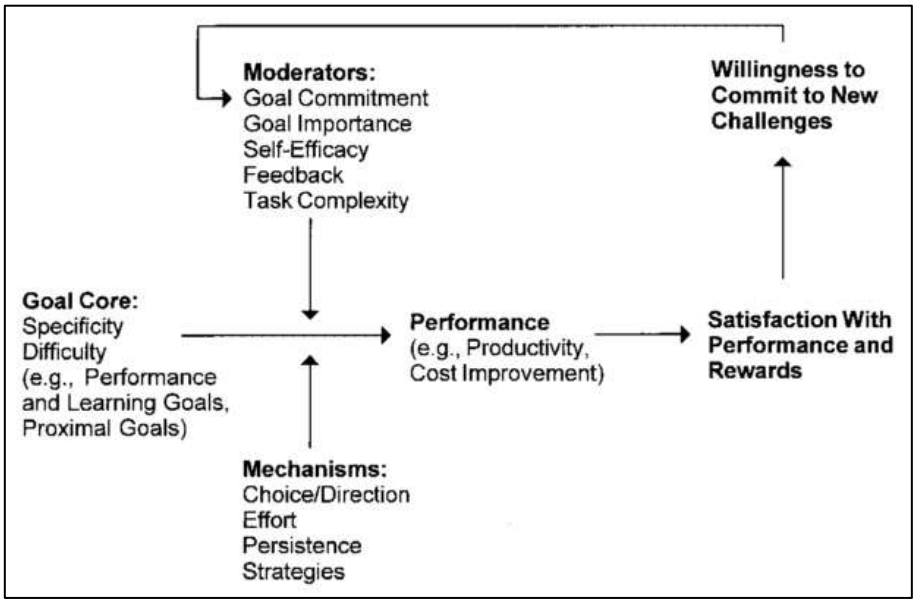


Figure 1: Essential Elements of Goal-Setting Theory and the High-Performance Cycle (Locke and Latham, 2002, p.714)

On reviewing the results of the four-round Delphi Method, the five soft skills arrived at and the subsequent composite performance index (CPI) successfully trialled in practice, Figure 12 below identifies the positive contributions the study can make to Goal-Setting Theory. These are described in points A-E.

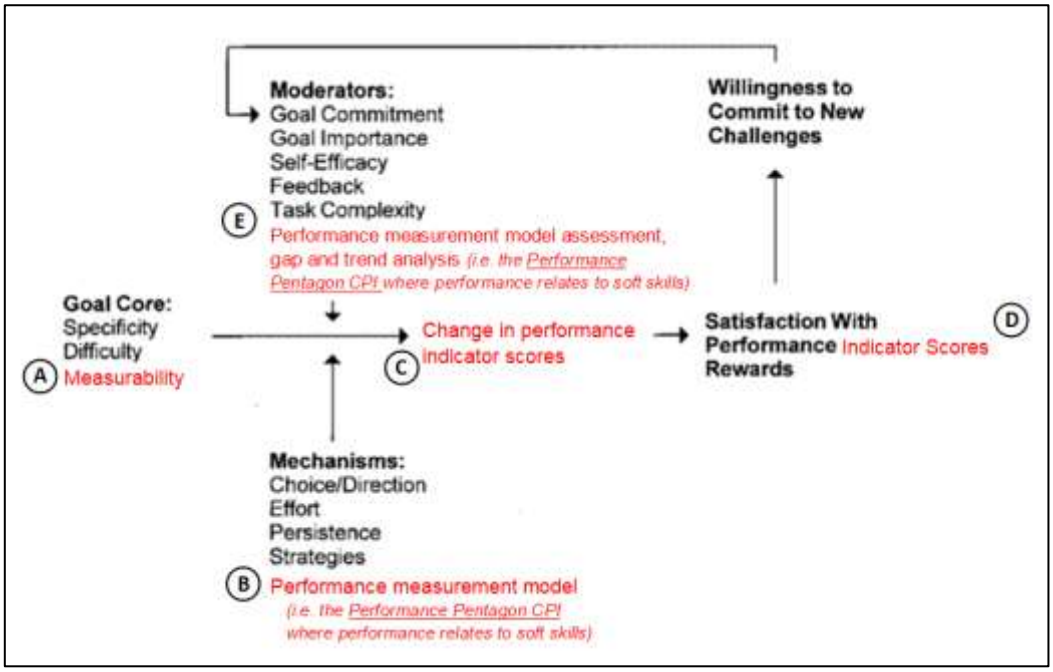


Figure 12: Contribution of the Performance Pentagon CPI to Goal-Setting Theory

The contributions made by this study to Goal-Setting Theory are indicated in red text on Figure 12 and described in more detail below:

A. Goal Core

This study aligns with the need for specific goals to be set, however there is a significant addition required for the set goals to improve performance beyond specificity and difficulty that are already stated in the theoretical model: "Measurability". If a goal cannot be measured, then it does not matter how difficult or specific it is, it will still not be possible to evidence whether or not it has been achieved. This is a significant omission in the theory that this study would recommend is added.

B. Mechanisms

The mechanisms to enable high performance require some way of tracking performance to provide the feedback moderator indicated within the model. Without this, performance cannot be gauged to determine how to adjust the other mechanisms described in the model (i.e. Choice/direction, Effort, Persistence, Strategies). The addition of a "performance measurement model" would allow performance to be gauged and the mechanisms to be adjusted accordingly; in the context of this study where performance relates to soft skills of project managers on emergency services construction projects (the basis for the use case), then the model that would be implemented is the Performance Pentagon CPI derived from this research.

C. Performance

The previous reference to "Performance" does not reflect the calibration required to determine whether or not performance has changed, hence the wording has been amended to "Change in performance indicator scores". Clearly, it is anticipated in the theory that a positive change/ improvement occurs, but improvement is not guaranteed so is referred to only as a change.

D. Satisfaction with Performance and Rewards

Specifically, and in line with the terminology added in A, B and C, the satisfaction is with the "Performance indicator score" achieved rather than performance in general.

E. Moderators

Moderators are needed in order to ensure consistency of application in reaching the set goal. Moderators could also be understood to be required to ensure consistency of assessment in relation to a standard (Free Dictionary, 2022), where one exists. This study has established a model for measuring performance that demonstrates whether a standard or goal has been attained (or not). Undertaking an assessment through this model, followed by a gap analysis to

determine the difference from the standard and any trends that may develop, are crucial moderators not currently described by the theory. It could be argued that this is not necessarily an extension of the model, but adds further detail to how the "Feedback" moderator could be perceived, however the addition is made here for the avoidance of doubt and the current absence of detail in relation to this moderator.

6.2.2 Control Theory

Control Theory addresses the use of 'control systems' to maintain a preselected state in mechanisms. Feedback plays an important role in the theory through regulating performance (Carver and Scheier, 1981), where mechanisms make continuous comparisons between actual events and a standard to reduce the difference (e.g. a thermostat). The Carver and Scheier (1982) diagram of a negative feedback loop below, where feedback is shown as the 'input function', provides a clear illustration of the essential elements of the theory and how they work together to maintain a preselected state.

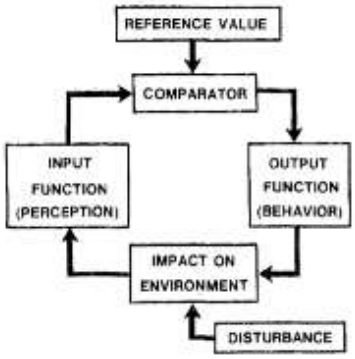


Figure 3: The Negative Feedback Loop (Carver and Scheier, 1982)

Following the completion of the Results and Data chapter and the "Performance Pentagon" five soft skills subsequently arrived at, Figure 13 below identifies the contributions the study can make to Control Theory, described in points A, B and C.

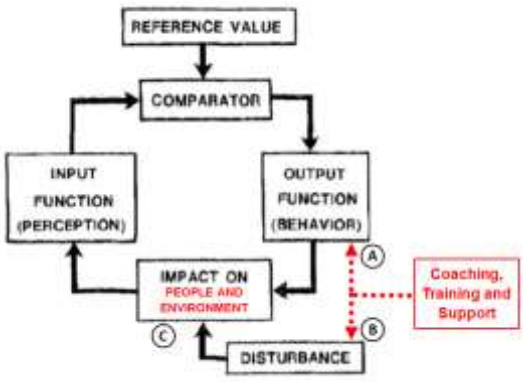


Figure 13: Contribution of the Performance Pentagon CPI to Control Theory

The contributions made by this study to Control Theory are indicated in red text on Figure 13 and described in more detail below:

A. Output Function (Behaviour)

The output function represents the action taken to regulate current performance toward the reference value, which Wiener (1985) described as a closed loop task. If current performance relates to the Performance Pentagon soft skills (i.e. effective communication, leadership, collaboration, flexibility, trust and respect), the theory currently makes the assumption that the individual being assessed will automatically be able to make this change, however people are not mechanical systems such as the theory was originally designed for. The gap here would be addressed by making the addition indicated in "A" on Figure 13 allowing coaching, training and support to be provided to better enable individuals to change their performance level.

B. Disturbance

There are many disturbances that may adversely affect the impact of the "output function" on the project environment. These may include inclement weather or any of the financial or supply chain impediments that have occurred in recent times in the UK and abroad (e.g. 'Brexit', the Covid-19 pandemic, the Russian invasion of Ukraine) which have all taken their toll on project planning. As with the output function, project professionals would benefit from coaching, training and support to assist them in minimising the effect of disturbances where possible, as it cannot be assumed that individuals will always know or have the tools to rectify them.

C. Impact on Environment

The terminology written by Carver and Scheier (1982) to describe the theory could be extended from "Impact on environment" to better describe what is being impacted when controls are applied to acknowledge where *people* are affected. It could be understood that '***social*** environment' is addressed by this terminology, but for clarity this study would advocate changing the heading to "Impact on **people and** environment".

Aside from the above amendments, there is broad agreement from this study with the principles of Control Theory and the strong use of feedback.

6.2.3 Social Cognitive Theory

Social Cognitive Theory addresses what might lead someone to changing their behaviour, setting out how an individual's self-efficacy (i.e. belief in their own ability to produce an intended result) can lead to someone making their desired change. The essential elements of the theory are that self-belief in an individual's own efficacy can be improved in four ways (Bandura, 1997):

i). Mastery experiences: Knowing that perseverance will overcome obstacles through personal experience;
ii). Social modelling: Seeing similar people succeed through determination;
iii). Social persuasion: Being persuaded by people to overcome self-doubts;
iv). Physical and emotional state to respond.

If the desired improvement relates to soft skills, there is currently no commonly agreed way of calibrating an individual's own (or other peoples') performance on construction projects. The Performance Pentagon CPI makes a strong contribution in facilitating the application of Social Cognitive Theory where the change required relates to soft skills of project managers on emergency services construction projects, since if it cannot be measured then any improvement cannot be evidenced. This indicates that there is a fifth element currently missing from the four ways of improving someone's self-efficacy, **"measured evidence":**

v). Measured evidence: Being persuaded by the evidence from a trusted performance measurement model, such as the Performance Pentagon CPI.

"Measured evidence" fills the gap in the theory where someone does not have their own personal experience, the observed experience of others, or the social persuasion of their social network (e.g. if they have no experience of the improvement in question) to call upon. As an alternative, they could therefore enhance their self-efficacy from the measured evidence available such as from the Performance Pentagon CPI (where the performance relates to soft skills of project managers on emergency services construction projects).

6.2.4 Agency Theory

Agency Theory describes how the use of performance measurement models can be used to influence behaviours (Ross, 1973; Mitnick, 1975), using the measures implemented by a principal (such as a client) to guide behaviours of an agent (such as a project team participant), and as a result align each of their objectives. The essential elements of the theory are illustrated in Figure 2.

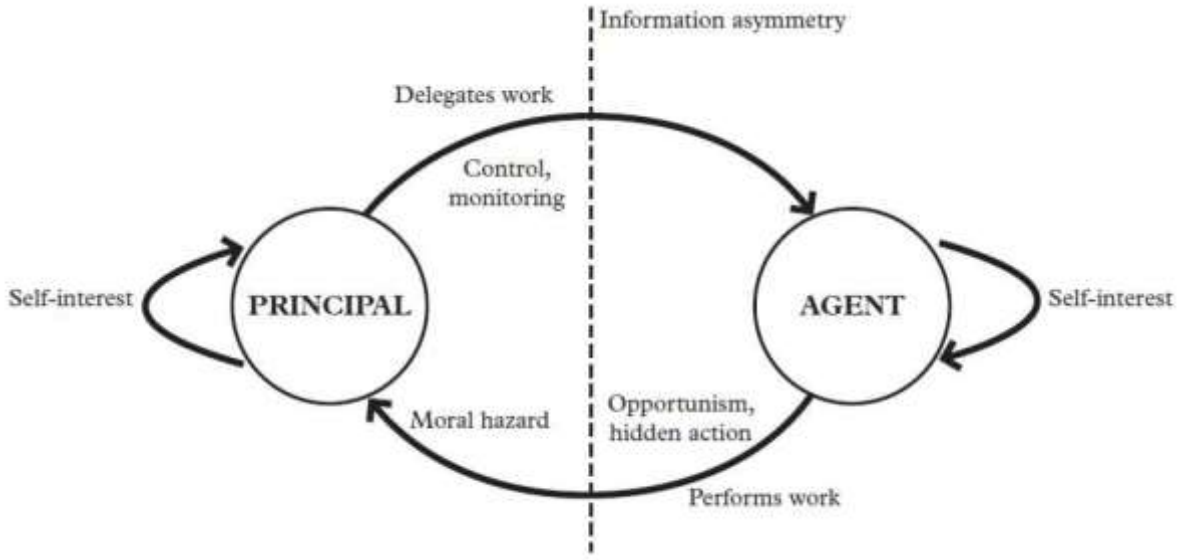


Figure 2: Agency theory and the assignment of work from principal to agent (Snippert et al, 2015)

Following the completion of the Results and Data chapter and having derived the "Performance Pentagon" five soft skills, Figure 14 below identifies the contributions the study can make to Agency Theory.

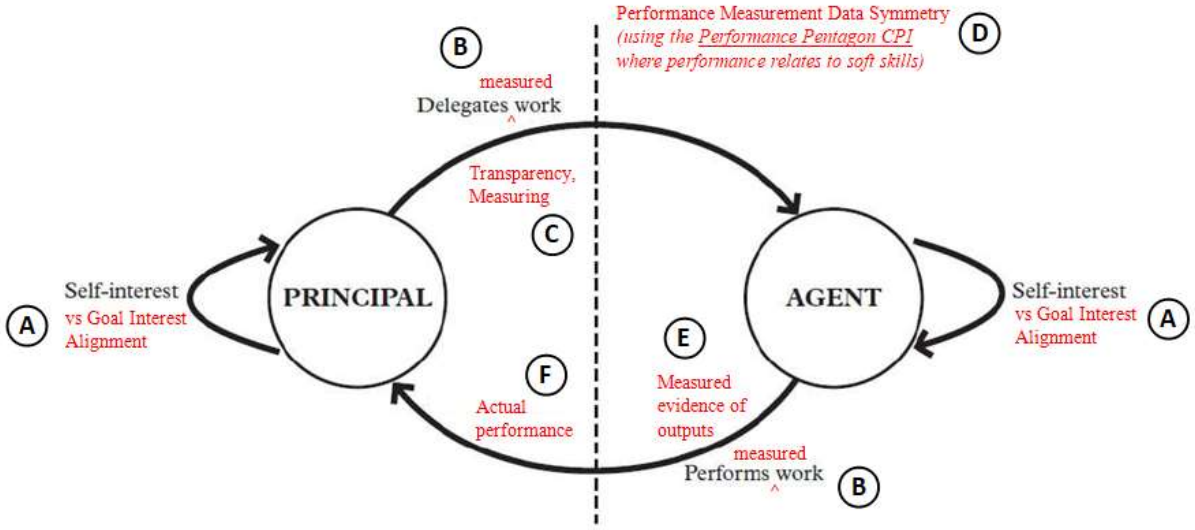


Figure 14: Contribution of the Performance Pentagon CPI to Agency Theory

The contributions made by this study to Agency Theory are indicated in red text on Figure 14 and described in more detail below:

A. Self-interest vs Goal Interest Alignment

Agency Theory assumes that the agent will act in a manner that is best for them and not the principal/owner (Smith, 2012 [1776]; Eisenhardt, 1989). Adding to this assumption, the alignment of both the principal's and agent's goals through jointly agreed performance objectives that can be measured and incentivised, would result in both parties' interests being served rather than only one or the other, hence the addition of the term 'goal interest' to be clear on the alternative position. Where the goal interests of both the principal and agent relate to soft skills performance of project managers on emergency services construction projects, it is now possible for this alignment of the two parties to happen due to the ability to measure the Performance Pentagon CPI.

B. Delegates measured work / Performs measured work

There is an important distinction not currently detailed in the Snippert et al (2015) diagram. The simple delegation and performance of work duties assumes that the work is performed in a silo, and that performance information will be shared at points in time. The addition of the word 'measured' underlines the importance of continuous assessment that can be accessed at any time by the principal so that decisions using the Performance Pentagon CPI model could be made live/ in real time and not when it has already happened and too late to influence. This extends Jensen's (1983) proposal for information systems to be used that inform the principal on actual performance, to ensure performance is actively measured as part of any information system.

C. Transparency, Measuring

The descriptors previously stated by Snippert et al (2015) under the label of principal "delegates work" to agent (i.e. control, monitoring) did not fully represent the benefit that the introduction of a performance measurement model like the Performance Pentagon CPI could achieve. The two replacement words added of "Transparency, Measuring" reflect the openness of the Agent's performance levels through measuring it using, for example, the Performance Pentagon CPI model. 'Measuring' puts an onus on both the principal and the agent to actively implement a measurement approach rather than simply 'monitor'.

D. Performance Measurement Data Symmetry

The "information asymmetry" previously referred to by both Snippert et al (2015) and Eisenhardt (1989) was very vague, as not all 'information' needs to be shared between the agent

and principal to ascertain performance levels or to find out what is happening, and requires some specificity. The diagram has therefore been altered to reflect this, identifying that the information where symmetry is needed (i.e. equal access to project details) is performance measurement data such as the Performance Pentagon CPI where performance relates to soft skills of project managers on emergency services construction projects.

E. Measured evidence of outputs

Previously in the absence of the application of a performance measurement model and performance measurement data in the Snippert et al (2015) diagram, the descriptors previously stated next to the agent "performs work" (i.e. opportunism, hidden action) did not reflect the benefit that the introduction of a performance measurement model like the Performance Pentagon CPI could achieve. The replacement wording chosen, "measured evidence of outputs", is a better reflection of the information available to the principal upon which to make decisions and breaks down the 'asymmetry' previously referred to.

F. Actual performance

The feedback loop is labelled "moral hazard" (Slyke, 2006) as the information on work performed is fed from the agent to the principal, to indicate that misleading information is being provided, explained by Slyke (2006) as

> *"when a party to the contract uses information and expertise and acts opportunistically, in its own self-interest, to the exclusion of the agreed upon contract goals"*
> (Slyke, 2006, p162).

However, there would be nothing for the agent to gain by providing misleading information if a performance measurement model like the Performance Pentagon CPI was implemented as the principal would be able to see the same performance measurement data as the agent, therefore the label has been changed simply to "actual performance".

6.3 Synthesising contributions of the CPI to academic theory: Phenomenon of Measured Goal Interest

Agency Theory initially represented a 'foreground theory' where the researcher felt the greatest contribution could be made to academic theory. After having now reviewed the contributions that the "Performance Pentagon" five soft skills can make to Control Theory, Social Cognitive Theory, and Goal Setting Theory, it has become clear that the contributions to all four theories can be supplementary to one another and synthesised as part of a new model.

Figure 15 overleaf depicts a new way of managing the Principal-Agent relationship, one that could be used in the creation of performance-based contracts where the soft skills performance of project managers on emergency services construction projects is concerned. This is something that is not currently possible using Agency Theory alone, since there is (before this study) no industry-based approach that is readily available for the assessment of soft skills performance in the UK construction sector. The new phenomenon from this study of measured goal interest (MGI) illustrates that if both parties are agreed on the goals to be met prior to commencement of the work, and that these can be measured transparently without bias (the agreement may reflect corresponding incentivisation/ reward), then both parties will be satisfied by the outcome on completion. The MGI phenomenon is illustrated in Figure 15 and shows that should any changes in the goals be required, for example if they are being easily exceeded, this will be based on live performance data as it is reported. It is worth noting that 'measured goal interest' represents **a brand new term** for this field of research.

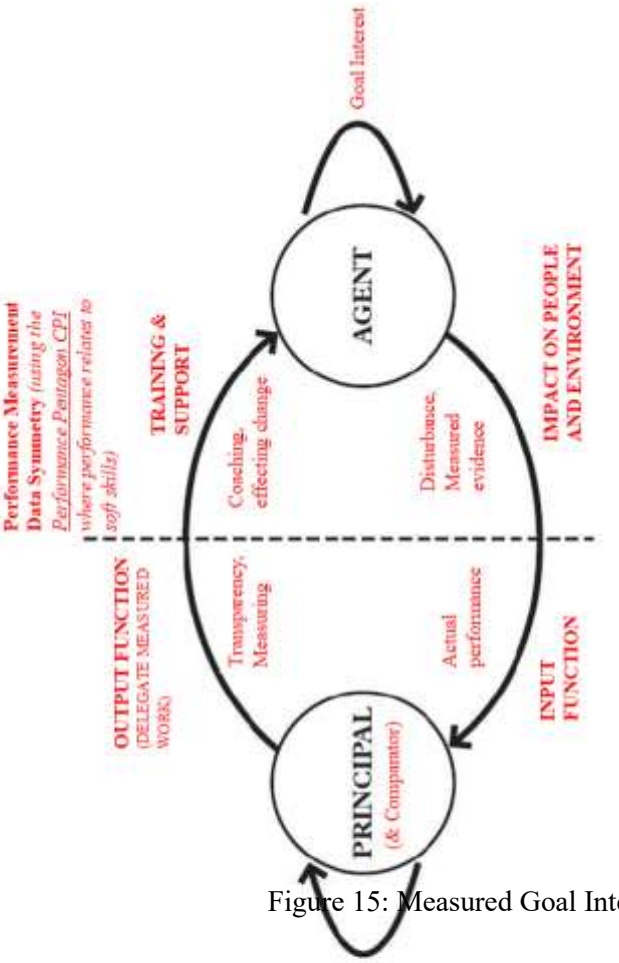
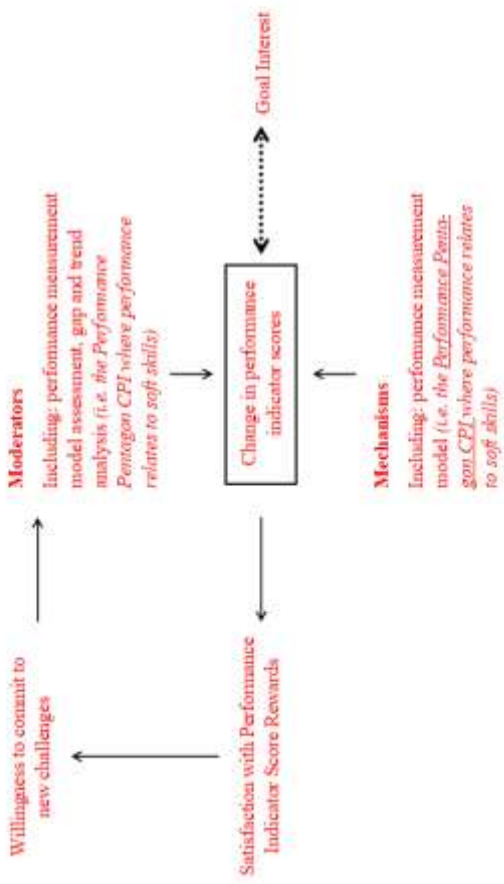


Figure 15: Measured Goal Interest phenomenon and the use of measur



Definitions and descriptions (in Figure 15):

a) **Principal (and Comparator)** [Influences: Agency Theory and Control Theory]
The principal is the individual who wants the work/project to be undertaken, in the construction industry this could be considered to be the Client. The principal is continuously reviewing the measured performance data being produced to determine whether it as at the desired level – if there is a significant and persistent change from that level, the goals will need to change accordingly; in this way the principal is acting as a 'comparator' (Carver and Scheier, 1982).

b) **Output Function** [Influence: Agency Theory and Control Theory]
The principal creates an output function, this could be a corrective action depending on the live performance data being received, but will in any case result in delegated, measured work for the agent. The performance level of this work will be completely transparent to the principal due to the implementation of a performance management system such as the Performance Pentagon CPI derived from this study (where performance relates to soft skills of project managers on emergency services construction projects).

c) **Training and Support** [Influence: Control Theory]
People are not mechanical systems, so maintaining any desired state or performance level cannot be achieved simply at the press of a button. Effecting change in people requires coaching and training; it cannot be assumed that individuals are able to change their capability unaided, particularly in areas where they do not already possess some expertise.

d) **Impact on People and Environment** [Influences: Social Cognitive Theory and Control Theory]
The behaviour of the agent impacts on the people they work with and their immediate environment, in order to change performance to the levels required by the principal. This performance level is then captured through measured evidence. However, people working on projects do not work in a vacuum, there are constantly disturbances that the agent will need to account for in demonstrating the required performance (e.g. weather conditions, a global pandemic, new government policies etc.).

e) **Input function** [Influences: Agency Theory and Control Theory]
The input function is the data provided to the principal of actual measured performance, allowing complete data symmetry between both the principal and agent.

f) Change in performance indicator scores [Influences: Goal Setting Theory]

The left section of the diagram in Figure 15 illustrates the amended elements of Goal Setting Theory from section 6.2.1 following the results of this research study. It demonstrates how the principal's goals can alter depending on the change in live performance indicator scores. The scores are generated through a mechanism (e.g. Performance Pentagon CPI where performance relates to soft skills of project managers on emergency services construction projects), the principal then decides whether the change is satisfactory or if a new challenge is required through moderating the scores (e.g. gap and trend analysis after using a performance assessment model).

6.4 Extent to which Objective 3 has been achieved

Objective 3 stated "Reflect on the theories relevant to the study and establish where the most significant contribution can be made". In reflecting on the contributions that the study has made individually to each of four different theories – Goal Setting Theory, Social Cognitive Theory, Control Theory and Agency Theory – there is evidence the objective has been achieved (most notably in synthesising each of the contributions in identifying a new phenomenon, Measured Goal Interest). However, the extent to which it has been achieved requires further explanation.

This chapter has described in detail the contributions made by the research to four theories. However, these contributions are predicated on the four theories being those that are most relevant to the study. A systematic review of the relevant theories was undertaken in section 2.3.1 through adopting the three stages set out by Tranfield, Denyer and Smart (2003). During the systematic review, the database search phrases in the review protocol needed to be broadened as they initially yielded zero articles for review. This resulted in four articles being selected for review once inclusion and exclusion criteria were applied and subsequently four theories being identified. If the search terms were broadened yet further, and if the journal ratings been higher, it is possible that further theories could have been identified and in a higher standard of journal, but this would also have risked diluting their significance to the research further.

6.5 Summary of the Chapter

This chapter has sought to go further than solely satisfying Objective 3, i.e. reflecting on the theories relevant to the study and establishing where the most significant contribution can be made, also describing the extent to which it has been achieved above. In reflecting on the contributions that the study has made individually to each of four different theories – Goal Setting Theory, Social Cognitive Theory, Control Theory and Agency Theory – the researcher has brought these contributions together

and synthesised them in identifying a new phenomenon, Measured Goal Interest (MGI) which represents **a brand new term** not previously seen in any literature on the subject. MGI represents a significant contribution to the existing academic theories on performance measurement, and provides a context within which the new performance measurement model, the Performance Pentagon CPI, can be successfully applied in the construction industry.

In section 2.3.3.5 of the literature review it was explained that agency theory only applies if all significant areas of performance are measurable (Marr, 2007). If not measurable, then a contract could not be reasonably enforced and the principal could not assess the performance of the agent, as would be the case – prior to this study – in the assessment of soft skills for which there were no commonly agreed measures of performance in the construction industry. The development of the Performance Pentagon CPI for the assessment of soft skills therefore provides a significant contribution to agency theory in particular, enabling it to be applicable where contracts require levels of soft skills performance to be achieved. The Measured Goal Interest phenomenon provides a clearer and more accurate means by which this relationship can be expressed, recognising the importance of goals being both shared and measurable.

7. Conclusion

7.1 Introduction to the Chapter

This chapter will set out the conclusions from this research study, in doing so bringing together the key findings that enabled the researcher to be satisfied that all the research objectives were met. The significant contributions to both professional practice and theory will also be brought together so there is clarity on the benefits that the outcomes from this study will have both for construction industry professionals and the academic literature on the subject. Finally, the limitations of the study will be described together with opportunities for further research.

7.2 Addressing the Research Objectives

This study sought to respond to the problem that soft skills on construction projects are either not measured or are measured very poorly, the aims being to identify the soft skills considered most important when working as part of a project team in the construction industry and to create a corresponding model to measure teams against. In the UK construction industry there is no commonly agreed approach to the measurement of soft skills performance even though their importance to projects are well recognised, nor is there sufficient recognition given to them by the relevant professional bodies. Three objectives emerged for this study to fulfil.

7.2.1 Objective 1: Development of a soft skills performance index on projects

The first objective in full was to ***"Develop a performance index that can be used to measure the performance of project participants' soft skills in the construction sector"***. The literature review identified a clear need for such an index to be available (Dainty, Cheng and Moore, 2003; Marr, 2007; Zuo et al, 2018) that will allow project participants' soft skills performance to be monitored and compared against participants in other project teams, and ultimately to provide greater certainty of achieving the project's intended outcomes.

There is evidence that this objective was achieved after having derived the Composite Performance Index (CPI) in the Results and Data chapter, and the extent to which it was achieved was addressed (see 5.2.6). In this chapter the weightings of five soft skills – determined following four rounds of the Delphi Method – were used to create what this research study has termed the 'Performance Pentagon CPI' (the five-sides of a pentagon illustrating the five soft skills derived). The CPI formula is repeated overleaf:

$$CPI = \Sigma (KPI_n \times Weighting_n)$$

$$= \text{Effective Communication} \times 0.216 + \text{Leadership} \times 0.193 + \text{Collaboration} \times 0.202 + \text{Flexibility} \times 0.187 + \text{Trust and Respect} \times 0.202$$

Figure 10: Composite Performance Index (CPI) Formula

7.2.2 Objective 2: The CPI trialled on live use case projects

This objective in full was to ***"Apply the new soft skills performance index to a live use case in the construction industry to confirm if it can be used successfully in the sector".*** The objective aimed to test whether the soft skills index could work in practice, establishing a significant contribution of the research to professional practice.

The CPI was trialled on five live projects at a client of the researcher (detailed in section 5.3.3) which each received a corresponding CPI score following assessment (illustrated in section 5.3.5), allowing projects to be compared against each other by both individual soft skill KPIs and their overall CPI. The soft skills CPIs were also compared with the traditional 'iron triangle' hard KPI scores and rankings that had been calculated for the same projects; these indicated that in three of the five projects the soft and hard measures performed in line with each other as expected. The CPIs in the other two projects were significantly affected by the impact of the Covid-19 pandemic. The Client had given the option for contractors to return to site where their organisational policies allowed: the contractors in the three projects that performed as expected all returned to site, however in the two that did not the contractors' organisational policy was to not return to site until much later when they felt it safer, severely impacting their projects' programmes. This limitation of the CPI's applicability is recognised in section 7.4.

The client organisation that permitted the live use case to be undertaken is the largest 'blue light' (i.e. emergency services) client in the UK and employs around 44,000 people. On completion of the use case trial, the client confirmed that the 'Performance Pentagon CPI' assessment model will be applied across the client's whole framework of projects, valued at £86m, as part of their performance measurement system. The quality of performance measurement data received following the assessment exceeded what the Client had in place previously, enabling greater depth and richness of discussion around project issues, and highlighting areas of strength and weakness that were not previously being captured. The success of this trial is evidence that the CPI can be successfully applied on real life projects in the

construction industry, providing evidence that the requirements of this research objective have been met. The extent to which the objective was achieved has been addressed (see 5.3.7).

7.2.3 Objective 3: Establish theoretical contribution

The objective in full was to ***"Reflect on the theories relevant to the study and establish where the most significant contributions can be made"***. The literature review acknowledged four theories relevant to the study that were reflected on for the contributions that were made to each of them: i.e. Goal Setting Theory, Social Cognitive Theory, Control Theory and Agency Theory (the individual contributions made are all set out in section 6.2).

Each of the study's contributions were brought together as part of a modified and extended synthesis of the existing theories, which the researcher ultimately described as the "Measured Goal Interest" (MGI) phenomenon in section 6.3, representing **a brand new term** for this field of research in describing the contribution that that the study has made and is described below.

Measured Goal Interest (MGI): If both parties are in agreement on the performance pentagon soft skills/CPI goals to be met prior to commencement of work, and these can be measured ["MEASURED"] transparently (the agreement may reflect corresponding incentivisation/ reward), then both parties will be satisfied by the outcome on completion ["GOAL INTEREST"].

Note: The phenomenon illustrates that should any changes in the goals be required, for example if they are being easily exceeded, this will be based on live performance data as it is reported.

The Measured Goal Interest phenomenon represents a significant contribution to the existing academic theories on performance measurement. It provides a context within which the researcher's new performance measurement model, the Performance Pentagon CPI, can be successfully applied in the construction industry, thus providing evidence that the third objective was achieved (the extent to which it was achieved has been addressed, see 6.4).

7.3 Contributions of the research

7.3.1 Contribution to Professional Practice

For ease of recognition and understanding, the five soft skills derived from the study as part of the CPI will be presented as the "Performance Pentagon for Project Soft Skills" (see Figure 11) where each side reflects a different skill. The shape was chosen to contrast with the well-known 'iron triangle' (Toor

and Ogunlana, 2010) for hard measures. The contributions that the new CPI will make for professional practice are summarised below (full detail in section 5.4):

i). The quality of soft skills performance measurement of project managers will improve on certain projects in the UK construction industry;
ii). It exceeds the applicability of the currently best-known performance measurement model in relation to soft skills in the UK construction industry;
iii). Less reliance on who facilitates the implementation of the performance measurement system;
iv). Opportunity for professional bodies to adopt a new soft skills assessment model without the cost of research;
v). A major consultancy has already adopted the composite performance index on its projects;
vi). A major client has already adopted the composite performance index as its standard practice;
vii). Consolidated definitions of 20 project soft skills have been produced for industry reference.

Additional detail is provided in section 5.4 to be clear on any restrictions to the above contributions, being prudent as to how the construction sector will actually benefit from this research in practice.

7.3.2 Contribution to Theory

After outlining the contributions that the study has made individually to each of four different theories (section 6.2) – Goal Setting Theory, Social Cognitive Theory, Control Theory and Agency Theory – the researcher brought these contributions together as part of a modified and extended synthesis of existing theories (section 6.3). The phenomenon of 'measured goal interest' – a new term that is an outcome from this research – represents a significant contribution to the existing academic theories on performance measurement. It describes how if both parties are agreed on the goals to be met prior to commencement of the work, and if these can be measured transparently without bias (with corresponding incentivisation/ reward), then both parties will be satisfied by the outcome on completion. The theory also identifies that if any change in the goals is required, e.g. if they are being easily exceeded, it will be based on live performance data. Additional detail is provided throughout section 6.2 to be clear on any restrictions to the above contributions.

7.4 Limitations of the Research

The limitations of this research have been identified and set out below:

- **The CPI cannot be generalised in its applicability to all construction professions, due to the professional make-up of the Expert Group**

The Expert Group consisted entirely of project management professionals from the researcher's organisation. Therefore, the CPI cannot be said to apply to all project participants as it was created only with input from a single discipline.

- **The CPI cannot be generalised in its applicability to the whole of the construction sector, due to the sub-sector make-up of the Expert Group and basis for the use case**

The data collected in this study is reflective only of the sub-sectors in which the Expert Group predominantly work and cannot be said to reflect all of construction. The researcher's organisation does work across all of the primary sub-sectors (e.g. healthcare, education, infrastructure) so it is expected that the Expert Group provides a very good representation of them, but this has not been confirmed. Furthermore, the use case was undertaken with a single client organisation (on five of their projects) so there is evidence that the CPI has been used successfully only within that organisation's sub-sector, emergency services, and on projects with a total contract value under £2,000,000 where it was applied.

- **Soft skill definitions after Delphi Round 1 represent a consolidated 'best fit'**

The 20 soft skills arrived at following Delphi Round 1 (i.e. 9 soft skills derived from the literature review, 11 from the data collection survey) provided definitions that were consolidated from each of the 89 responses received and subsequent interviews, representing a 'best fit' but not necessarily the detail from every response (although attempted as closely as possible). This means that there will inevitably have been some participants in Delphi Round 2 that – when provided with the new definitions from which to select the 5-10 most important – may have either disagreed with these definitions or ignored the request to select them based on the definitions provided and instead based it on their own preconceived definitions for expediency.

- **The CPI assessment criteria are based on the soft skill definitions after Delphi Round 1 and so also represent a consolidated 'best fit'**

The assessment criteria created to measure the five soft skills (see section 5.3.2) are based on the definitions of the soft skills that were consolidated after round 1 (see Table 11). The definitions, and consequently the assessment criteria, represent a close as possible 'best fit', although not necessarily the detail of every response meaning that there may be a small number of participants who would disagree with these assessment criteria.

- **Unexpected events that prevent members of the project team from working – such as the Covid-19 pandemic – can impact on the applicability of the CPI**

  It was clear from two of the projects in the use case exercise that the Covid-19 pandemic affected some projects differently to others, depending on the policies of the project participants' organisations during such a major unexpected event. Therefore it needs to be recognised that for the CPI to be applied successfully, project participants should all be able to work in a way that does not significantly impact on the project programme.

- **The theories considered most relevant to the study may have been greater in number, had the search phrases in the systematic review been broadened further**

  The contributions to theory are predicated on the four theories selected in the literature review being most relevant to the study. The systematic review of the relevant theories adopted the three stages set out by Tranfield, Denyer and Smart (2003), however the database search phrases in the review protocol needed to be broadened as they initially yielded zero articles for review. This resulted in four articles being selected once inclusion and exclusion criteria were applied, and subsequently four theories being identified. It is possible that further theories could have been identified and in a higher standard of journal if the search terms were broadened yet further, although this would also have risked diluting their significance to the study.

- **The timing of when the scores are submitted by a project participant only reflects that snapshot in time and not necessarily the view that would be taken over a longer period**

  If someone has had particularly challenging issues with an individual or project discipline during the same period that they are asked to score their soft skills performance, this will influence what they score that individual even though it may not reflect their performance over a longer period. The perception of the scorer may also be influenced by the pressure or stress they are under at that moment in time. It is therefore important to make assessments at regular intervals with the project team, e.g. bi-monthly, so that any anomalies can be identified and explored further if necessary. In this way they can act as an early warning system if there are issues in the team that need to be addressed during the life of the project.

7.5 Opportunities for Further Research

Five opportunities for further research have been identified:

- **Create CPIs by region where the Expert Group is based**

  The population from which the Expert Group was selected included all eligible project management staff in the three regions of the researcher's organisation where project management staff were employed, i.e. the UK, USA and India, with the majority of participants based in the UK (56 no.). The results from the Expert Group were homogenised across each of the regions' participants to create a larger number of participants, recognising that the relatively small number of participants from the USA (17 no.) and India (16 no.) would be less likely to allow conclusions to be drawn on a regional basis. The four rounds of the Delphi Method were therefore conducted drawing from all participants across the three regions.

  If there had been a larger number of participants from the USA and India, then three separate regionalised CPIs could have been developed. This would have allowed for any nuances in regional preferences to come out and be more relevant to each country's projects, therefore an opportunity for further research would be to change the eligibility criteria so that a larger number of people could form the Expert Group in these regions. For reference only, an analysis of Round 1 survey responses (before consolidated results were sent back to respondents to re-select their top 5-10 soft skills in Round 2) has been undertaken by region and is included in Appendix R – despite the small sample sizes in the USA and India – for any apparent trends.

- **Expand the geographical regions for the Expert Group into new areas**

  The Literature Review identified that the Delphi Method has previously been applied in the context of construction performance measurement predominantly in Asia. The success of the Delphi Method's application to the UK, USA and India in this study give further assurance that it should also prove popular for use in other countries.

- **Change the Expert Group membership to focus on other construction disciplines**

  The Expert Group could be changed to include construction disciplines beyond solely project management, and other perspectives beyond consultants. The consultant project manager view may have similar traits to other consultant specialists such as quantity surveyor, civil engineer, structural engineer etc. who may not be as personally invested in the project as the client's own staff, who would have a different view again to the site-based contractor delivering the project. The professional make-up of the Expert Group provides a number of further variables to change in repeating the study.

- **Repeat each individual Delphi Round multiple times and take a mean response**

  The responses provided by the Expert Group at each round of the Delphi Method may be affected by the live issues the participants were addressing at the time of completing the survey. If the same survey was completed, say, three times over a longer period, this would diminish the effect of any one incident or relationship on a project that could have affected the scoring. The drawback of this approach is that it would treble the number of surveys the participant completes and potentially the timeframe to complete them, the patience of the participant and willingness to stay with the study may also be tested and risk them pulling out of the process.

- **Add an additional phase to the research focusing on evaluation of the CPI with further data**

  Each of the live projects in the use case were from a single client organisation, hence all had a project culture rooted in that client's approach and the sub-sector (i.e. emergency services) in which the client is based. Evaluation of the CPI could be given greater focus through collecting additional data relating to its application on another study to further refine it, e.g. using it on projects within different client environments in other sectors. Feedback could be gathered from those who have used the guidance on how to apply the proposed assessment criteria and scoring system (see section 5.3.2) to determine any variations or difficulties in its application to improve it for future users.

7.6 Summary of the Chapter

This chapter has addressed how each of the three research objectives have been met successfully. It has explained the significant contributions that the study has made both to professional practice and the academic theory on the subject of performance measurement. The fact that both a major client *and* major consultancy in the UK construction sector have adopted the "performance pentagon" soft skills within their own performance measurement models as standard practice shows how successful this study has already been. The development, synthesis and modification of existing theories that led to the phenomenon of measured goal interest following this study has resulted in an original contribution to the academic literature on the subject, the term "measured goal interest" never having been used previously. The limitations of the study have been identified and opportunities for further research set out, which the researcher may look to pursue in the near future.

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Appendices

Appendix A:

Timetable for the DBA Thesis submission

The milestones for this research from the beginning of the course through to DBA Thesis submission are set out below:

Activity	Start	End
DBA Programme	**01/10/17**	**18/07/22**
Research Methods Course	**01/10/17**	**20/07/18**
Submit Qualifying Report (QR)	21/07/18	21/12/18
QR Viva Voce	25/04/19	25/04/19
Confirmation of Ethical Approval	25/11/19	25/11/19
Data Collection	**06/01/19**	**12/03/21**
Delphi Method: Questionnaire Preparation	**06/01/19**	**14/02/20**
Permission and support from Gleeds Board	06/01/20	24/01/20
Develop Delphi round 1 questionnaire (rounds 2-4 questionnaires will be based upon round 1 responses)	06/01/20	08/10/20
Identify Expert Group	09/01/20	10/01/20
Pilot Delphi round 1 questionnaire	27/01/20	07/02/20
Amend Delphi round 1-4 questionnaires as required	10/02/20	14/02/20
Delphi Round 1	**24/02/20**	**05/06/20**
Distribute questionnaire	24/02/20	24/02/20
Response period	24/02/20	06/03/20
Analyse results	09/03/20	27/03/20
Interviews	**30/03/20**	**05/06/20**
Identify interviewees	30/03/20	31/03/20
Prepare agenda and format for interviews	01/04/20	01/04/20
Arrange interviews	02/04/20	03/04/20
Conduct interviews	06/04/20	01/05/20
Procure type-up of interview transcripts	04/05/20	15/05/20
Analyse interview transcripts	18/05/20	29/05/20
Peer review of interview transcript analysis	01/06/20	05/06/20
Delphi Round 2	**22/06/20**	**01/08/20**
Distribute questionnaire	22/06/20	22/06/20
Response period	22/06/20	03/07/20
Analyse results	06/07/20	01/08/20
Delphi Round 3	**03/08/20**	**25/09/20**
Distribute questionnaire	03/08/20	03/08/20

Response period	03/08/21	21/08/21
Analyse results	24/08/21	25/09/20
[October/November 2020 – Reassessment of Literature Review and Methodology]		
Delphi Round 4	**23/11/20**	**12/03/21**
Distribute questionnaire	23/11/20	27/11/20
Response period	30/11/20	11/12/20
Analyse results	14/12/20	01/01/21
Interviews	**04/01/21**	**12/03/21**
Identify interviewees	04/01/21	08/01/21
Arrange interviews	11/01/21	14/01/21
Conduct interviews	15/01/21	22/02/21
Procure type-up of interview transcripts	23/02/21	05/03/21
Analyse interview transcripts	08/03/21	12/03/21
Use Case on Live Projects	***13/07/20***	***31/07/20***
Distribute questionnaire	*13/07/20*	*13/07/20*
Response period	*13/07/20*	*17/07/20*
Analyse results	*20/07/20*	*31/07/20*
Writing up	**15/03/21**	**08/07/22**
Chapter 4: Results and Data	15/03/21	16/07/21
Chapter 1: Introduction	19/07/21	30/07/21
Chapter 3: Methodology	02/08/21	29/10/21
Chapter 2: Literature Review	01/11/21	31/12/21
Chapter 5: Contribution to Professional Practice	03/01/22	04/03/22
Chapter 6: Contribution to Theory	07/03/22	06/05/22
Chapter 7: Conclusions	09/05/22	17/06/22
References and Bibliography	20/06/22	22/06/22
Appendices	23/06/22	24/06/22
Abstract	27/06/22	27/06/22
Title page/ Contents/ Acknowledgements	28/06/22	28/06/22
Proof reading	29/06/22	01/07/22
Revisions	04/07/22	07/07/22
Produce bound copies	08/07/22	08/07/22
Final Submission	**18/07/22**	**18/07/22**

Appendix B:

Risk Assessment

Risk Assessment

The risks are summarised in the table below.

Risk Description	**Risk Factor**			**Mitigating Actions**
	Severity	**Likelihood**	**Risk**	
Delays in the experts submitting survey responses due to respondent fatigue to the four rounds of the Delphi Method.	H	M	M/H	Schedule Microsoft Outlook reminders in the experts' online calendars; issue reminder emails to any non-respondents.
Selection of the Expert Group is important, these individuals must be willing to commit to all four rounds but there is a risk they will drop out before completing them.	H	M	M/H	Provide a clear briefing to the Expert Group so that they understand expectations before committing themselves; include a supporting letter from my organisation's Executive Board to generate added motivation.
Questionnaire poorly understood due to language used being either ambiguous or unclear.	M	M	M	The questionnaires will be piloted to identify any areas for potential misinterpretation.
Dictaphone battery runs out during interview recording.	H	L	M	Bring spare batteries to interview.
Changing employer during data collection phase.	H	L	M	Any employer changes would only take place if the same data collection conditions are possible, or if the data collection phase has completed.
Loss of material produced to date from computer malfunction – questionnaires, transcriptions etc.	H	L	M	Back-up material via an online cloud system.

Appendix C:

Correspondence with Use Case organisation

[Email redacted from open access version of thesis]

Appendix D:

Approvals and Support from Country Leaders of Researcher's Organisation

[Emails redacted from open access version of thesis]

Appendix E:

Email to Delphi Round 1 Participants and Round 1 Questionnaire

From: Michael Parker
Sent: 02 March 2020 18:36
To: [redacted]
Cc: [redacted]
Subject: Questionnaire (USA) - Gleeds Research Study on Performance Measurement

Dear all,

Your participation is kindly requested to take part in a research study that is being issued to project management staff in the UK, USA and India today. The study is focused on the performance measurement of soft skills on construction projects, and has the potential to make a significant contribution to the industry and enhance Gleeds' growing reputation as experts in performance measurement. The attached Participant Briefing Information provides further details about the study.

The research involves 4 online questionnaires, each issued separately by email approximately 4-8 weeks apart, and should take no longer than 15-20 minutes each time to complete. It is critical to the study that participants complete all 4 questionnaires. After the first questionnaire, a small selection of participants will be asked to take part in a short interview of approximately 30 minutes by telephone regarding their responses. The key dates are set out below:

Research Study	Time required	Date	Response Period
Questionnaire 1	**20 mins**	**2nd March 2020**	**1 week**
Interviews *(a selection tbc)*	30 mins	6th April 2020	Held over 4 weeks if selected
Questionnaire 2	15 mins	8th June 2020	2 weeks
Questionnaire 3	15 mins	6th July 2020	2 weeks
Questionnaire 4	15 mins	3rd August 2020	2 weeks

Please can you complete Questionnaire 1 on this link by **5pm on Friday 6th March**:
https://www.surveymonkey.co.uk/r/GleedsResearchStudy.

Thank you in advance for your contribution to this study.

Best regards,

Mike

Michael Parker | Associate Director | Gleeds Advisory Ltd
T: +44 (0)121 644 5400 | **F:** +44 (0)121 644 5401 | **M:** + 44 (0)7718 804237
7th Floor, Centre City, 5-7 Hill Street, Birmingham (UK), B5 4UA
michael.parker@gleeds.co.uk

Aston Business School

Research Study

1. Round 1 Questionnaire

Further to the Participant Briefing Information, this survey will ask questions relevant to a research study on soft skills measurement in construction projects.

Participant Consent Form
The initial questions will be to gain your consent to participate in the research study.

* 1. I confirm that I have read and understood the Participant Briefing Information provided for this study and have had the opportunity to ask questions. ***Please enter your initials below to confirm.*** 0

* 2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving reason. ***Please enter your initials below to confirm.*** 0

* 3. I agree to take part in the above study. ***Please enter your initials below to confirm.*** 0

* 4. Please select Yes/No next to the three questions below: 0

	Please select Yes/No below
If requested to carry out a short interview, I agree to the interview being audio recorded	
I agree to the use of anonymised quotes	
I agree that my data gathered in this study may be stored (after it has been anonymised) in a specialist data centre and may be used by other researchers that the current research team for future research	

* 5. Please enter your name below 0

First name

Last name

Aston Business School

Research Study

2. Personal Details

* 1. Job Title and Discipline 0

* 2. Nationality 0

* 3. Gleeds Office Location (city and country) 0

* 4. Number of years' experience working in the construction industry 0

* 5. Number of years' experience working in the construction industry ***in country of office location*** *(UK, USA or India)* 0

3. Soft Skills Question

* 1. Please list below the 5-10 soft skills that you consider to be of greatest importance when working as part of a project team in the construction industry.

Note: Soft skills are the personal attributes, behavioural and interpersonal skills required to be successful in a particular role within a ***project team***. 0

Soft Skill 1	
Soft Skill 2	
Soft Skill 3	
Soft Skill 4	
Soft Skill 5	
Soft Skill 6	
Soft Skill 7	
Soft Skill 8	
Soft Skill 9	
Soft Skill 10	

Appendix F:

Participant Briefing Information

Aston University
295 Aston Express Way, Birmingham B4 7ER
T: 0121 204 3011
E: parkerma@aston.ac.uk

Aston Business School

2nd March 2020

Participant Briefing Information

Dear Participant,

You are being invited to take part in a research study. Before you decide whether to take part, it is important to understand why the research is being done and what is involved. Please read the following information carefully.

Title: DEVELOPING A PERFORMANCE INDEX TO MEASURE SOFT SKILLS ON CONSTRUCTION PROJECTS: A DELPHI STUDY

Research Student: Michael Parker (Associate Director, Gleeds Birmingham - UK)

i) Purpose of the study

This research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. You are invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. If you decide to take part, you are free to withdraw at any time.

ii) Benefits of taking part

By taking part in this study you will be helping to further the current understanding of an important subject, and enhance the firm's growing reputation as experts in performance measurement. You will also help to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

iii) What is involved

There is no cost involved, we only ask that you commit to being part of the study throughout its 6-month duration. It will involve 4 short online questionnaires, each issued separately by email approximately 4-8 weeks apart, and should take no longer than 15-20 minutes each time to complete. ***It is critical to the study that you complete all 4 questionnaires.*** After submitting your response to the first questionnaire, you may be asked to take part in a short interview of approximately 30 minutes regarding your responses, most likely by telephone/ videoconference. The key dates are outlined below:

Research Study	Time required	Date	Response Period
Questionnaire 1	20 mins	2nd March 2020	1 week
Interviews *(a selection tbc)*	30 mins	6th April 2020	*Held over 4 weeks if selected*
Questionnaire 2	15 mins	8th June 2020	2 weeks
Questionnaire 3	15 mins	6th July 2020	2 weeks
Questionnaire 4	15 mins	3rd August 2020	2 weeks

If you agree to be part of this study, you simply need to click this link which will take you to the survey to complete Questionnaire 1: https://www.surveymonkey.co.uk/r/GleedsResearchStudy

iv) Contact for further information

You can contact me directly through my student email address parkerma@aston.ac.uk. If you have any concerns about the way in which the study has been conducted, you can contact the Secretary of Aston Business School's Research Ethics Committee on: s.ahmed108@aston.ac.uk or abs_aarm@aston.ac.uk.

Aston University
295 Aston Express Way, Birmingham B4 7ER
T: 0121 204 3011
E: parkerma@aston.ac.uk

Aston Business School

I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The results of the research will be used within my doctorate thesis, if you would like to see a copy of the final thesis please let me know.

My sincere thanks for taking the time to read this briefing information.

Yours faithfully,

Michael Parker

Aston University
295 Aston Express Way, Birmingham B4 7ER
T: 0121 204 3011
E: parkerma@aston.ac.uk

Aston Business School

Confidentiality and Data Protection

The University takes its obligations under data and privacy law seriously and complies with its Data Protection Policies and Procedures, its Record Management Policy and Procedures and the University's Information Security Policy. Moreover, all data generated by the research study will be retained in accordance with the University's policy on Academic Integrity. The University will also ensure that the data that is collected as part of the research study will be kept confidential and will only be used for the purposes of the research study.

For the purposes of the research study, the data that will be obtained will be pseudonymised. This means that the personal data you provide will be replaced with a pseudonym i.e. a value of a code which does not allow your data to be directly identified. The University, in accordance with data and privacy law, will ensure that the personal data provided is stored separately to the pseudonymised data and, in accordance with its Information Security Policy, will ensure that appropriate measures are adopted to ensure data is stored securely. The data will be stored by the UK Data Archive.

Aston University takes its obligations under data and privacy law seriously and complies with the General Data Protection Regulation ("GDPR") and the Data Protection Act 2018 ("DPA"). Aston University is the sponsor for this study based in the United Kingdom. We will be using information from you in order to undertake this study. Aston University will process your personal data in order to register you as a participant and to manage your participation in the study. It will process your personal data on the grounds that it is necessary for the performance of a task carried out in the public interest (GDPR Article 6(1)(e). Aston University may process special categories of data about you which includes details about your health. Aston University will process this data on the grounds that it is necessary for statistical or research purposes (GDPR Article 9(2)(j)). Aston University will keep identifiable information about you for 6 years after the study has finished.

Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will use the minimum personally identifiable information possible. Individual studies may provide you with a time period after taking part in the study where you are able to withdraw data that has not been anonymised. This time period will be specified in the participant information sheet for the study.

You can find out more about how we use your information at www.aston.ac.uk/dataprotection or by contacting our Data Protection Officer at dp_officer@aston.ac.uk.

If you wish to raise a complaint on how we have handled your personal data, you can contact our Data Protection Officer who will investigate the matter. If you are not satisfied with our response or believe we are processing your personal data in a way that is not lawful you can complain to the Information Commissioner's Office (ICO).

Appendix G:

Delphi Round 1 Questionnaire Responses

ID	Country	Soft Skill 1	No.	Soft Skill 2	No.	Soft Skill 3	No.	Soft Skill 4	No.	Soft Skill 5	No.	Soft Skill 6	No.	Soft Skill 7	No.	Soft Skill 8	No.	Soft Skill 9	No.	Soft Skill 10	No.	Queries
IN1	India	Communication	1	Flexibility	9	Integrity	2	Work ethics	10	team works	7	Positive attitude	8									0
IN2	India	Listening	13	Confidence	17	Writing skills	Q	Verbal communication	1	Team work	7	Problem solving	9	Leadership	5	Work ethics	10	Time management	Q	Adaptability/ flexibility	9	2
IN3	India	Proactive	10	Enthusiastic	10	Listener	13	Teamplayer and leader	5	Empathetic	12	Extrovert	Q	Communication skills	1	Technological skills	-	Negotiation skills	19	Resilience	11	1
IN4	India	Negotiations	4	Exp in MS office	-	Exp in Design soft	-	Presentation skills	1	Problem solver	9											0
IN5	India	Communication	1	Decision Making	5	Leadership	5	Team working	7	Ability to adapt to changes	9	Problem solving	9	Time management	Q	Empathy	12					1
IN6	India	Adaptability	9	Creative	6	Self Driven	10	Time management	Q	Communication	1	Eye for detail	20	Team building	7							1
IN7	India	Written and oral Communica	1	Listening and understandir	13	Conflict resolution	4	Foresee the upcoming challenge	-	Maintaining and adopting to a	-	Preparing presentations a	1	Ensuring constant motiva	8	Multi stakeholder manager	1					0
IN8	India	Motivation	8	Trusting	2	Communication	1	Team Building	7	Task Management	-	Listening	13									0
IN9	India	Communication	1	Managing and working with	7	Leadership	5	Client Management	Q	Meetings management	Q	Decision making	5									2
IN10	India	Communication skills	1	Ethics compliance	2	Encouaring the team members	8	Work life balancing	-	Getting feedback from team fo	13	Networking skills	19									0
IN11	India	Communication Skills	1	Teamwork	7	Dependability	14	Work Ethic	10	Integrity	2	Leadership	5	Adaptability	9	Problem Solving	9	Continuous Self Upgradatic	3	Conflict Resolution	4	0
IN12	India	Communication	1	Trustworthy	2	Taking Responsibilities	5	Positive Attitude	8	Support others for their delive	7	Confidence	17	Proactive	10	Self Development	3	English Speaking	-	Quick Learner	9	0
IN13	India	Verbal Communication	1	Written Communication	1	Man Mangement	Q	Encouraging to speak up	8	Formal discussions (task base	Q	Team bonding	7	Respect for others views	2	Interactive debates	9	Equal Participation in daily	9	Knowledge of task in hand	-	2
IN14	India	Self Confidence and Boldnes	17	Communication strategy	1	Team work and coaching	7	Problem solving techniques	9	Interpersonal Skills	19	Stress Management	11	Negotiation techniques	4	Trust Building	2	Adaptability	9	Time management	Q	1
IN15	India	Communication	1	Goal & Vision	17	Transparency	2	Problem Solving Skills	9	Work Delegation & Tracking	15	Plan - Prioritize	-	Clarity on what we do	17	Stakeholders management	1	Diplomacy	1	Calculating / Calculated Ris	-	0
IN16	India	Communication	1	Positive Attitude	8	Common Sense	Q	Team Work	7	Time Management	Q	Creativity	6	Problem Solving	9	Sensitivity	12	Adaptability	9	Perseverance	10	2
UK1	UK	Verbal Communication	1	Written Communication	1	Confidence	17	Honesty	2	Leadership	5	Collaborative Approach	7	Supporting Colleagues	8	Timely Delivery / meeting	-					0
UK2	UK	Communication	1	Professional	Q	Leadership	5	Problem solving	9	Coordinated	Q	Good listener	13	Thorough	20	Understanding	12					2
UK3	UK	Communication	1	Teamwork	7	Time Management	Q	Empathy	12	Problem Solving	9	Commercial Awareness	-	Motivational	8	Reputation	Q	Flexibility	9			2
UK4	UK	Communication	1	Experience	Q	Ability to listen	13	Patience	16	Collaboration	7	Constructive Criticism	Q									2
UK5	UK	Empathy	12	Listener	13	Diplomat	1	Team player	7	Emotionally intelligent	12	Flexible	9	Solution finder	9							0
UK6	UK	Good Listener	8	Empathy	12	Ability to compromise	4	Awareness of others priorities	12	Ability to explain oneself clea	1											0
UK7	UK	Communication	1	Collaboration	7	Committement	10	Teamwork	7	Leadership	5											0
UK8	UK	Organisation	18	Building trust	2	Communication	1	Influence	Q	Negotiation	4											1
UK9	UK	Good Communication	1	Technical Knowledge	-	Accurate Planning	-	Personal Organisation	17	Risk Identification and Mitigat	-	Personal Dedication	10	Professional Integrity	2	Job Satisfaction	-					0
UK10	UK	Collaboration will	7	Communication at differen	1	Understanding of person type	12	Email content and structure - be	1	Appreciation of limitations	15	Ability to conform to stan	9	Maintaining positivity/m	9							0
UK11	UK	Communication	1	Patience	16	Decisiveness	5	Openness	2	Diplomacy	1	Trust	2	Intergrity	2	Professionalism	Q	Punctuality	14	Calmness	16	1
UK12	UK	Good listener	13	Honesty	1	Reliable	14	Professional	Q	Friendly	19	Open to ideas	9	Constructive criticism	13							1
UK13	UK	Commitment	10	Confidence	17	Open	2	Be flexible	9	Able to listen	13	People management	Q	Ability to be decisive	5	Approachable	19	Willing to learn	3	Have personality	Q	2
UK14	UK	Time Managment	Q	Managing Personalities/Be	4	Leadership	5	Professionalism	Q	Team Work	7	Motivation	10	ICT skills	Q	Presentation	1					3
UK15	UK	Communication	1	Interpersonal Skills / Relati	19	Teamwork	7	Problem Solving	9	Leadership	5	Motivation	10	Conflict Management	4	Adaptability	9	Decision Making	5	Organisation & People Man	18	0
UK16	UK	experience	Q	open	9	honest	2	consistent	Q	clear	1	fair	2	listening	13	flexible	9	tolerant	16	emphathetic	12	2
UK17	UK	Active listening	13	Leadership	5	Motivation	8	Communication	1	Conflict Management	4	Trust Building	2	Decision Making	5	Organisation	18	Team Building	7	Influencing	Q	1
UK18	UK	Good listener	13	Communicator	1	Presenting	1	Negotiation	4	Writing skills	1	Critical thinking	9	Making informed decisio	5	Adaptability	9	Dispute resolution	4	Delegation	15	0
UK19	UK	Common Sense	Q	Listening	13	Verbal / Non Verbal / Written	1	Dependable / Reliability	14	Flexibility	9	Problem Solving	9	Conflict Management an	4	Honesty	2	Co-operation	7	Empathy / Emotional Intelli	12	1
UK20	UK	Communication	1	Build relationships	7	Thick skin	11	Negotiation	4	Self-motivation	10	Disciplined	18	Organised	18	Prioritise	18	Understand the objectives	12	Leader	5	0
UK21	UK	Listening	13	Communication	1	People Management	Q	Expectation Management	Q	Flexibility / Adaptation	9	Collaboration	7	Emotional Intelligence	12							2
UK22	UK	People Skills - Relating to pe	8	Communication - verbal, w	1	Leadership	5	Organisational skills	18	Time Management skills (Prio	Q	Making Decisions	5	Being Driven/ Motivated	8	Conflict Management	4	Building Relationships/ Tru	2			1
UK23	UK	Personality	19	Professionalism	Q	Patience	16	Approachable	19	Fairness	2	Diplomatic	Q	Drive	10	Confidence	17					2
UK24	UK	positive attitude	8	Collaborative practices	7	open to communication	19	ability to see beyond own intere	9	understanding of other partie	12											0
UK25	UK	Listening	13	Resilience	11	managing takeholder relations	4	understanding of others job role	12	understanding of others work	12	Emotional intelligence	12	good time keeping	14	able to work alone or as a t	9	respectfulness	2	honesty	2	0
UK26	UK	Teamwork	7	Communication	1	interpersonal skills	19	Leadership	5	Time management	Q	Integrity	2	Empathy	12	Organisation	18					1
UK27	UK	Communication	1	Teamwork	7	Being flexible/ adaptable	9	Self motivated	10	Reliable	14	Listening	13									0
UK28	UK	good communication	1	ability to listen	13	ability to lead	5	respect others	2	get along with people	19	understand roles of other	12	not egotistical	7							0
UK29	UK	Effective Communication	1	Teamworking	7	Interpersonal Skills	19	Patience and Understanding	16	Flexibility	9	Leadership	5									0
UK30	UK	Empathy	12	Communication Skills	1	Diligence	10	Commitment to the task	10	Appreciation of others efforts	12	Punctuality	14									0
UK31	UK	Leadership	5	Motivation	8	Communication	1	Organisation	18	Decision Making	5	Conflict Management / A	4	Negotiation	4	Teamwork	7					0
UK32	UK	Leadership	5	Motivation	8	Communication	1	Conflict Managememt	4	Trust Building	2	Decision Making	5	Organisation	18	Delegation	15	Risk Management	-	Prioritising	18	0
UK33	UK	Confident	17	Patient	16	Good Listener	13	Sociable	19	Team Player	7	Good Ideas	6	Personable	19	Able to speak your mind.	2	Verbal Skills	1			0
UK34	UK	Communication	1	Teamwork	7	Flexibility	9	Negotiating	4	Assertiveness	8	Social Skills	19	Time Management	Q							1
UK35	UK	Communication-verbal	1	Empathy	12	Coerciveness	-	Leadership	5	Fairness	2											0
UK36	UK	Confidence	17	Trustworthy	2	Professional	Q	Personable	19	Strong Communication Skills	1	Emotive	Q	Negotiation	4	Mediation	4	Team- working	7			2
UK37	UK	Empathy	12	Flexibility	9	Accountability	5	Creativity	6	Ability to learn and share	3											0
UK38	UK	Organised	18	Effective Communication	1	Rapport Building	7	Problem Solving	9	Empathy	12	Integrity	2	Dependable	14	Work ethic	10	Leadership	5	Conflict Resolution	4	0
UK39	UK	Listening	13	Empathy	12	Negotiation	4	Decision Making	5	Empowerment	15	Problem solving	9	Team work	7	Self Management	18	Perseverance	10	Positivity	8	0
UK40	UK	Verbal Communication	1	Listening	13	Physical Communication	1	Humor - Quick-wittedness	19	Persuasion - Conflict Resolutio	4	Interpersonal Relationshi	19	Mentoring - Coaching	5	Delegation	15	Decision Making	5	Critical Thinking - Problem S	9	0
UK41	UK	Communication	1	Problem solving	9	Organisation	18	Openness	2	Leadership	5											0
UK42	UK	Communication	1	Approachability	19	Collaboration	7	Cooporation	7	Professional integrity	2	Empowering leadership	15	Compliance	2	Giving all equal opportuniti	2	Responsibility	5	Safety	-	0
UK43	UK	Ability to listen to others in t	13	Clear communication of de	1	Accepting when decisions are	5	Understanding when others are	12	Engendering trust between te	2	Ability to negotiate betw	4									0
UK44	UK	Judgement	Q	Empathy	12	Clarity	17	Bravery	Q	Adaptability	9											2
UK45	UK	Communication	1	Organisation	18	Leadership	5	Willingness to learn	3	Innovation	6	Collaboration	7	Consistency	Q	Open minded	9	Demonstration	Q	Empathy	12	2
UK46	UK	Proactive approach and stror	10	Integrity beyond doubt	2	Approachable	19	Desire to take on challenges hea	5	Ability to communicate effect	1	Lead by example, set the	5	Do the right thing even w	14	Be understanding - an abili	12	Take responsibility (at your	5	Flexible - goes with the terr	9	0
UK47	UK	Communication	1	integrity	2	honesty	2	understanding	12	attitude	10											0
UK48	UK	Politeness/manners	1	punctuality	14	confidence	17	proactivity	10	adapability/flexibility	9	realability	14	empathy	12	team player	7	willingness to learn new sk	3	enthusiasm	10	0
UK49	UK	Problem solving	9	Communication / interpers	1	Teamwork	7	Adaptability	9	Leadership	5	Time Management	Q	Creativity	6	Attention to detail	20	Work ethic	10	Creativity	6	1
UK50	UK	Listening	13	Communication	1	Critical Thicking	9	Decision Making	5	Problem Solving	9	Motivation	8	Delegation	15	Networking	19	Leadership	5	Empathy	12	0
UK51	UK	Collaboration	7	Effective Communications	1	reformed challenge of ideas	6	Leadership through example	5	Applied logical thinking	9	Effective planning	-	Robust organisational str	Q	Ability to take strategic and	Q	Client outcome based focu	-	Ability to interpret brief	-	2
UK52	UK	Communication	1	Confidence	17	interpersonal	19	Grounded	1	Decisive	5											0
UK53	UK	Communication	1	Listening	13	Coordination	18	Problem solveing	9	interpretation	13	Understanding	12									0
UK54	UK	Communication	1	Active Listening	13	Trust	2	Decision Making	5	Negotiation	4	Leadership	5	Motivation	8	Team Building	7					0
UK55	UK	Collaborative	7	Respectful	2	Honest	2	Positive attitude	8	Supportive	8	Ethical	2	Adaptable	9	Self-motivated	8	Accountable	5	Flexibility	9	0
UK56	UK	Team Building	7	Effective Communication	1	Value Added	Q	Creativity	6	Effective Delivery	Q	Innovation	6	Problem Solving	9	Encouraging	8	Dealing with Challenges	11	Leadership	5	2
US1	USA	Project management	-	Estimating	-	Time management	Q	Technical Knowledge	-	Accounting knowledge	-	Team work	7	Communication	1	Adaptability	9					1
US2	USA	Communication	1	Empathy	12	Problem Solving	9	Work Ethic	10	Teamwork	7	Time Management	Q	Adaptability	9	Leadership	5	Attention to Detail	20	Innovative Mindset	6	1
US3	USA	Communication	1	Attitude	10	Negotiation	4	Adaptability	9	Honesty	2											0
US4	USA	clear speech	1	presentation skills	1	professional writing skills	1	critical thinking	9	integrity	2	adaptability	9	business etiquette	1	interpersonal skills	19	positive attitude	8	teamwork	7	0
US5	USA	Communication	1	Time Magagement	Q	Activity/Task Management	-	Teamwork	7	Dependability / Promptness	14	Managing Client/Team Ex	Q									2
US6	USA	Good communication skills	1	approachable	19	team oriented	7	well rounded	-	self confident	17											0
US7	USA	Being personable/likeable	19	Providing clear direction	5	Being flexible/adaptable	9	Dependability - following throu	14	Meeting deadlines	14	Being organized	18	Ability to remain level-h	16							0
US8	USA	Time Management	Q	Detail Oriented	20	Energetic	10	Conscious	-	Hard Working	10	Ethical	2									1
US9	USA	Communication	1	Understanding need behin	-	Likability	19	Reliable/responsible	14	Computer literacy	-											0
US10	USA	Leadership	5	Accountable	3	Dependable	14	Optimistic	8	Engaging	1	Empathetic	12	Reflective	Q	Considerate	12	Impatient	Q	Learning	3	2
US11	USA	Communication	1	Emotional Intelligence	12	Collaborative	7	Respectful and Constructive Dis	4	Organizational and Project Rol	12	Personable	19	Respectful	2	Caring	19	Solution Driven	9	Observant	20	0
US12	USA	Communication	1	Multitasking	Q	Leadership	5	Flexibility	9	Problem Solving	9	Time Management	Q	Creativity	6	Attention to Detail	20					2
US13	USA	Use concise communication	1	Be courteous	1	Ability to work with a wide ran	7	Ability to use a positive persona	8	Use humor appropriately	19											0
US14	USA	Communication/Speaking	1	Listening	13	Flexibility	9	Critical Thinking	9	Logical thinking	9	problem solving	9	conflict management	4	open mindedness	9	confidence	17	honesty	2	0
US15	USA	Compassion	12	Understanding	9	Empathy	12	Respect	2	Calmness	16	Advocacy	Q	Consideration	Q	Friendship	Q	Loyalty	Q	Diligence	18	4
US16	USA	Talking to a group, large or s	1	Making a presentation	1	Social interaction	19	Sense of humor	19	Pleasant appearance and dem	1	Being on time for meetin	14	Talking on the phone	1	Emailing and texting	1					0
US17	USA	Ability to understand people	-	Ability to mediate between	4	Not take decisions personally	11	Influence others by exhibiting le	5	Communicate on both a verba	1	Willing to teach and take	3									0

The results opposite reflect 16 responses from India, 56 from UK and 17 from USA. They have been colour-coded as follows:

Response aligns to either a) one of the 9 Consolidated Soft Skills from the Literature Survey, or b) one of the 11 New Soft Skill Trends that emerged from this Round 1 questionnaire.

Response requires further consideration before aligning to either a) one of the 9 Consolidated Soft Skills from the Literature Survey, or b) one of the 11 New Soft Skill Trends that emerged from this Round 1 questionnaire. This may be through interviewing the respondent to understand the meaning intended when submitting the response.

Response is not considered a soft skill as defined in the questionnaire.

Appendix H:

Delphi Round 1 Interview Transcriptions

Interview No. 1

Interview Participant: **US12**
Office: **New York, USA**
Date and Time: **1st May at 5pm GMT**
Meeting Medium: **Video Call (Microsoft Teams)**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information. Participants all agreed to the sessions being recorded on Microsoft Teams for later review.

MP: I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. You have been invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. *If you decide to take part, you are free to withdraw at any time.* By taking part in this study you are helping to further the current understanding of an important subject and enhancing the firm's growing reputation as experts in performance measurement. Our aim is to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

Thank you for responding to the survey that was distributed, and listing the 5-10 soft skills that you considered to be of greatest importance when working as part of a project team in the construction industry. As a reminder of the soft skills you listed, I have shared my screen with you.

You listed 8 soft skills in the survey, there were 3 in particular that I wanted to talk through in more detail if that's ok.

The first is **Multitasking**. Can you explain what you meant by that please?

US12: It's the ability to tackle multiple items at once on a given project, where there are always multiple issues to deal with and you are able to **prioritise** what is most urgent. This requires **flexibility** so that you're not solely focused on one task but open-minded in how you tackle problems, it requires a high level of **personal organization** to coordinate tasks effectively. I feel like a lot of us get stuck in a certain way of doing things, and when we're working with multiple clients on multiple projects, we have to be flexible and adapt to what their needs are.

MP: OK, just to clarify does that require adapting to different project environments, or specifically individual clients?

US12: Project environments. Every project will have a different team, and with every individual it's a different personality that you have to deal with who you need to be flexible to. We work with everyone, everyone does things their certain way, etc.

MP: What is this skill involved in managing those different personality types? How can you be better prepared to deal with them to get more successful outcomes?

US12:That's a really good question... you just have to have an open mind I guess!

MP: OK! Thank you. The next response I was interested is **time management**. Time management in what sense?

US12: I mean where you know you have to handle two or three projects at once and you have to have the skills to know what time to allocate to each, whilst staying in tune with everyone.

MP: And the last one was **creativity**, what did you mean by that?

US12:Anything can happen on a particular project. Sometimes you really have to think outside the box to find a solution to the problem. Again, it's one of those where I think we get stuck into doing things a specific way. But some situations you really have to get creative, you really have to think outside the box.

MP: Thanks. As I mentioned in the Briefing Sheet, the results of the research will be used within my doctorate thesis, and if you would like to see a copy of the final thesis please let me know. As I mentioned in my initial email, it's requested that you commit to being part of the study throughout its duration – there will be 3 more short online questionnaires, each issued approximately a month apart, and should take no longer than 15-20 minutes each time to complete. It is critical to the study that you complete all the questionnaires.

Thank you again for being part of the study, I really appreciate it.

US12:OK, awesome, I look forward to that!

Recommendations

Soft Skill suggested by participant	**Researcher recommendation** Soft Skill closely aligns to proposed definition of (if relevant):	**Peer review recommendation** Soft Skill closely aligns to proposed definition of (if relevant):
Multi-tasking	Self-organised	Self-organised
Time management	Self-organised	Self-organised
Creativity*	Innovation	Innovation

**Previously allocated but interested to hear participant's response.*

Interview No. 2

Interview Participant: **IN2**
Office: **Mumbai, India**
Date and Time: **1st May at 9am GMT**
Meeting Medium: **Video Call (Microsoft Teams)**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information. Participants all agreed to the sessions being recorded on Microsoft Teams for later review.

MP: I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. You have been invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. *If you decide to take part, you are free to withdraw at any time.* By taking part in this study you are helping to further the current understanding of an important subject and enhancing the firm's growing reputation as experts in performance measurement. Our aim is to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

Thank you for responding to the survey that was distributed, and listing the 5-10 soft skills that you considered to be of greatest importance when working as part of a project team in the construction industry. As a reminder of the soft skills you listed, I have shared my screen with you.

You listed 10 soft skills in the survey, there were 2 in particular that I wanted to talk through in more detail if that's ok.

The first is **Confidence**. Can you explain what you meant by that please?

IN2: I have worked on both the client side and consultant side, and what you want as a client is to see people lead the team – speaking with confidence helps you to do that, and for the project team to follow you. In front of a client, if I don't come across as a confident person, my company doesn't come across as a confident organisation.

MP: That's interesting, do you need to be an extrovert to come across as confident or can it come across in other ways? No, I think there is a very thin line in between being confident and being extrovert. An introvert can be absolutely as confident as anyone else – confidence in what you know should be reflected in how you speak about a subject, it can be based in competence.

MP: What does that mean to you in practice in terms of their behaviours?

IN2: When you are discussing issues with someone you need to be able to provide direction and remove ambiguity about what you believe a solution should be – that prevents confusion with the team – discomfort in presenting their own view can also come across in body language which is also part of giving confidence.

MP: OK, thank you. The second, the second soft skills you suggested that I wanted to touch on is **Writing Skills**. What do you mean by writing skills? In what context?

IN2: 90% of our project communication happens via emails, unless you see the time very regularly and this might mean speaking more in person or by phone. That's one area where communication from writing skills are very important; the other is in report writing. As a consultant, we are generally asked to present our work through types of reports, for example monthly progress reports which can go to the highest on the client side for those who are too far removed to be closely involved day-to-day. So how I portray the project and our contribution in that report is vitally important to ensure we communicate the right information effectively

Just to go back to emails, writing skills are very important here because the other person cannot see you like for example, how I'm talking to you [by video call]. I can make out if you're angry, or if you are joking if I can see you and your expressions. But then when I'm writing an email, I have to choose my words carefully to make sure the person receiving it does not misunderstand its meaning. Some emails need to be written in a polite, formal way, particularly if requesting information. There are some emails where you have to be a very strong, but without being offensive – understanding political correctness.

MP: Thank you. The next one that I wanted to pick up on is **Time Management**, which might mean something different in different contexts. What did you mean by time management?

IN2: I have a team of around four to five people working for me on a project. The first important thing for me is that I understand the capacity of my team. Accordingly I can prepare a programme which is achievable that I can commit to with the client. Giving the wrong programme to the client, maybe if I say two days when I require almost a week, means I either don't understand the quantum of work or I don't understand the team's capacity. This can have a negative impact in the company's reputation.

MP: Just to confirm what you said: when you talk about time management you mean that you're looking at that the requirements of tasks in terms of staff utilisation and resource allocation and then looking at the capacity and effectiveness of your team and using this information to create a schedule?

IN2: Yes.

MP: Thank you. The final one is **Adaptability/ Flexibility**. What did you mean by these terms?

IN2: I have worked in many sides of the industry throughout my career: with architects providing drawings, on site with labourers, as a client and consultant. In each of these organisations I had different roles to play and I had different goals. On the client side, my goal was to complete the project to time and uh do cost. When I was with an architect it was about completing the drawings getting them out to site. When I worked on site the goal was to get the work executed faster, so everywhere the requirement was different, the circumstances were different. The resources available were different and none of the scenarios were that similar, but I had to be able to adapt to each of these scenarios and be flexible. Even within specific roles, we have to work on multiple projects and every sector is different: a retail project is very different from a hospital project. A hospital hospitality project is very different from a commercial project. So if a person does not have that flexibility and adaptive nature, he will find it very difficult to settle into the project environment.

MP: How can someone learn to adapt to working on those different projects?

IN2: When a client is appointing a consultant, he's more looking at the consultant's whole organisation. For example, if a client has a corporate culture: very structured and protocol driven, you have to be that way for them to accept you or for them to feel that you're part of their team. You need to quickly understand what is expected, for example a client might require that

whatever you do, whatever decisions you take, you record everything on email. Other clients might take an opposite view and feel nervous when everything is being recorded or just not like using emails.

In India there are clients in rural areas that are not corporate at all and very basic. So you have to be able to get into that mould as well as be able to work for IKEA and Boeing.

MP: Thanks. As I mentioned in the Briefing Sheet, the results of the research will be used within my doctorate thesis, and if you would like to see a copy of the final thesis please let me know. As I mentioned in my initial email, it's requested that you commit to being part of the study throughout its duration – there will be 3 more short online questionnaires, each issued approximately a month apart, and should take no longer than 15-20 minutes each time to complete. It is critical to the study that you complete all the questionnaires.

Thank you again for being part of the study, I really appreciate it.

IN2: You are most welcome.

Recommendations

Soft Skill suggested by participant	**Researcher recommendation** Soft Skill closely aligns to proposed definition of (if relevant):	**Peer review recommendation** Soft Skill closely aligns to proposed definition of (if relevant):
Confidence*	Confidence	Confidence
Writing Skills	Communication	Communication
Time management	N/A – Did not describe a soft skill. Scheduling and resource allocation is a hard skill.	N/A – Description provided does not fit the definition of a soft skill.
Adaptability / Flexibility*	Flexibility	Flexibility

**Previously allocated but interested to hear participant's response.*

Interview No. 3

Interview Participant: **UK2**
Office: **Cardiff, UK**
Date and Time: **28th April at 11:30am GMT**
Meeting Medium: **Video Call (Microsoft Teams)**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information. Participants all agreed to the sessions being recorded on Microsoft Teams for later review.

MP: I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. You have been invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. *If you decide to take part, you are free to withdraw at any time.* By taking part in this study you are helping to further the current understanding of an important subject and enhancing the firm's growing reputation as experts in performance measurement. Our aim is to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

Thank you for responding to the survey that was distributed, and listing the 5-10 soft skills that you considered to be of greatest importance when working as part of a project team in the construction industry. As a reminder of the soft skills you listed, I have shared my screen with you.

You listed 8 soft skills in the survey, there were 4 in particular that I wanted to talk through in more detail if that's ok.

The first is **Professional**. Can you explain what you meant by that please?

UK2: We look for people who are members of various professional organizations, and I think you get a good level of interaction with those people. It's about being presentable, being able to interact, negotiate and work diligently. Its part of the wider capability to communicate well - you do it in a professional way.

MP: By that do you mean if they are chartered by a professional body? You mentioned some other terms there like how they present themselves, how they interact, communicate, diligence, negotiation. Do these all form part of what you would term as professionalism?

UK2: These are all relevant, but ultimately it's about reflecting the standard expected of a chartered individual, doing things in a professional way. It means that there's a proper meeting agenda that everyone is clear on to prepare accordingly; the meeting follows a structure, minutes and actions are recorded accurately.

MP: Thank you. The next one is **Leadership**. What does leadership mean to you?

UK2: Project managers need to show leadership, and there's many different facets of leadership including leading by example, having a good knowledge of process and procedures, being able

to impart that knowledge onto other people and members of the team - ensuring it's going the right direction.

MP: Ok. You proposed **Coordinated** as a soft skill, what did you mean by that?

UK2: I think it's very important that an individual is properly prepared, structures and files are properly coordinated, that contract administration processes are followed properly. If you are coordinated and prepared, you can answer and address issues as they come along.

MP: Thank you. The final one I wanted to ask about is **Understanding**. Understanding of what?

UK2: When you're communicating something, you must be able to ensure that the person you're communicating with understands what you're trying to get out of it, but you must also understand where they're coming from. If you don't understand that, you're not going to get the right output so you have to make sure it's clearly understood by them what you're trying to achieve. And you have to also understand what they're trying to achieve as part of this as well. This gives rise negotiation discussions, so the underlying skill is in understanding each party's vested interests.

MP: Thanks. As I mentioned in the Briefing Sheet, the results of the research will be used within my doctorate thesis, and if you would like to see a copy of the final thesis please let me know. As I mentioned in my initial email, it's requested that you commit to being part of the study throughout its duration – there will be 3 more short online questionnaires, each issued approximately a month apart, and should take no longer than 15-20 minutes each time to complete. It is critical to the study that you complete all the questionnaires.

Thank you again for being part of the study, I really appreciate it.

UK2: Cheers very much Michael.

Recommendations

Soft Skill suggested by participant	**Researcher recommendation** Soft Skill closely aligns to proposed definition of (if relevant):	**Peer review recommendation** Soft Skill closely aligns to proposed definition of (if relevant):
Professional	N/A – Expectation from participant is that chartership competencies are broadly demonstrated.	N/A – Definition from participant not confined to a single soft skill.
Leadership*	Leadership	Leadership
Coordinated	Self-organised	Self-organised
Understanding*	CHANGE to Soft Skill: Explanation goes beyond "Empathetic" as had initially been assigned to this. After explanation, intention was more reflective of an individual's ability to negotiate positive outcomes for multiple parties which aligns better with	Conflict Management and Negotiation

	"Conflict Management and Negotiation".	

**Previously allocated but interested to hear participant's response.*

Interview No. 4

Interview Participant: **US5**
Office: **New York, USA**
Date and Time: **1st May at 5pm GMT**
Meeting Medium: **Video Call (Microsoft Teams)**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information. Participants all agreed to the sessions being recorded on Microsoft Teams for later review.

MP: I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. You have been invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. *If you decide to take part, you are free to withdraw at any time.* By taking part in this study you are helping to further the current understanding of an important subject and enhancing the firm's growing reputation as experts in performance measurement. Our aim is to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

Thank you for responding to the survey that was distributed, and listing the 5-10 soft skills that you considered to be of greatest importance when working as part of a project team in the construction industry. As a reminder of the soft skills you listed, I have shared my screen with you.

You listed 6 soft skills in the survey, there were 2 in particular that I wanted to talk through in more detail if that's ok.

The first is **Time management**. Can you explain what you meant by that please?

US5: This was specific to my role in project management. Often I've had three projects running simultaneously all demanding my attention with major critical milestones coming up or decisions being made, I need to be able to manage my time effectively to make sure I wasn't going to burn out and just dropped the ball on everything. So it's not about, programming or scheduling. It's about personal organization to manage your own time effectively between projects and to coordinate tasks more effectively.

MP: Thank you. I was interested to understand why you thought **managing client and team expectations** was a soft skill, what did you mean by that?

US5: Sure, you need to be able to identify the dependability and practice of people so that you know how to manage them within the project, both from the team and the client. This is something I've seen where people will allow their clients to make almost ridiculous demands because the client doesn't understand what they're asking, or they may not understand the impact it will have. We've had clients ask for all sorts of schedule, program models, options, and almost pointless exercises from us. They don't understand what these requests mean in terms of workload. The skill is

understanding what the underlying clients expectations are from you and then managing from that so that they don't just run all over you.

A client might say 'I need this document sent out right away to the market, we need to get an RFP out to a contractor straight away'. The skill is being able to manage your client and say we need to go through this with the team and make sure it's concise, we think it's incomplete and we think that you'll get a better set of information or better pricing back from the market if we do this - it's actually providing our professional knowledge that were paid to provide to the client and not just let them run the show.

MP: So how much of 'managing expectations' is understanding the roles of the clients and other members of the team and preparing for those reactions accordingly? Is this a form of quality assurance, asking 'this is the role that you were appointed to perform, has it been achieved successfully'?

US5: Yes we should be able to speak to project consultants and understand if they are delivering what they should be. There is also a skill in being able to speak to your client and have the confidence in your capability that you know what you're talking about – having the experience and confidence to convey what is possible instead of unrealistic deadlines and options, working every hour possible because an unrealistic expectation has been set.

MP: OK, so it's also about having clarity around what the objectives are, what the desired style of delivery is so that they are on board with it, and conveying how this is being met.

US5: Yeah. the client needs to trust you and be open to your advice.

MP: Thanks. As I mentioned in the Briefing Sheet, the results of the research will be used within my doctorate thesis, and if you would like to see a copy of the final thesis please let me know. As I mentioned in my initial email, it's requested that you commit to being part of the study throughout its duration – there will be 3 more short online questionnaires, each issued approximately a month apart, and should take no longer than 15-20 minutes each time to complete. It is critical to the study that you complete all the questionnaires.

Thank you again for being part of the study, I really appreciate it.

US5: Thanks Michael.

Recommendations

Soft Skill suggested by participant	**Researcher recommendation** Soft Skill closely aligns to proposed definition of (if relevant):	**Peer review recommendation** Soft Skill closely aligns to proposed definition of (if relevant):
Time management	Self-organised	Self-organised
Managing client and team expectations	Confidence – touches on other soft skills like Communication, but the predominant point is that the project professional needs to be able to back themselves in their	Undecided – feels like different skills are touched upon, difficult to choose between Confidence, Communication, Trust,

	professional capacity and present with confidence.	Leadership, and Conflict Management and Negotiation.

Interview No. 5

Interview Participant: **UK36**
Gleeds Office: **Tonbridge Wells, UK**
Date and Time: **28th April at 12pm GMT**
Meeting Medium: **Video Call (Microsoft Teams)**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information. Participants all agreed to the sessions being recorded on Microsoft Teams for later review.

MP: I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. You have been invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. *If you decide to take part, you are free to withdraw at any time.* By taking part in this study you are helping to further the current understanding of an important subject and enhancing the firm's growing reputation as experts in performance measurement. Our aim is to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

Thank you for responding to the survey that was distributed, and listing the 5-10 soft skills that you considered to be of greatest importance when working as part of a project team in the construction industry. As a reminder of the soft skills you listed, I have shared my screen with you.

You listed 9 soft skills in the survey, there were 5 in particular that I wanted to talk through in more detail if that's ok.

The first is **Confidence**. Can you explain what you meant by that please?

UK36: You can only lead meeting if you have confidence, either in someone's technical ability or at least in terms of how they are able to organize themselves. I think it's important to convey competence to the team, that inspires belief from others.

MP: Thank you. I'd like to get your view on what the term **Professional** means?

UK36: There's a particular way you can present yourself that makes you come across professional, and get the respect of the room.

MP: 'Present yourself' in in what sense? What is it that you're presenting that makes you look professional?

UK36: I think it's body language and how you speak. I think there's a way you could dress. There's a way you can sit, there's a way you can shake people's hands, there's a way you can talk to people.

MP: Thanks. The next one you said was **Personable**. What does that mean to you?

UK36: To me that means being able to connect with people be able to talk to people also on a personal level, and I think that creates stronger relationships and I would even say friendships.

MP: Thank you. The next is **Emotive**, what do you mean by that?

UK36: I meant like when you gauge how people are feeling around you. I think that's really important. Like if you're in a meeting and you can tell if someone is feeling poorly or not looking quite right and reacting appropriately and sensitively. Otherwise I think it can break down a project team and you can end up not having a very strong connection with people.

MP: Thank you. Finally, Negotiation – what does this mean in the context of a project?

UK36: I would say negotiation is trying to persuade someone to your way of thinking. Because if you're submitting a tender estimate, it will be accepted or declined and you need to negotiate and convince that your way is correct.

MP: Thanks. As I mentioned in the Briefing Sheet, the results of the research will be used within my doctorate thesis, and if you would like to see a copy of the final thesis please let me know. As I mentioned in my initial email, it's requested that you commit to being part of the study throughout its duration – there will be 3 more short online questionnaires, each issued approximately a month apart, and should take no longer than 15-20 minutes each time to complete. It is critical to the study that you complete all the questionnaires.

Thank you again for being part of the study, I really appreciate it.

UK36: Thanks Michael.

Recommendations

Soft Skill suggested by participant	**Researcher recommendation** Soft Skill closely aligns to proposed definition of (if relevant):	**Peer review recommendation** Soft Skill closely aligns to proposed definition of (if relevant):
Confidence*	Confidence	Confidence
Professional	Communication. The interviewee's response described a soft skill that was not clearly articulated within the KPIs already listed, however body language is a non-verbal, physical mode of communication – therefore the definition of 'Communication' will be expanded to clarify that it includes for body language.	Undecided – Elements of Communication, Empathetic, and Confidence – difficult to tell apart.
Personable*	Personable	Personable
Emotive	Empathetic	Empathetic

Negotiation*	Conflict Management & Negotiation	Conflict Management & Negotiation

**Previously allocated but interested to hear participant's response.*

Interview No. 6

Interview Participant: **UK56**
Office: **Milton Keynes, UK**
Date and Time: **22nd May at 2:30pm GMT**
Meeting Medium: **Video Call (Microsoft Teams)**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information. Participants all agreed to the sessions being recorded on Microsoft Teams for later review.

MP: I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. You have been invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. *If you decide to take part, you are free to withdraw at any time.* By taking part in this study you are helping to further the current understanding of an important subject and enhancing the firm's growing reputation as experts in performance measurement. Our aim is to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

Thank you for responding to the survey that was distributed, and listing the 5-10 soft skills that you considered to be of greatest importance when working as part of a project team in the construction industry. As a reminder of the soft skills you listed, I have shared my screen with you.

You listed 10 soft skills in the survey, there were 2 in particular that I wanted to talk through in more detail if that's ok.

The first is **Value Added**. Can you explain what you meant by that please?

UK56: It's kind of going the extra mile piece that clients like to see. Now obviously we've all got to be mindful of our fees, but it's the little differentiators that sometimes make the difference to a project, they don't have to cost a lot of time or money. But, it just makes a difference to how the client perceives you. On a project I can see who is bringing something a little bit extra.

MP: Can that be susceptible to an individual's perception of what that means to go the extra mile?

UK56: It means thinking about the wider context of the project, not necessarily just their isolated element. And also be thinking about the wider benefits that the project might bring as well, and what could be added to that. Actually, Michael what I'm getting at is kind of adding to the benefits without necessarily costing more money. And benefits realisation is often the bit of the project that isn't very well captured.

MP: Thanks. The next one is **Effective Delivery**, can you explain that please?

UK56: Yes that's about being proactive in terms of looking ahead to try and avoid pinch points ahead of time. Do you think someone might cope better in those in those more pressurized situations,

to manage the team better and keep them motivated? One is being inspirational yourself. But also getting a team that wants to work together when you know when one person struggling the others, demonstrating a team working ethos.

MP: Thanks. As I mentioned in the Briefing Sheet, the results of the research will be used within my doctorate thesis, and if you would like to see a copy of the final thesis please let me know. As I mentioned in my initial email, it's requested that you commit to being part of the study throughout its duration – there will be 3 more short online questionnaires, each issued approximately a month apart, and should take no longer than 15-20 minutes each time to complete. It is critical to the study that you complete all the questionnaires.

Thank you again for being part of the study, I really appreciate it.

UK56:Thanks Michael.

Recommendations

Soft Skill suggested by participant	**Researcher recommendation** Soft Skill closely aligns to proposed definition of (if relevant):	**Peer review recommendation** Soft Skill closely aligns to proposed definition of (if relevant):
Value Added	Enthusiasm	Enthusiasm
Effective Delivery	Collaboration	Collaboration

Interview No. 7

Interview Participant: **UK23**
Office: **Milton Keynes, UK**
Date and Time: **29th April at 11am GMT**
Meeting Medium: **Video Call (Microsoft Teams)**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information. Participants all agreed to the sessions being recorded on Microsoft Teams for later review.

MP: I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. You have been invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. *If you decide to take part, you are free to withdraw at any time.* By taking part in this study you are helping to further the current understanding of an important subject and enhancing the firm's growing reputation as experts in performance measurement. Our aim is to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

Thank you for responding to the survey that was distributed, and listing the 5-10 soft skills that you considered to be of greatest importance when working as part of a project team in the construction industry. As a reminder of the soft skills you listed, I have shared my screen with you.

You listed 8 soft skills in the survey, there were 4 in particular that I wanted to talk through in more detail if that's ok.

The first is **Professionalism**. Can you explain what you meant by that please?

UK23: I feel being a project manager in the construction industry is a process driven job where there are processes to follow. If you stick to those processes you can't really go far wrong, which sounds very theoretical but I think part of professionalism is ensuring that you do stick to those processes and you are fulfilling the scope of services that you're supposed to be is supposed. But its also partly about how you come across, being professional.

MP: That's interesting, and most project participants will likely have a professional standard to adhere to that informs their scope of service so that's not limited to project managers. What do you mean by 'how you come across'?

UK23: It is a little bit more opaque. For me it is not crossing a personal line, keeping the relationship professional. Sometimes it is easy to cross that line with the amount of time you spend with a project team which sometimes isn't a bad thing, but it's important not to forget that actually this is a job, I'm delivering service which I'm being paid for.

MP: So is that to say it's necessary to respect the boundaries of each other's roles?

UK23:Absolutely.

MP: The next one I was interested in was **Approachable**.

UK23:It's quite easy to be quite overly authoritative. For instance, I'm working on a project now where there is an individual who is so adversarial and just obviously has a dislike for the contractor and it's getting to the point where the contractor is phoning me and saying 'look, I've got this issue but I don't want to go to the QS [Quantity Surveyor] because he's just going to flip his lid'. So you need to be approachable so that anyone can just pick up the phone and speak to you about it. If you're not that approachable, then people are just going to try to resolve it themselves and then things can be compounded and can escalate.
Sometimes that means being available to speak over the phone than rely on an email. If you have an approachable personality, then they're going to ring you first and say 'It's not great news, but I want to talk to you about it first'. If you're not that approachable person, they're going to be slightly reluctant to do that.

MP: That is a very interesting point. OK, so the next one was **Fairness**. What what did you mean by that?

UK23:The individual I was just talking about who had the issue with a contractor, their response to any issue he raises is 'well, you know they're trying to pull a fast one'. Often I have to help reach agreement about what is a fair outcome, particularly cost and if there's a compensation event. It's quite often I'll have to step in and say, actually, no, I think that's unfair. A fair settlement on this one would be so and so – it's easy to be cynical about builders but every claim has to be taken seriously.

MP: So if you're if you're receiving a claim from a contractor or a consultant, when you refer to fairness, is this a similar skill to how you would mediate in a conflict situation?

UK23:Yeah, yeah, exactly. It's easy to use this example because it's cost driven. You've got a budget, you can see that budget is getting close to being exceeded, but if something is an entitlement it can unlock that. You have to be completely impartial and you have to be fair.

MP: Thanks. OK, the next one was **Diplomatic** - what context did you mean that in?

UK23:I'm trying to think of an example to explain that one a bit more... I think in most jobs you've got to have diplomacy anyway, but there is overlap here with communication as a soft skill and how you flex your style to the needs of a situation, but with empathy: knowing how to flex that style with the individuals you're working with. You have to have empathy whatever that issue is.

MP: Thanks. As I mentioned in the Briefing Sheet, the results of the research will be used within my doctorate thesis, and if you would like to see a copy of the final thesis please let me know. As I mentioned in my initial email, it's requested that you commit to being part of the study throughout its duration – there will be 3 more short online questionnaires, each issued approximately a month apart, and should take no longer than 15-20 minutes each time to complete. It is critical to the study that you complete all the questionnaires.

Thank you again for being part of the study, I really appreciate it.

UK23:Thanks very much Michael, bye bye.

Recommendations

Soft Skill suggested by participant	**Researcher recommendation** Soft Skill closely aligns to proposed definition of (if relevant):	**Peer review recommendation** Soft Skill closely aligns to proposed definition of (if relevant):
Professionalism	N/A. Intent lay in demonstrating alignment with a professional body's set of responsibilities linked to a role.	N/A. No real indication that a soft skill is what was intended here.
Approachable*	Personable	Personable
Fairness*	CHANGE to Soft Skill: Definition as explained more closely links to 'Conflict Management and Negotiation' than 'Trust'.	Conflict Management and Negotiation
Diplomatic	Empathetic	Empathetic

**Previously allocated but interested to hear participant's response*

Interview No. 8

Interview Participant: **UK16**
Office: **Cardiff, UK**
Date and Time: **29th April at 1pm GMT**
Meeting Medium: **Video Call (Microsoft Teams)**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information. Participants all agreed to the sessions being recorded on Microsoft Teams for later review.

MP: I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. You have been invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. *If you decide to take part, you are free to withdraw at any time.* By taking part in this study you are helping to further the current understanding of an important subject and enhancing the firm's growing reputation as experts in performance measurement. Our aim is to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

Thank you for responding to the survey that was distributed, and listing the 5-10 soft skills that you considered to be of greatest importance when working as part of a project team in the construction industry. As a reminder of the soft skills you listed, I have shared my screen with you.

You listed 10 soft skills in the survey, there were 2 in particular that I wanted to talk through in more detail if that's ok.

The first is **Experience**. Can you explain what you meant by that please?

UK16: Experience helps in the fact that you you're familiar with the situations you're in and the types of people you end up working with on projects. Experience allows me to be more be more perceptive.

MP: How does having better familiarity with project issues and perception of issues translate into a skill?

UK16: The skill is in the efficiency of how I use my time which allows me to add more value. It allows a solution to an issue to be reached more quickly. I also think if you are open with people in the right environment, you can get better results in my opinion.

MP: So by 'open' does that mean that at you are mindful to work in different ways in different client environments?

UK16: Yeah, that right. A better term for it would be 'flexibility'. I'm conscious of that. You've got to build confidence and trust of everybody to get the job done, so being flexible in different environments and open about what is expected is important. Personality profiling can be a useful

tool as well as experience, I know I'm a 'completer finisher' type - being a PM [Project Manager] you've got to be. I like to get to the place where everyone is happy and prevent projects from getting to difficult, dark places when disputes arise which can happen when people don't open up with you.

MP: That makes sense. OK, so the next one was being consistent. **Consistent** about what?

UK16: Consistent in behaviour, consistent in expectations. There's the HR side and the process side of the job that people need to be consistent in. If you keep changing your mind, if you don't make decisions, you know these are all things that I personally think that just ends up storing trouble. So being consistent and fair is a better place for a PM to be. Maybe you're friends one minute, and the next minute on your back and that's the sort of dynamic in the group which is a worry. Consistency helps people get to know you and build up trust in you as well.

MP: Thanks. As I mentioned in the Briefing Sheet, the results of the research will be used within my doctorate thesis, and if you would like to see a copy of the final thesis please let me know. As I mentioned in my initial email, it's requested that you commit to being part of the study throughout its duration – there will be 3 more short online questionnaires, each issued approximately a month apart, and should take no longer than 15-20 minutes each time to complete. It is critical to the study that you complete all the questionnaires.

Thank you again for being part of the study, I really appreciate it.

UK16: Pleasure, Michael.

Recommendations

Soft Skill suggested by participant	**Researcher recommendation** Soft Skill closely aligns to proposed definition of (if relevant):	**Peer review recommendation** Soft Skill closely aligns to proposed definition of (if relevant):
Experience	Flexibility	Flexibility
Consistent	Trust	Trust

Interview No. 9

Interview Participant: **IN13**
Office: **Pune, India**
Date and Time: **29th April at 9am GMT**
Meeting Medium: **Video Call (Microsoft Teams)**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information. Participants all agreed to the sessions being recorded on Microsoft Teams for later review.

MP: I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. You have been invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. *If you decide to take part, you are free to withdraw at any time.* By taking part in this study you are helping to further the current understanding of an important subject and enhancing the firm's growing reputation as experts in performance measurement. Our aim is to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

Thank you for responding to the survey that was distributed, and listing the 5-10 soft skills that you considered to be of greatest importance when working as part of a project team in the construction industry. As a reminder of the soft skills you listed, I have shared my screen with you. You listed 10 soft skills in the survey, there were 5 in particular that I wanted to talk through in more detail if that's ok.

The first is **Man Management**. Can you explain what you meant by that please?

IN13: Based on my experience of working around 13/14 years in the Middle East and in India, what that means is a way to derive the hourly output. The weekly output of an individual person, subordinates and assistants in terms of different tasks. Using a planner to do all the scheduling and based on that the invoicing and other things to be generated. Cash flows will give an indicator of their success in this to map the health of the project, so it's absolutely imperative they have man management skills to get all these tasks done properly.

MP: Thanks, that makes sense. The next one was **Encouraging to speak up**, what it what do you mean by that?

IN13: I mean to motivate his people to speak up – orders are often passed like military rule from a higher level that trickles down to the bottom most supervisor or a site agent, or even a foreman who is actually getting these works done on a construction site. They might have suggestions in which things can be done in a better way, maybe in a different way. Maybe we innovate within the available resources. We can do things differently, which would help, if not increase the probability, of relieving the pressure and the burden on the subordinates. But they may never actually, ever get a chance to speak up. It definitely is the case in the Middle East and in India where people are not at all encouraged to speak up about anything, even if it is innovative; a good manager should be listening to their views.

MP: That's really useful. Thank you. OK, so the next one that was **Formal discussions (task based)**. Can you explain what you mean by that please?

IN13: Yes, so project manager is a hugely responsible position where formal discussions are required as part of the role. To have those conversations he needs to be informed of the task based discussions that have happened. It could be as small as a 10 minute toolbox talk or a high level dashboard or white board in the project managers office. These could focus on the constraints, labour shortages, shortages of equipment, these kind of things. Formal discussions need to be recorded and monitored.

MP: Does this involve applying verbal and written communication skills in a formal setting?

IN13: Exactly, that's what I mean.

MP: OK. The next was **Interactive debates**. I What did you mean by that?

IN13: Having a difference of opinion is bound to happen. It's the construction industry. People have different mindsets, from different age groups. Forgive me for using the phrase, but there is always a debate between the old school thoughts and the new school thoughts. The younger generation would like to do it at a different way. Diverse thoughts should be encouraged, a good project manager should not be discouraging these kinds of pairs. The skill of the individual is in how you put your point and how you persuade and negotiate - and the bravery to put it across in the first place. Confidence in their capability will help them to convey their views in these situations.

MP: Thank you. Just one more: **Equal participation in daily team tasks**. What did you mean by that please?

IN13: Here we have the Middle East and Indian context, unlike the developed world, which I know very well because I worked with plenty of Scots and Irish, where the project manager never ever goes to the site. Never ever, and maybe that's how the project management works in that part of the world, and they're not supposed to be involved and he's supposed to be in charge of all the other tasks – he is involved at a very high level. If you want just an example, I can give an example of Carillion [until recently a major contractor] – I would see the project manager on site only on the 23rd of every December when we used to have a company get-together. That was only time I could shake hands with him or interact with him. The rest of the year he was not at all approachable. So that's principally where I am coming from with this one.

MP: Thanks. As I mentioned in the Briefing Sheet, the results of the research will be used within my doctorate thesis, and if you would like to see a copy of the final thesis please let me know. As I mentioned in my initial email, it's requested that you commit to being part of the study throughout its duration – there will be 3 more short online questionnaires, each issued approximately a month apart, and should take no longer than 15-20 minutes each time to complete. It is critical to the study that you complete all the questionnaires. Thank you again for being part of the study, I really appreciate it.

IN13: Pleasure, Michael.

Recommendations

Soft Skill suggested by participant	**Researcher recommendation** Soft Skill closely aligns to proposed definition of (if relevant):	**Peer review recommendation** Soft Skill closely aligns to proposed definition of (if relevant):
Man Management	N/A – Not a soft skill, describes task and resource management and scheduling which are hard skills.	N/A – This isn't a soft skill.
Encouraging to speak up*	Motivational	Motivational
Formal discussions (task based)	Communication	Communication
Interactive debates	Conflict Management and Negotiation	Conflict Management and Negotiation
Equal participation in daily team tasks*	CHANGE to Soft Skill: Discussion reflected the hierarchical nature of some roles – albeit this may be geography-specific. Definition as explained more closely links to 'Personability' than 'Flexibility.	Personability

**Previously allocated but interested to hear participant's response*

Interview No. 10

Interview Participant: **UK13**
Office: **Nottingham, UK**
Date and Time: **29th April at 4pm GMT**
Meeting Medium: **Video Call (Microsoft Teams)**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information. Participants all agreed to the sessions being recorded on Microsoft Teams for later review.

MP: I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. You have been invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. *If you decide to take part, you are free to withdraw at any time.* By taking part in this study you are helping to further the current understanding of an important subject and enhancing the firm's growing reputation as experts in performance measurement. Our aim is to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

Thank you for responding to the survey that was distributed, and listing the 5-10 soft skills that you considered to be of greatest importance when working as part of a project team in the construction industry. As a reminder of the soft skills you listed, I have shared my screen with you. You listed 10 soft skills in the survey, there were 5 in particular that I wanted to talk through in more detail if that's ok. The first is **People Management**. Can you explain what you meant by that please?

UK13:Its about having the people skills to get people to actually deliver what they are supposed to deliver, when they need to deliver it, to the expected quality and standard. I've been instances where it doesn't work for me – people screaming and shouting, having an attitude, being rude, having less of an inclination to go the extra mile – all of which may have an impact on output and quality. We have to motivate each other to get the best out of each other, we want to feel part of something rather than just providing a service.

I'm not the most outgoing of people, but I think we've got really good positive team and the whole team invested in the job and the schemes I'm working on, and I think that's been borne by being able to get on with one another and understand what makes them tick. The project manager within the City Council who I work with keeps talking about us being an exemplary project team for this particular scheme which drives the team on.

MP: That provides a nice lead into the second one. What did you mean by **Having personality**?

UK13: People refer to me as being a people person and I don't particularly believe I am outside of my personal life. I'm not particularly outgoing. I have been around the track a few times though and I feel having a personality means being able to soften the atmosphere when needed, help people to know that there is more to it than just ploughing through the process and being able

to and enjoy it too, even have a joke with one another! So long as everyone has the attitude of knowing there is a job to do. It's probably something I do without realising it too much.

MP: That's interesting, because what could be understood from the wording is that you need to have an extrovert character to be successful in a project team – but from what you've said that's not the case?

UK13: That's right, its about being an approachable, personable personality that people feel they can be a little bit more open with.

MP: Is that a hallmark of the business? Or is that typical of the industry?

UK13: It's a Gleeds trait. It's funny actually. A good example is that today we had a 2 hour commercial review on a scheme. The QS was steadfast on the contract with what appears to be quite a disagreement looming – and two hours later we've talked it through and decided to park it and revisit it rather than go over old ground and make a big issue out of it.

MP: You also suggested **Confidence**. What would strike you as somebody who had confidence? And why is it a soft skill?

UK13: I suppose it can be a personality trait, but I think I think if you're not overly confident naturally you can portray confidence and I think that is a skill. If people were looking at you and know that you are confident in your ability then others will feed off that confidence. It's partly about being confident in their own ability, but also inspiring in others that you have it. I hope that sort of answers it?

MP: It does! Thank you. Next you said being **Open** was an important soft skill, what do you mean by that?

UK13: I think you've got to be open to new ideas and ways of working. It shouldn't be 'it's my way or the highway', tunnel vision view. Sometimes you need to rely heavily on the design team as there are more pressing issues that you can't deal with. Having a different view doesn't mean having a disagreement, as that view might give a different take on things.

MP: That does resonate with me, as every project you work on will have a different sub-culture to that of your own organization as it's made up of consultants and contractors that you have to work with so is not defined by how you previously worked.

UK13: Yes, absolutely yeah, absolutely right. You have to adapt to each situation.

MP: The last one I wanted to touch you've already spoken about a little bit, and that was being **Approachable.**

UK13: Again, it's about that personality, isn't it- being welcoming and being able to have a bit of a giggle with the team.

MP: Thanks. As I mentioned in the Briefing Sheet, the results of the research will be used within my doctorate thesis, and if you would like to see a copy of the final thesis please let me know. As I mentioned in my initial email, it's requested that you commit to being part of the study throughout its duration – there will be 3 more short online questionnaires, each issued approximately a month apart, and should take no longer than 15-20 minutes each time to complete. It is critical to the

study that you complete all the questionnaires. Thank you again for being part of the study, I really appreciate it.

UK13:Thanks, Michael.

Recommendations

Soft Skill suggested by participant	**Researcher recommendation** Soft Skill closely aligns to proposed definition of (if relevant):	**Peer review recommendation** Soft Skill closely aligns to proposed definition of (if relevant):
People Management	Motivational	Motivational
Having personality	Personability	Personability
Having confidence*	Confidence	Confidence
Open*	CHANGE to Soft Skill: Definition as explained more closely links to 'Flexibility' than 'Trust'.	Flexibility
Approachable	Personability	Personability

**Previously allocated but interested to hear participant's response*

Interview No. 11

Interview Participant: **US15**
Office: **Chicago, USA**
Date and Time: **28th April at 4pm GMT**
Meeting Medium: **Video Call (Microsoft Teams)**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information. Participants all agreed to the sessions being recorded on Microsoft Teams for later review.

MP: I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. You have been invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. *If you decide to take part, you are free to withdraw at any time.* By taking part in this study you are helping to further the current understanding of an important subject and enhancing the firm's growing reputation as experts in performance measurement. Our aim is to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

Thank you for responding to the survey that was distributed, and listing the 5-10 soft skills that you considered to be of greatest importance when working as part of a project team in the construction industry. As a reminder of the soft skills you listed, I have shared my screen with you.

You listed 10 soft skills in the survey, there were 4 in particular that I wanted to talk through in more detail if that's ok.

The first is **Compassion**. Can you explain what you meant by that please?

US15: So here in the United States, you know we have 3 presidents, right? It's the time they take to get to know you, and understand what's going on in your life outside of work. Let me give you some examples:

I went through a divorce, Chris Williams he really took the time to connect, to listen and to see how I was doing mentally and emotionally. I've never before seen presidents of a business show that degree of care. It's always been a one way relationship. What can you do for me.

I had a mini stroke in 2009 when at a previous company. I was doing a project in downtown Chicago and it was just a tremendous amount of pressure. But the moment that the company I worked for felt that they could safely transition me out of the project, they went ahead and they let me go because I had lost a step. I needed time to recover. Here it's very different, they genuinely care.

MP: That's great to hear and thanks for sharing those examples. They pointed towards your experiences of working for Gleeds, I'm interested to understand how these would come across in a project environment? In the question I made a note that soft skills are the personal attributes,

behavioural and interpersonal skills required to be successful in a particular role on a project, and this is the bit that I'm focusing on in this study rather than your experience within the organisation. Do you think compassion still applies in the same way on a project?

US15:I do. Yeah, you have to show a sense of compassion to your team members understand everyone. There's a lot that goes on in a person's life, right? And that can affect their performance positively and negatively impact their performance. If someone was performing before and now they're not, why aren't they? Too often I've seen people go ahead and just throw people aside, right? 'John Doe isn't performing anymore. Get rid of him'. I'm like, well, why isn't John still performing, what's going on? Is there something that we can do or that I can do? It to me, that's compassion.

MP: OK, that's really interesting. I noticed that you also listed 'Empathy' in your survey, how does compassion differ from empathy?

US15:Compassion is the action that you take, empathetic is a more personal characteristic. That's the way that I interpret it, empathy is the understanding of the situation and compassion is kind of the action associated with it.

MP: Thank you. The second item that I wanted to mention was **Understanding**. Understanding in what sense?

US3: Well, again, I think that unlike other companies. Gleeds has taken the time to understand me personally. A good example is *Anon*, he called me 2 weeks ago just to see how I was doing. Is there anything that we can do to help? It weighed greatly with me. I've never worked at a place that's done that you know where they actually want to understand.

MP: Thanks Jeffrey. Again, I'm interested here to try to detach your experience within the organisation versus your experience working on within project teams. How does that come across in the delivery of a of a project when you're working with people from different organizations, can you still show understanding in the same way?

US15:Well, absolutely. So I'm working on Amazon projects now. I've only been engaged for about 3 weeks with a team of folks that have been engaged for several years. And within that structure the team lead calls me up yesterday and asks 'hey are you good? Are you satisfied with this role? I want to understand'.

I never have experienced anything like that, I thought that was very nice.

MP: The next one is **Advocacy**. What does that mean to you?

US15:During the divorce one of the presidents, Paul Reimer, would call me semi regularly. When I shared with him how bad things had gotten he was incredibly accommodating which was completely unnecessary but completely welcome. He has advocated for me to have certain assignments that are a bit more sensitive to being a single dad, you know, 'I think this would be well suited for Jeff given his circumstances'.

MP: Thank you, that does sound like a sensitive response. Lastly, you wrote **Consideration**?

Yes. I don't think that Paul would have gone ahead and recommended me or assign me to projects if it wouldn't have been also beneficial for the company you know? And the client, right? They

strongly take what you have to say into consideration when they're making a resource decision, and take into account what's happening with you and what you need before making that decision.

MP: Thanks. As I mentioned in the Briefing Sheet, the results of the research will be used within my doctorate thesis, and if you would like to see a copy of the final thesis please let me know. As I mentioned in my initial email, it's requested that you commit to being part of the study throughout its duration – there will be 3 more short online questionnaires, each issued approximately a month apart, and should take no longer than 15-20 minutes each time to complete. It is critical to the study that you complete all the questionnaires. Thank you again for being part of the study, I really appreciate it.

US15:No worries at all Michael, its been a pleasure.

Recommendations

Soft Skill suggested by participant	**Researcher recommendation** Soft Skill closely aligns to proposed definition of (if relevant):	**Peer review recommendation** Soft Skill closely aligns to proposed definition of (if relevant):
Compassion*	Empathetic. Don't consider there to be a distinction between a passive and active version of the skill – down to the individual.	Empathetic – don't understand the distinction he is trying to make.
Understanding*	CHANGE to Soft Skill: Description more closely aligned to 'Active listening' than 'Flexibility'	Active listening
Advocacy	Empathetic. Description as given still sits with this soft skill – taking the time to understand what others need.	Unsure. Advocacy is not necessary a soft skill but a role you can play for people. Difficult one to assign.
Consideration	Empathetic	Empathetic

**Previously allocated but interested to hear participant's response*

Interview No. 12

Interview Participant: **UK4**
Gleeds Office: **London, UK**
Date and Time: **21st May at 3.30pm GMT**
Meeting Medium: **Video Call (Microsoft Teams)**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information. Participants all agreed to the sessions being recorded on Microsoft Teams for later review.

MP: I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. You have been invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. *If you decide to take part, you are free to withdraw at any time.* By taking part in this study you are helping to further the current understanding of an important subject and enhancing the firm's growing reputation as experts in performance measurement. Our aim is to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

Thank you for responding to the survey that was distributed, and listing the 5-10 soft skills that you considered to be of greatest importance when working as part of a project team in the construction industry. As a reminder of the soft skills you listed, I have shared my screen with you.

You listed 6 soft skills in the survey, there were 2 in particular that I wanted to talk through in more detail if that's ok.

The first is **Experience**. Can you explain what you meant by that please?

UK4: With the type of clients I work with, the big developers in London, we you need to have a level of experience. There's a nuance in how you've got to have experience in relation to how you how you operate within all soft skills.

MP: So does experience allow you to communicate better for example because you understand the meaning behind what's being said more?

UK4: Yes. It's how you learn to read people, some clients might require more patience or more collaboration and that only comes through experience. So it's an ability to know how to actually deal with the person.

I'm always moving on to different projects where I'm going to be spending the majority of my working day with new people, so very quickly I have to establish a working relationship with them where I become their trusted advisor. You have to have a level of experience where you can actually 'suss' it out relatively quickly so that there is a seamless transition.

MP: How could you develop that if it were to be framed as a skill?

UK4: It's a very, very interesting question. Depending on the grade of the person, you could develop it relatively quickly but it may be shadowing, learning alongside people for a while. It is a little bit of a time thing, but I think you can only do that through mentoring and then with people watching you. It's a difficult one.

MP: No problem. The last one was **Constructive criticism**. Did this refer to how well it's given or received?

UK4: Both. I mean it's how it's how you give it and it's how you take it. Because at the end of the day you know you've got to work with these people for a finite period of time on a program and in a project, and you need to be able to work with them again as well on future on future work. Alternatively it might be that you know you'll probably never work with these people again because of the way they performed, but you still need to get stuff out of them until that point!

MP: Could you give me an example of why this is an important skill?

UK4: OK, so a common example is we are working with a contractor who is not an ideal tier. Not even a tier four or five. I need to get elements of information out of him. I could be incredibly critical of him to the point at which you know nobody would ever use them again, especially the client, but I need to help him along the way be critical of him with good reasoning. The soft skill, perhaps, is in the way that you deliver your advice, so that you're still motivating them. I didn't realise this was going to be such a self analysis!

MP: This terminology means different things to different people, so don't worry that's understandable!

UK4: Yeah. So being constructively critical to one person may well mean that you're being very blunt in the way that you give responses but what you do is you judge the scenario, don't you? As to how, how far, how far you need to go, or how far you can go depending on the scenario in order to keep them motivated.

MP: Thanks. As I mentioned in the Briefing Sheet, the results of the research will be used within my doctorate thesis, and if you would like to see a copy of the final thesis please let me know. As I mentioned in my initial email, it's requested that you commit to being part of the study throughout its duration – there will be 3 more short online questionnaires, each issued approximately a month apart, and should take no longer than 15-20 minutes each time to complete. It is critical to the study that you complete all the questionnaires. Thank you again for being part of the study, I really appreciate it.

UK4: Have a good day, cheers.

Recommendations

Soft Skill suggested by participant	Researcher recommendation Soft Skill closely aligns to proposed definition of (if relevant):	Peer review recommendation Soft Skill closely aligns to proposed definition of (if relevant):
Experience	Empathetic. Whilst Collaboration would express the willingness to build positive relationships, Empathetic is more appropriate as interviewee spoke about the ability to gauge people quickly to establish a working relationship.	Unsure – is it a soft skill at all?
Constructive criticism	Motivational	Motivational

Interview No. 13

Interview Participant: **UK36**
Office: **Birmingham, UK**
Date and Time: **18th May at 4pm GMT**
Meeting Medium: **Video Call (Microsoft Teams)**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information. Participants all agreed to the sessions being recorded on Microsoft Teams for later review.

MP: I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. You have been invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. *If you decide to take part, you are free to withdraw at any time.* By taking part in this study you are helping to further the current understanding of an important subject and enhancing the firm's growing reputation as experts in performance measurement. Our aim is to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

Thank you for responding to the survey that was distributed, and listing the 5-10 soft skills that you considered to be of greatest importance when working as part of a project team in the construction industry. As a reminder of the soft skills you listed, I have shared my screen with you.

You listed 9 soft skills in the survey, there were 2 in particular that I wanted to talk through in more detail if that's ok.

The first is **Time management**. Can you explain what you meant by that please?

UK36: When I say time management I meant a more prioritising because there's so many different things that come up on your desk unless you manage it correctly, you could be risking your relationship with the parties that you're involved with. I mean making sure that all responses are dealt with in an efficient manner to keep that relationship between the parties going. So it is how you organise yourself so that you're prioritising things well.

MP: OK. Thank you, the second one is **Reputation**. Why do you think that's an important soft skill?

UK36: I mean your own reputation as opposed to the company's reputation – what you say and how you say it – because then oral instruction will turn into an action, but if somebody doesn't believe in your reputation as much, then they may not action it. So I mean more of belief that the client and the parties have between themselves.

MP: What is the underlying skill that might help to instil that belief in the project team that youre talking about?

UK36:I think it's communication and how professional you are in your communication. I've noticed that if a contractor doesn't believe in the project manager, they will want everything in black and white as opposed to taking actions straight away. So demonstrating good communication skills and backing up with the knowledge.

MP: Thanks. As I mentioned in the Briefing Sheet, the results of the research will be used within my doctorate thesis, and if you would like to see a copy of the final thesis please let me know. As I mentioned in my initial email, it's requested that you commit to being part of the study throughout its duration – there will be 3 more short online questionnaires, each issued approximately a month apart, and should take no longer than 15-20 minutes each time to complete. It is critical to the study that you complete all the questionnaires. Thank you again for being part of the study, I really appreciate it.

UK36:Thank you Michael.

Recommendations

Soft Skill suggested by participant	**Researcher recommendation** Soft Skill closely aligns to proposed definition of (if relevant):	**Peer review recommendation** Soft Skill closely aligns to proposed definition of (if relevant):
Time management	Self-organised	Self-organised
Reputation	Communication	Communication

Interview No. 14

Interview Participant: **UK51**
Gleeds Office: **London, UK**
Date and Time: **15th May at 4.45pm GMT**
Meeting Medium: **Video Call (Microsoft Teams)**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information. Participants all agreed to the sessions being recorded on Microsoft Teams for later review.

MP: I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. You have been invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. *If you decide to take part, you are free to withdraw at any time.* By taking part in this study you are helping to further the current understanding of an important subject and enhancing the firm's growing reputation as experts in performance measurement. Our aim is to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

Thank you for responding to the survey that was distributed, and listing the 5-10 soft skills that you considered to be of greatest importance when working as part of a project team in the construction industry. As a reminder of the soft skills you listed, I have shared my screen with you.

You listed 10 soft skills in the survey, there were 5 in particular that I wanted to talk through in more detail if that's ok.

The first is **Robust organisational structuring**. Can you explain what you meant by that please?

UK51: Not enough consideration is given to the organizational structure of the team. There's a presumption that everyone knows what each other is doing, they know how to interact with each other. So it relates potentially to how people are assigned roles given their capability and their background and their personality. It goes beyond the role.

MP: So in order to do that, do you need a clear vision for the project and what it entails?

UK51: It's critical, absolutely critical. You need to know the project and the nuances of the project that you are undertaking to be able to do that and how everyone both emotionally, intellectually and technically will slot into the role.

MP: Ok. The next one was **Ability to take a strategic and a detailed view**. I'm interested to know what you meant by that?

UK51: While strategic thinking is important for projects to succeed, you need to have an eye for detail. It's got to be wide and narrow, and be able to transition between the two quickly. On one particular subject matter, I could be talking strategically about how the issue dovetails into a

wider framework. And then when talking about how it relates to the project, I can go right down into the detail and ask a specific question based on my experience about the subject matter. You understand the whole and therefore can take them forward successfully, but also can pick up the detail to keep the team on their mettle.

MP: Is that something which can be trained or is it something that only comes with experience, do you think?

UK51:Yeah, that definitely is a skill you need to learn. You need to understand what client outcomes look like. And by that, I don't mean what the procurement team sees the outcomes need to look like. I mean, what the sponsor or the lead individual has called the key outcomes for the project.

MP: Is there a quality element to that, managing expectations and maintaining dialogue?

UK51:You know, too often people accept the brief. 'I assume that's is correct' without interrogation, rather than really getting inside and understanding what the client's trying to achieve.

MP: OK. Thank you. The last one as having an **Ability to interpret the brief**. What is the soft skill needed here?

UK51:I suppose the soft skill in that is about rather than just accepting what the client has been put in front of you, you have to challenge. So that's the soft skill there, in how you interpret and listen in to what the client really wants.

MP: Thanks. As I mentioned in the Briefing Sheet, the results of the research will be used within my doctorate thesis, and if you would like to see a copy of the final thesis please let me know. As I mentioned in my initial email, it's requested that you commit to being part of the study throughout its duration – there will be 3 more short online questionnaires, each issued approximately a month apart, and should take no longer than 15-20 minutes each time to complete. It is critical to the study that you complete all the questionnaires. Thank you again for being part of the study, I really appreciate it.

UK51:Thanks Mike.

Recommendations

Soft Skill suggested by participant	**Researcher recommendation** Soft Skill closely aligns to proposed definition of (if relevant):	**Peer review recommendation** Soft Skill closely aligns to proposed definition of (if relevant):
Robust organisational structuring	N/A: Resource allocation in itself is not a soft skills, albeit it requires an understanding of individuals' behaviours to ensure they are well suited to a project.	N/A: Not a soft skill.
Ability to take a strategic and a detailed view	Detail-oriented, albeit the skill described requires this in tandem with strategic competence.	Detail-oriented.
Ability to interpret the brief	Active listening.	Active listening.

Interview No. 15

Interview Participant: **IN16**
Office: **London, UK**
Date and Time: **29th April at 8am GMT**
Meeting Medium: **Video Call (Microsoft Teams)**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information. Participants all agreed to the sessions being recorded on Microsoft Teams for later review.

MP: I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. You have been invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. *If you decide to take part, you are free to withdraw at any time.* By taking part in this study you are helping to further the current understanding of an important subject and enhancing the firm's growing reputation as experts in performance measurement. Our aim is to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

Thank you for responding to the survey that was distributed, and listing the 5-10 soft skills that you considered to be of greatest importance when working as part of a project team in the construction industry. As a reminder of the soft skills you listed, I have shared my screen with you.

You listed 10 soft skills in the survey, there were 4 in particular that I wanted to talk through in more detail if that's ok.

The first is **Common sense**. Can you explain what you meant by that please?

IN16: This is quite interesting. For example, some organisations might say on a Friday lets meet tomorrow – despite clients not normally working on Saturday and Sunday – so they need to be sensitive to the individuals they are working with. Also when it comes to resolving issues, if senior managers are not available we have to refer to certain procedures – we have to allow some personal accountability to make decisions and take small steps ourselves.

MP: OK, thank you. The second one is **Time management**. What do you mean by this?

IN16: It means understanding the output of each of the worker, what is their productivity. But also in meetings: for example, they have five issues to discuss in the meeting and they have an agenda and they have set a time - everybody's time has to be respected, and the meeting brought to a close having covered the agenda in full.

MP: Thank you. You mentioned **Creativity**, I'm interested to know what you meant by that?

IN16: We sometimes have to think out of the box and use lateral thinking to can solve a problem.

For example, if there is a if there is a dewatering issue at the site and the traditional way is to use the dewatering pump and start diverting water to another area so that we solve the problem. That's the first step. Secondly you should think where exactly is this water coming from? Is it really a groundwater table problem? Or do you have a source of water coming from neighbouring site which is the problem?

MP: The last one is **Sensitivity**?

IN16: Some clients you need to be careful they don't get offended by talking to them in a very straightforward and aggressive way. It depends on the personality, some want to get straight to the point. We also need to put our feet into their shoes and understand the pressures they are under. There can be ego clashes and differences of opinions where you have to change approach. Sachin Tendulkar was a very good batsman who had an exceptional talent but at the end of the day, it's the team which works as a united team to go forward in the cricket matches. It's a team which wins the match.

MP: Thanks. As I mentioned in the Briefing Sheet, the results of the research will be used within my doctorate thesis, and if you would like to see a copy of the final thesis please let me know. As I mentioned in my initial email, it's requested that you commit to being part of the study throughout its duration – there will be 3 more short online questionnaires, each issued approximately a month apart, and should take no longer than 15-20 minutes each time to complete. It is critical to the study that you complete all the questionnaires. Thank you again for being part of the study, I really appreciate it.

IN16: Thanks Mike.

Recommendations

Soft Skill suggested by participant	**Researcher recommendation** Soft Skill closely aligns to proposed definition of (if relevant):	**Peer review recommendation** Soft Skill closely aligns to proposed definition of (if relevant):
Common sense	Leadership. As I have defined it, it requires project participants to be decisive and take accountability – which is what the interviewee means in their definition of common sense.	Leadership
Time management	N/A. Not a soft skill as described – scheduling resources is a hard skill, and meeting management is a facilitation skill (hard rather than soft) mainly required of the project manager or occasionally the client.	N/A. This is not a soft skill
Creativity*	Innovation	Innovation
Sensitivity*	Empathetic	Flexibility

**Previously allocated but interested to hear participant's response*

Note: <u>Disagreement</u> between researcher and peer reviewer on "**Sensitivity**". Both suggestions are touched upon so it is understandable. The definition provided within this research for Flexibility is already picked up by another entry on the interviewee's survey ("Adaptability") so would not get a 'double vote' in the second round of the Delphi Method. Therefore "Empathetic" will be taken forward for this particular entry as it is not mentioned in the other entries by the interviewee.

Interview No. 16

Interview Participant: **UK21**
Office: **Bristol, UK**
Date and Time: **28th April at 2.30pm GMT**
Meeting Medium: **Video Call (Microsoft Teams)**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information. Participants all agreed to the sessions being recorded on Microsoft Teams for later review.

MP: I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. You have been invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. *If you decide to take part, you are free to withdraw at any time.* By taking part in this study you are helping to further the current understanding of an important subject and enhancing the firm's growing reputation as experts in performance measurement. Our aim is to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

Thank you for responding to the survey that was distributed, and listing the 5-10 soft skills that you considered to be of greatest importance when working as part of a project team in the construction industry. As a reminder of the soft skills you listed, I have shared my screen with you.

You listed 7 soft skills in the survey, there were 2 in particular that I wanted to talk through in more detail if that's ok.

The first is **People management**. Can you explain what you meant by that please?

UK21: Understand that everybody works in a different way and everybody has a different dynamic, so the skill of people management to me is not applying the same process time and time again, it's the ability to evaluate a situation or scenario and part of that can be evaluating a person and the way that somebody might work within a group or team in order to get the best out of them. It would be a situational leadership type thing.

MP: One of the other skills you listed is emotional intelligence – do these two overlap in your view?

UK21:I think there's a huge overlap between the two. In my experience, the people who are better managers are people who have better emotional intelligence – and they are self-aware enough to be able to reasonably identify their own positives, but also their own shortcomings and the things that need to be adapted. You may also be able to see people that you would work better with, or those that are better placed than you – so perhaps delegation, or it might actually be partnership or team working.

MP: Thanks. The other one I was keen to learn more about was what you meant by **Expectation management**?

UK21: A key part of the stakeholder engagement role is managing realistic expectations, so it's an extension of the stakeholder management role. Some messages can be difficult to deliver to project members and you have to find the right way of communicating it even if its not what they want or expect to hear – there's a skill in that.

MP: Thanks. As I mentioned in the Briefing Sheet, the results of the research will be used within my doctorate thesis, and if you would like to see a copy of the final thesis please let me know. As I mentioned in my initial email, it's requested that you commit to being part of the study throughout its duration – there will be 3 more short online questionnaires, each issued approximately a month apart, and should take no longer than 15-20 minutes each time to complete. It is critical to the study that you complete all the questionnaires. Thank you again for being part of the study, I really appreciate it.

UK21: Thanks Mike.

Recommendations

Soft Skill suggested by participant	**Researcher recommendation** Soft Skill closely aligns to proposed definition of (if relevant):	**Peer review recommendation** Soft Skill closely aligns to proposed definition of (if relevant):
People Management	Motivational	Motivational
Expectation Management	Communication	Communication

Interview No. 17

Interview Participant: **IN9**
Office: **Bangalore, India**
Date and Time: **1st May at 11am GMT**
Meeting Medium: **Video Call (Microsoft Teams)**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information. Participants all agreed to the sessions being recorded on Microsoft Teams for later review.

MP: I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. You have been invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. *If you decide to take part, you are free to withdraw at any time.* By taking part in this study you are helping to further the current understanding of an important subject and enhancing the firm's growing reputation as experts in performance measurement. Our aim is to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

Thank you for responding to the survey that was distributed, and listing the 5-10 soft skills that you considered to be of greatest importance when working as part of a project team in the construction industry. As a reminder of the soft skills you listed, I have shared my screen with you.

You listed 7 soft skills in the survey, there were 3 in particular that I wanted to talk through in more detail if that's ok.

The first is **Managing and working with diverse teams**. Can you explain what you meant by that please?

IN9: We've got to stakeholders coming from different backgrounds and also in different industries and sectors, with different sets of objectives. The diversity in teams of dealing with these different stakeholders in in the project environment and everybody working together in the same direction.

MP: The second one is **Client management**. What do you mean by that?

IN9: Who we work for is very different depending on the nature of the client organisation. In funding companies their sole interest is to invest in a project and then make returns out of the project. Developers also have a similar objective, but the way they work is different. And then you have the end user clients who want to build facilities for their own purpose, so managing their expectations is quite different. Normally you cannot have a similar approach to work with all these clients, so we need to have a clear understanding of their objectives.

It is important that we appreciate their requirements and manage them accordingly. Individuals within those client organizations you know, when so that is also important in order to understand their way of working and. The way we work with individuals in one client organisation may not be applicable for a similar role in a different client organisation.

First and foremost we must understand their business objective. At the end of the day everybody is doing it for a business purpose and that's why they engaging us as a professional consultant. So the most important thing is to understand their business objective and align our delivery strategy to suit their business objective. We will have a scope ope of work, understanding exactly what they want to achieve and aligning that to the way that we manage the project. Sometimes the scope of work will not meet their objectives, so we need to go back to discuss with them until I understand clearly what is that they're expecting. Then how we communicate the client's expectations for the rest of the stakeholders is equally important.

MP: OK thank you. The final one that I wanted to pick up on was **Meeting management**. What is the skill involved in managing meetings?

IN9: We need to facilitate and manage communication during meetings or else the desired outcomes will not be achieved. If not managed properly, the topics discussed in some meetings could even end up in disputes as well. Chairing a meeting means driving the whole process. It could be even things like basic disciplines of keeping an eye on time that people need to develop skills in.

MP: Thanks. As I mentioned in the Briefing Sheet, the results of the research will be used within my doctorate thesis, and if you would like to see a copy of the final thesis please let me know. As I mentioned in my initial email, it's requested that you commit to being part of the study throughout its duration – there will be 3 more short online questionnaires, each issued approximately a month apart, and should take no longer than 15-20 minutes each time to complete. It is critical to the study that you complete all the questionnaires. Thank you again for being part of the study, I really appreciate it.

IN9: Thanks Mike.

Recommendations

Soft Skill suggested by participant	**Researcher recommendation** Soft Skill closely aligns to proposed definition of (if relevant):	**Peer review recommendation** Soft Skill closely aligns to proposed definition of (if relevant):
Managing and working with diverse teams*	Collaboration	Collaboration
Client management	Active listening. Communication is clearly important to the way it is described, but the underlying skill is in how well the expectations are heard and understood.	Communication
Meeting Management	N/A. Meeting management is a facilitation skill, a hard skill.	N/A. Not a soft skill managing task completion in meetings.

**Previously allocated but interested to hear participant's response*

Note: Disagreement between researcher and peer reviewer on "**Client management**". Both suggestions are touched upon so it is understandable. Communication is already picked up by another entry on the interviewee's survey ("Communication") so would not get a 'double vote' in the second round of the Delphi Method. Therefore "Active listening" will be taken forward for this particular entry as it is not mentioned in the other entries by the interviewee.

Interview No. 18

Interview Participant: **UK44**
Office: **Birmingham, UK**
Date and Time: **28th April at 8:30am GMT**
Meeting Medium: **Video Call (Microsoft Teams)**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information. Participants all agreed to the sessions being recorded on Microsoft Teams for later review.

MP: I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. You have been invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. *If you decide to take part, you are free to withdraw at any time.* By taking part in this study you are helping to further the current understanding of an important subject and enhancing the firm's growing reputation as experts in performance measurement. Our aim is to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

Thank you for responding to the survey that was distributed, and listing the 5-10 soft skills that you considered to be of greatest importance when working as part of a project team in the construction industry. As a reminder of the soft skills you listed, I have shared my screen with you.

You listed 5 soft skills in the survey, there were 3 in particular that I wanted to talk through in more detail if that's ok.

The first is **Judgement**. Can you explain what you meant by that please?

UK44: I see judgment as the ability to weigh the pros and cons over of a particular situation or set of circumstances and come to a considered decision and sensible conclusions. It needs cool consideration of the various factors, particularly needed in heated situations in the midst of the eye of the storm. Now that's a very crucial factor, under pressure, that's effective leadership - something that's particularly required to be project managers or a participant in a successful project team.

Advice is based on judgments weighing up different factors.

MP: Thanks the next one you wrote was **Clarity**, clarity in what sense?

UK44: I think this is a very important one for me.

If I can tell you a little anecdote that only happened in the last week. I had a colleague, we were talking about a potential project. We're making a pitch for a potential project, which is a very complicated, involved project. This particular colleague started talking about way leaves and easements, and after about 2 minutes I stopped the individual and said look I'm struggling here

because I can't see the difference between a way leave and an easement. Isn't it fundamentally about someone getting permission from someone else to do something that they have an interest in?

He went 'yeah it is'. So I said, well, when we're discussing this with the client, can we just keep to that principle of getting a license or an approval? Anyway, we went on a conference call to talk about the opportunity and an individual from another organisation is talking at length about way leaves an easements, and out of principle the owner of the business stops this person in his tracks. 'I haven't got a clue what you're talking about. I don't understand these terms way leaves and easements'! So clarity is about talking one language with the technical experts, and then translating that into something that's meaningful and understandable for non technical audiences such as a client or other stakeholders to focus on receiving effective communication and focus on the key message to allow action to be taken.

There is a balancing act between having that clarity of message, but at the same time trying to ensure that you're not losing the technical detail and nuances. I think it's a particular skill, actually. Sometimes it's done by giving examples.

MP: The next one interested me, you wrote **Bravery**. What do you mean by bravery?

UK44: Well, we spoke at the very beginning about judgments. You're weighing the pros and cons, and using your experience, your knowledge to come to a judgment. That judgment may be frequently confronted, where someone is saying to you that you're wrong. Its important to listen and still have faith in my judgment - then you need the bravery to be able to stand up for it and sometimes in the face of confrontation, human nature is such that people do not like confrontation.

Sometimes that judgment is misplaced and your opinion might be changed. But don't kick the can down the road

MP: So is it having the bravery to actually exercise the decision-making and judgement skills you spoke about earlier and put them in practice?

UK44: Yeah, absolutely. How frequently have you been in meetings where you've been told a direction of travel and then come out and someone says to you 'I don't agree with that whatsoever'. But they don't have the bravery to confront that in the meeting. I think it takes confidence - partly in your own value system to put that across - but also in knowing what's right for the project because you have that clarity in mind of what is required, and you have that vision.

The reverse side of the coin is being brave enough to say you got something wrong!

Or in the midst of a bunch of professionals and someone is talking about something technically and everybody is nodding their heads up and down. Then you say, 'I'm sorry, but I don't understand this'. I have frequently been in situations where I have said ' look, I don't understand what you're saying' – so many times people have turned to me after the meeting and said 'Tom, I'm glad you asked that question because I didn't have a clue!'.

MP: Thanks. As I mentioned in the Briefing Sheet, the results of the research will be used within my doctorate thesis, and if you would like to see a copy of the final thesis please let me know. As I mentioned in my initial email, it's requested that you commit to being part of the study throughout its duration – there will be 3 more short online questionnaires, each issued approximately a month apart, and should take no longer than 15-20 minutes each time to complete. It is critical to the

study that you complete all the questionnaires. Thank you again for being part of the study, I really appreciate it.

UK44: Thanks Mike.

Recommendations

Soft Skill suggested by participant	**Researcher recommendation** Soft Skill closely aligns to proposed definition of (if relevant):	**Peer review recommendation** Soft Skill closely aligns to proposed definition of (if relevant):
Judgement	Leadership	Leadership
Clarity*	CHANGE to Soft KPI. Definition given more closely aligns to definition for 'Communication' rather than 'Confidence'.	Communication
Bravery	Confidence	Confidence

**Previously allocated but interested to hear participant's response*

Appendix I:

Email example to Delphi Round 2 Participants and Round 2 Questionnaire

[Email redacted from open access version of thesis]

Aston Business School

Questionnaire 2 - Research Study

1. Personal Details

* 1. First and Last Name (e.g. Michael Parker) 0

* 2. Gleeds Office Location (city and country) 0

2. Soft Skills Question

* 1. This survey follows the Round 1 questionnaire two months ago where you provided a list of the 5-10 soft skills that you considered most important when working as part of a project team in the construction industry.

The consolidated results from all responses across the UK, USA and India businesses have been provided to you in an email showing the 20 soft skills suggested in total, along with the corresponding definitions. Please take a couple of minutes to read through this list and the corresponding definitions sheet.

In the boxes below, please reconsider whether you would change any of the soft skills you originally submitted in Round 1, and list a minimum of 5 to a maximum of 10 soft skills that you feel are most important when working as part of a project team in the construction industry.

0

Soft Skill 1	
Soft Skill 2	
Soft Skill 3	
Soft Skill 4	
Soft Skill 5	
Soft Skill 6	
Soft Skill 7	
Soft Skill 8	
Soft Skill 9	
Soft Skill 10	

Appendix J:

Delphi Round 2 Questionnaire Responses

ID	Country	Soft Skill 1	No.	Soft Skill 2	No.	Soft Skill 3	No.	Soft Skill 4	No.	Soft Skill 5	No.	Soft Skill 6	No.	Soft Skill 7	No.	Soft Skill 8	No.	Soft Skill 9	No.	Soft Skill 10	No.
IN1	India	Communication	1	Leadership	5	Conflict Mgmt	4	Innovation	6	Reliability	14	Detail-oriented	20	Empathetic	12	Listening	13	Delegation	15	Self-organised	18
IN2	India																				
IN3	India	Leadership	5	Communication	1	Motivational	8	Collaboration	7	Delegation	15	Trust	2								
IN4	India	Effective communication	1	Confidence	17	Flexibility or Adaptability	9	Leadership	5	Negotiation techniques	4	Stress Management	11	Trust and respect	2	Reliability	14	Innovation	6	Motivational	8
IN5	India																				
IN6	India	Effective Communication	1	Active listening	13	Conflict Management and Neg	4	Leadership	5	Flexibility	9	Collaboration	7	Motivational	8	Confidence	17	Reliability	14	Detail-oriented	20
IN7	India	Effective Communication	1	Flexibility	9	Collaboration	7	Leadership	5	Integrity & Respect	2										
IN8	India	Effective Communication	1	Leadership	5	Flexibility	9	Collaboration	7	Self Organised	18										
IN9	India	Effective communication	1	Trust & Respect	2	Motivational	8	Work life balancing		Colloboration	7	Self-organised	18	Learning	3						
IN10	India																				
IN11	India	Communication	1	Trust	2	Motivational	8	Enthusiasm	10	Confidence	17	Self Organized	18	Detail oriented	20	Reliability	14	Learning	3	flexibility	9
IN12	India	Motivational	8	Trusting	2	Communications	1	Collaboration	7	Listening	13	Delegation & Empowerm	15	Leadership	5	Empathetic	12	Composure	16	Self Organised	18
IN13	India	Communication	1	Positive Attitude	8	Team Work	7	Time Management		Problem Solving	9										
IN14	India	Communication	1	Flexibility	9	Leadrship	5	Collaboration	7	Team works	7	Reliability	14	Conflict Management	4						
IN15	India	Communication	1	Leadership (includes decis	5	Collaboration (team working)	7	Flexibility	9	Trust and respect	2	Conflict management anc	4	Motivational	8	Detail oriented	20	Confidence	17	Composure	16
IN16	India	Effective Communication	1	Trust & Respect	2	Empathetic	12	Personability	19	Conflict Management & negot	4	Leadership	5	Trust & Respect	2	Collabration	7	Enthusiasm & Proactiveness	10	Collaboration	7
UK1	UK	Communication	1	Trust	2	Self-organised	18	Reliability	14	Collaboration	7										
UK2	UK	Effective Communication	1	Collaboration	7	Trust & Respect	2	Active Listening	13	Leadership	5	Motivational	8	Flexibility	9	Negotiation	4	Empathetic	12		
UK3	UK	Communication	1	Trust and Respect	2	Leadership	5	Collaboration	7	Empathetic	12	Self Organised	18								
UK4	UK	Communication	1	Leadership	5	Trust and Respect	2	Motivation	8	collaboration	7	Organisation	18								
UK5	UK	Communication	1	Leadership	5	Flexible - Problem Solving	9	Organised - Coordinated	18	Trusted - Professional	2	Reliable	14	Detail Oriented - Thorou	20	Collaborative	7	Conflict Management	4	Listening	13
UK6	UK	Effective Communication	1					Self Organised	18					Leadership	5	Learning and Growth	3	Personability	19	Trust and Respect	2
UK7	UK	Communication	1	Collaboration	7	Empathy	12	Active listening	13	Positive attitude	8										
UK8	UK	Effective Communication	1	Innovation	6	Leadership	5	Empathetic	12	Trustworthy	2	Conflict Management	4	Collaboration	7						
UK9	UK	Flexibility	9	Motivational	8	Resilience	11	Detail-oriented	20	Learning and growth	3										
UK10	UK																				
UK11	UK	Effective Communication	1	Leadership	5	Collaboration	7	Good Listening Skills	13	Personable	19	Flexibility	9								
UK12	UK																				
UK13	UK	Leadership	5	Motivation	8	Communication	1	Conflict Management	4	Trust Building	2	Organisation	18	Empathetic	12	Collaberation	7	Flexibility	9	Confidence	17
UK14	UK	Effective Communication	1	Trust and Respect	2	Enthusiasm & Proactiveness	10	Collaboration	7	Confidence	17	Self-Organised	18	Detail-oriented	20	Leadership	5	Flexibility	9	Learning and Growth	3
UK15	UK	Communication	1	Resilience	11	Trust and Respect	2	Conflict Management	4	Empathetic	12	Self-organised	18	Confidence	17	Reliability	14	Flexibility	9	Enthusiam	10
UK16	UK	Effective Communication	1	Problem Solving	9	Collaboration	7	Flexibility	9	Leadership	5	Attention to detail	20	Personability	19	Active Listening	13	Reliability	14	Trust & Respect	2
UK17	UK	Effective communication	1	Leadership	5	Active Listening	13	Trust and Respect	2	Collaboration	7										
UK18	UK	Effective Communication	1	Trust and Respect	2	Conflict Management and Neg	4	Leadership	5	Collaboration	7	Motivational	8	Flexibility	9	Enthusiasm and pro-active	10	Empathetic	12	Active Listening	13
UK19	UK	Effective Communication Ski	1	Collaboration	7	Adaptability	9	Leadership	5	Efficient working	18	Proactiveness	10	Conflict Management an	4						
UK20	UK	Communication	1	Collaboration	7	Commitment	10	Flexibility	9	Leadership	5	Trust & Respect	2	Reliability	14	Enthusiastic	10	Learning	3	Conflict Management	4
UK21	UK	Communication	1	Confidence	17	Interpersonal	19	Flexibility	9	Grounded	1	Decisive	5	Collaboration	7	Leadership	5				
UK22	UK	Personality	19	Professionalism		Patience	16	Approachable	19	Fairness	4	Diplomatic	12	Drive	10	Confidence	17				
UK23	UK																				
UK24	UK	Leadership/commitment	5	Flexibility	9	Communication	1	Confidence	17	Trust & Respect	2	Empathetic	12	Active Listening	13	Learning & Growth	3	Personability	19	Resilience	11
UK25	UK	Communication	1	Approachability	19	Collaboration	7	Leadership	5	Professional Integrity	2	Safety		Compliance	2	Reliability	14				
UK26	UK	Listening	13	Empathetic	12	Leadership	5	Enthusiasm	10	Trust & Respect	2	Collaboration	7	Flexibility	9						
UK27	UK	Effective Communication	1	Trust & Respect / Honesty	2	Reliability	14	Professional (though could be tr	2	Personability / Empathetic	19	Confident	17	Open to Ideas (learning a	3	Constructive Criticism (Res	11	Flexible	9	Organised	18
UK28	UK																				
UK29	UK																				
UK30	UK	Clear communication	1	Engendering trust and resp	2	Conflict management within th	4	Collaberation between team me	7	Listening to others	13	Motivate the team memb	8	Delegate to others in the	15						
UK31	UK																				
UK32	UK																				
UK33	UK	Effective Communication	1	Build Relationships	7	Resilience	11	Conflict Management & Negotia	4	Self-Motivation/Discipline	10	Self organised	18	Prioritise	18	Understand the objectives	12	Leadership	5	Delegation & empowermer	15
UK34	UK																				
UK35	UK	Organisation	18	Effective Communication	1	Rapport Building	19	Problem Solving	9	Collaborative	7	Dependable	14	Leadership	5	Conflict Resolution	4	Empathy	12	Integrity	7
UK36	UK	Active listening	13	Effective communication	1	Adaptability/Flexibility	9	Presenting	1	Conflict management and neg	4	Delegation and empower	15	Collaboration	7	Trust and respect	2	Leadership	5	Reliability	14
UK37	UK	respect /politeness	1	Communication	1	collaboration	7	active listening	13	adapability / flexability	9	emphathetic	12	reliability	14	confidence	17	composure	16	personability	19
UK38	UK	Effective Communication	1	Collaboration	7	Flexibility	9	Empathy	12	Trust and Respect	2	Leadership	5	Motivational	8	Self Organised	18	Reliability	14	Personability	19
UK39	UK																				
UK40	UK	Ability to communicate effe	1	Integrity beyond doubt	2	Approachable	19	Take on challenges - don't shy a	11	Proactive approach	10	Lead by example and set	5	Do the right thing at all t	2	Be understanding - have an	13	Take responsibility	5	Retain flexibility and be abl	9
UK41	UK																				
UK42	UK	Communication	1	Listening / Active Listening	13	Coordination / Collaboration	7	Problem Solving	9	Interpretation	13	Understanding / Flexibili	9	Leadership	5	Trust & Respect	2	Organisation	18	Delegation / Empowermen	15
UK43	UK	Communication - Verbal & P	1	Listening	13	Positive Attitude	8	Humor - Quick wittedness	19	Persuasion - Conflict resolutio	4	Interpersonal Relationshi	19	Mentoring - Coaching	5	Delegation - Empowermen	15	Decision Making - Acountal	5	Critical Thinking - Problems	9
UK44	UK	Effective communication	1	Listening	13	Flexibility	9	Collaboration	7	Empathy / Emotional Intellige	12	Conflict management	4	Leadership	5	Learning and continous imp	3				
UK45	UK																				
UK46	UK	Common Sense	12	Listening	13	Effective Communication	1	Dependable / Reliable	14	Flexible	9	Problem Solving	9	Conflict Management & I	4	Honesty	2	Co-operation	7	Empathy / Emotional Intelli	12
UK47	UK	Effective Communication	1	Teamworking	7	Interpersonal Skills	19	Patience and Udnerstanding	16	Flexibility	9	Leadership	5	Conflict Management	4						
UK48	UK																				
UK49	UK	Flexibility	9	Collaboration	7	Trust and respect	2	Empathetic	12	Enthusiasm and proactiveness	10	Self organised	18	Leadership	5	Effective communication	1	Motivational	8	Active listening	13
UK50	UK																				
UK51	UK	Patience	16	Communication	1	Listening	13	Detail awareness	20	Leadership skills	5	Organisational skills	18								
UK52	UK	Effective Communication	1	Flexibility	9	Empathy	12	Accountability	5	Creativity	6	Active Listening	13								
UK53	UK	Communcation	1	Teamwork	7	Flexibility/ Adaptability	9	Slef Motivated	10	Reliable	14	Listening	13	Leadership	5						
UK54	UK																				
UK55	UK	Judgement	5	Leadership	5	Clarity	1	Trust and respect	2	Bravery	17	Adapability	9	Empathy	12	Conflict management and r	4	Composure	16	Resilience	11
UK56	UK	Communicator	1	Diplomat	1	Empathetic	12	Team player	7	Flexible	9										
UK56																					
US1	USA	Communication	1	Collaboration	7	Honesty - (Trust & Respect)	2	Negotiation - (Conflict Managen	4	Leadership	5	Adaptability - (Flexibility	9	Personability	19	Enthusiasm & Proactiveness	10	Learning & Growth	3		
US2	USA	Communication	1	Flexibility	9	Leadership	5	Conflict Management	4	Resilience	11	Self-organised	18	Innovation	6	Detail-oriented	20				
US3	USA																				
US4	USA	Effective communication	1	Trust and Respect	2	Empathetic	12	Active listening	13	personability	19	motivational	8	confidence	17	delegation and empowerm	15	composure	16	conflict management and n	4
US5	USA	Effective Communication	1	Enthusiasm & Proactiveness	10	Delegation & Empowerment	15	Collaboration	7	Self-organised	18	Conflict Management & M	4								
US6	USA	Concise Communication	1	Be courteous	1	Ability to work with a wide ran	7	Ability to use a positive persona	8	Trust & Respect	2	Leadership	5	Listening	13	Reliability	14	Composure	16	Use humor appropriately	19
US7	USA	Effective Communication	1	Collaborationn	7	Confidence	17	Reliability	14	Learning And Growth	3	Active listening	13								
US8	USA	Compassion	12	Calmness	16	Empathy	12	Respect	2	Understanding	13	Advocacy	12	Loyalty		Consideration	12	Trust and Respect	2	Composure	16
US9	USA																				
US10	USA																				
US11	USA	Effective Communication	1	Active Listening	13	Personability	19	Reliability	14	Composure	16										
US12	USA	Communication	1	Active Listening	13	Flexibility	9	Problem Solving	9	Critical Thinking	9	Conflict Management	4	Leadership	5	Innovation	6	Confidence	17		
US13	USA	Effective Communication	1	Leadership	5	Motivational	8	Time Management	18	Detailed Oriented	20	Energetic	10	Hard Working	10	Conscientious and Ethical	2	Resilience	11	Reliability	14
US14	USA	Communication	1	Flexibility	9	Resilience	11	Collaboration	7	Trust	2	Reliability	14	Self-organised	18	Confidence	17				
US15	USA	Talking to a group, large or sı	1	Making a presentation	1	Social interaction	19	Sense of humor	19	Pleasant appearance and dem	1	Being on time for meetin	14	Talking on the phone	1	Emailing and texting	1				
US16	USA	Communication	1	Empathetic	12	Conflict Management & Negot	4	Enthusiasm & Proactiveness	10	Collaboration	7	Self-organized	18	Flexibility	9	Leadership	5	Detail-Oriented	20	Innovation	6
US17	USA	Leadership	5	Motivational	8	Collaboration	7	Enthusiasm and proactiveness	10	Active Listening	13	Composure	16	Confidence	17	Effective Communication	1	Conflict Management	4	Trust and Respect	2

Appendix K:

Email example to Delphi Round 3 Participants and Round 3 Questionnaire

From: Michael Parker
Sent: 05 August 2020 14:55
To: [redacted]
Cc: [redacted]
Subject: Questionnaire 3 of 4: US-UK-IND research exercise

Dear all,

Thank you for your participation in our soft skills research study to date, the first two questionnaires have had a high response rate. We now have only two short questionnaires left to go, so thank you for your patience! We previously asked you to select what you felt to be the most important soft skills when working as part of a project team. Following these responses we have now converged upon **five** soft skills that have been carried forward to the 3rd questionnaire.

The link to Questionnaire 3 is below, it should take only a few minutes; you are simply asked to provide a rating of 1-5 against each of the five soft skills, based on how important you feel they are when working as part of a project team in the construction industry:

https://www.surveymonkey.co.uk/r/GleedsResearchSurvey3

Please can you respond by the end of the day on **Friday 14th August**. Thanks in advance for your contribution.

Kind regards,

Mike

Michael Parker | Associate Director | Gleeds Advisory Ltd
T: +44 (0)121 644 5400 | **F:** +44 (0)121 644 5401 | **M:** + 44 (0)7718 804237
7th Floor, Centre City, 5-7 Hill Street, Birmingham, B5 4UA
michael.parker@gleeds.co.uk

Aston Business School

Questionnaire 3 - Research Study

1. Personal Details

* 1. First and Last Name (e.g. Michael Parker) 0

* 2. Gleeds Office Location (city and country) 0

2. Soft Skills Question

* 1. Please provide a rating score from 1-5 on the following soft skills and their definitions based on how important you feel they are when working as part of a **project team** in the construction industry. The rating scores 1-5 are as follows:

5 = Very important
4 = Important
3 = Moderate importance
2 = Low importance
1 = Not important

Note: You can award each score to **more than one** soft skill if you wish, or not at all. 0

	Rating
a). Effective Communication: Appropriate engagement with relevant stakeholders at all levels including written, verbal and body language (including presentation).	
b). Leadership: Demonstrates mentoring skills, shows decisiveness and takes accountability.	
c). Collaboration: Demonstrates teamworking ethic and building positive working relationships.	
d). Flexibility: Ability to problem solve and adaptability to new and different ways of working.	
e). Trust & Respect: Seeks to build mutual trust and respect, being open with project participants.	

Comments (if you would like to further explain any responses):

Appendix L:

Delphi Round 3 Questionnaire Responses

ID	Country	Office	a). Effective Communication	b). Leadership	c). Collaboration	d). Flexibility	e). Trust & Respect
IN1	India	Mumbai, India	5	5	5	5	5
IN2	India						
IN3	India	Bengaluru, India	5	5	5	5	5
IN4	India	Bangalore, India	5	5	5	3	5
IN5	India	Mumbai, India	5	3	4	5	4
IN6	India	Chennai, India	5	5	4	4	5
IN7	India	Chennai, India	5	5	5	5	5
IN8	India	Chennai , India	4	4	5	4	5
IN9	India	Pune India	5	4	4	3	5
IN10	India	Banglore, India	5	5	4	5	5
IN11	India						
IN12	India	Pune, India	5	5	5	5	5
IN13	India	Bangalore, India	5	4	5	4	5
IN14	India	Bangalore,India	5	4	4	3	3
IN15	India	Bangalore, India	5	4	4	4	5
IN16	India	Delhi, India	5	5	5	4	5
UK1	UK	Milton Keynes, UK	5	5	4	4	5
UK2	UK	Bristol, England	5	5	5	5	5
UK3	UK	Tunbridge Wells, England	5	4	4	3	4
UK4	UK	Leeds	5	5	5	5	5
UK5	UK	Cardiff, Wales, UK	5	4	4	4	4
UK6	UK	Glasgow United Kingdom	5	5	5	5	5
UK7	UK	Liverpool	4	3	4	4	5
UK8	UK	Tunbridge Wells	5	4	5	5	5
UK9	UK						
UK10	UK						
UK11	UK	Tunbridge Wells	5	4	5	4	4
UK12	UK						
UK13	UK	Nottingham	5	4	5	5	4
UK14	UK	London, United Kingdom	5	3	5	4	5
UK15	UK	Milton Keynes, United Kingdom	5	4	4	5	5
UK16	UK	Birmingham	5	4	4	4	4
UK17	UK	London UK	5	5	5	4	4
UK18	UK	London UK	5	5	5	5	5
UK19	UK						
UK20	UK	Manchester	5	4	5	3	5
UK21	UK	Manchester	5	4	5	4	5
UK22	UK	Cardiff, UK	5	5	5	4	5
UK23	UK	Cardiff, UK	4	5	4	4	5
UK24	UK	Nottingham, England	5	5	5	5	5
UK25	UK						
UK26	UK						
UK27	UK	Tunbridge Wells, England	5	5	3	4	4
UK28	UK						
UK29	UK	liverpool	5	4	5	4	5
UK30	UK	Cambridge UK	5	5	5	5	5
UK31	UK	London UK	5	5	5	5	5
UK32	UK	Remote Worker (UK)	5	4	5	3	3
UK33	UK						
UK34	UK						
UK35	UK	Nottingham	5	3	3	3	5
UK36	UK	Milton Keynes	5	5	5	5	5
UK37	UK	cardiff	5	4	5	4	4
UK38	UK	Birmingham	5	5	5	5	5
UK39	UK						
UK40	UK	Nottingham, UK	5	5	5	5	5
UK41	UK	London	5	4	4	5	4
UK42	UK	Glasgow	5	3	5	5	4
UK43	UK	newcastle upon tyne, uk	5		5	5	5
UK44	UK	Bristol, United Kingdom	5	3	5	4	5
UK45	UK						
UK46	UK	Leeds, UK	5	5	4	4	4
UK47	UK	Manchester, UK	5	4	3	3	5
UK48	UK	Birmingham	4	4	5	4	5
UK49	UK	Tunbridge Wells	5	5	5	5	5
UK50	UK	Bristol	5	4	5	4	4
UK51	UK	London, United Kingdom	5	4	5	5	5
UK52	UK	London UK	4	1	5	3	3
UK53	UK	Southampton, UK	5	4	5	4	4
UK54	UK						
UK55	UK	Birmingham	5	5	4	4	4
UK56	UK	Bristol	5	5	4	3	4
US1	USA	New York, United States	5	4	5	4	5
US2	USA						
US3	USA						
US4	USA	Atlanta, USA	5	4	4	5	5
US5	USA	Atlanta, USA	5	4	5	3	2
US6	USA	Atlanta, USA	5	5	5	4	5
US7	USA	New York	5	5	4	4	5
US8	USA						
US9	USA	Chicago USA	5	5	5	4	5
US10	USA	New York, NY USA	5	5	5	5	5
US11	USA	Atlanta, GA, USA	5	4	5	5	4
US12	USA	Atlanta, USA	5	3	5	4	4
US13	USA	New York	5	5	4	4	4
US14	USA	New York	5	4	4	5	4
US15	USA	Atlanta USA	5	5	5	5	5
US16	USA	Atlanta, GA, USA	5	3	5	5	4
US17	USA	Atlanta, GA USA	4	4	4	4	5

Responses highlighted in Orange were selected for further review through interview.

Appendix M:

Delphi Round 3 Interview Transcriptions

Interview No. 19

Interview Participant: **UK43**
Office: **Newcastle, UK**
Date and Time: **8th October 2020 at 8.15am GMT**
Meeting Medium: **Telephone**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information, and the reason for wanting to speak following Round 3 questionnaire. Participants all agreed to the sessions being recorded for later review. The table below indicates the response selected for further discussion (5 = Very important, 4 = Important, 3 = Moderate importance, 2 = Low importance, 1 = Not important).

Soft Skill	Round 3 Response
a) Effective Communication	**5**
b) Leadership	**(blank)***
c) Collaboration	**5**
d) Flexibility	**5**
e) Trust and Respect	**5**

*Score identified for review

MP: I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. As you know, you were invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. Y*ou are free to withdraw at any time.* By taking part in this study you are helping to further the current understanding of an important subject and enhancing the firm's growing reputation as experts in performance measurement. Our aim is to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

Thank you for responding to the 3rd and most recent survey that was distributed, and giving a rating of the 5 soft skills and their definitions provided based on how important you feel they are when working as part of a project team in the construction industry.

One of the responses you provided was considered an outlier in the context of all the responses received – the **blank** that you left for **Leadership**. Can you explain why you left this blank please?

UK43:I don't consider leadership in itself a soft skill, in my view this is the amalgamation and delivery of other soft skills that make somebody into a leader.

MP: Thanks for your explanation. In the question, I provided an amalgamated definition of Leadership that was based on all the responses received from across the business in the first round, this was:

"Demonstrates mentoring skills, shows decisiveness and takes accountability". I appreciate that any one person would likely have a different definition, but that was the definition intended for the purpose of the rating in the questionnaire. How would you score this particular definition?

UK43:Personally, I would not relate those skills to Leadership. Everybody would have their own interpretation of what leadership is, but that wouldn't necessarily be the one that I would choose. I would be looking more along the lines of communication, adaptability, conflict resolution, motivation, listening, stuff like that which are more key for a leadership role. So if you asked me to give you a score based on this particular definition, I would have to give it a 1 out of 5 as I disagree that, as defined, this is an important soft skill.

MP: OK thanks, I understand your position on that.

I mentioned in the Briefing Sheet, the results of the research will be used within my doctorate thesis, and if you would like to see a copy of the final thesis please let me know. As I mentioned in my initial email, it's requested that you commit to being part of the study throughout its duration – there will just be 1 more short online questionnaire. Thank you again for being part of the study, I really appreciate it.

UK43: That's great Michael, thanks.

Round 3 scoring

Soft Skill	Round 3 Response	Response following Interview
a) Effective Communication	**5**	**5**
b) Leadership	**(blank)***	**1**
c) Collaboration	**5**	**5**
d) Flexibility	**5**	**5**
e) Trust and Respect	**5**	**5**

*Score identified for review

Interview No. 20

Interview Participant: **IN14**
Office: **Bangalore, India**
Date and Time: **9th October 2020 at 9.15am GMT**
Meeting Medium: **Telephone**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information, and the reason for wanting to speak following Round 3 questionnaire. Participants all agreed to the sessions being recorded for later review. The table below indicates the response selected for further discussion (5 = Very important, 4 = Important, 3 = Moderate importance, 2 = Low importance, 1 = Not important).

Soft Skill	Round 3 Response
a) Effective Communication	**5**
b) Leadership	**4**
c) Collaboration	**4**
d) Flexibility	**3**
e) Trust and Respect	**3***

*Score identified for review

MP: I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. As you know, you were invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. Y*ou are free to withdraw at any time.* By taking part in this study you are helping to further the current understanding of an important subject and enhancing the firm's growing reputation as experts in performance measurement. Our aim is to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

Thank you for responding to the 3rd and most recent survey that was distributed, and giving a rating of the 5 soft skills and their definitions provided based on how important you feel they are when working as part of a project team in the construction industry.

One of the responses you provided was considered an outlier in the context of all the responses received – the **'3'** that you awarded for **Trust and Respect**. Can you explain why you awarded this score please? Just to recap, the definition for Trust and Respect in the question was "Seeks to build mutual trust and respect, being open with project participants".

IN14: I felt that Trust had nominal importance as each member of my project teams is a member of a professional institution so its expected that people deliver a service in a certain way. However, Respect is certainly important and in the end I awarded an average score as a '3'.

MP: So you awarded different scores to 'Trust' and 'Respect' and averaged them out?

IN14: Yes. I thought Trust was a '2', and Respect was a '4', so averaged these out as '3'.

MP: That's interesting. Can you explain a little more about why you felt Trust was a '2'?

IN14: Yes – we are all bound by contracts so trust for me does not come into it as an important feature which is why I scored it lower. If it's in the contract, it should happen as there is an obligation to do it.

MP: Thanks for explaining your scoring.

I mentioned in the Briefing Sheet, the results of the research will be used within my doctorate thesis, and if you would like to see a copy of the final thesis please let me know. As I mentioned in my initial email, it's requested that you commit to being part of the study throughout its duration – there will just be 1 more short online questionnaire. Thank you again for being part of the study, I really appreciate it.

IN14: No problem, thank you.

Round 3 scoring

Soft Skill	Round 3 Response	Response following Interview
a) Effective Communication	**5**	**5**
b) Leadership	**4**	**4**
c) Collaboration	**4**	**4**
d) Flexibility	**3**	**3**
e) Trust and Respect	**3***	**3**

*Score identified for review

Interview No. 21

Interview Participant: **UK35**
Office: **Nottingham, UK**
Date and Time: **7th October 2020 at 4.30pm GMT**
Meeting Medium: **Telephone**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information, and the reason for wanting to speak following Round 3 questionnaire. Participants all agreed to the sessions being recorded for later review. The table below indicates the response selected for further discussion (5 = Very important, 4 = Important, 3 = Moderate importance, 2 = Low importance, 1 = Not important).

Soft Skill	Round 3 Response
a) Effective Communication	**5**
b) Leadership	**3**
c) Collaboration	**3***
d) Flexibility	**3**
e) Trust and Respect	**5**

*Score identified for review

MP: I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. As you know, you were invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. Y*ou are free to withdraw at any time.* By taking part in this study you are helping to further the current understanding of an important subject and enhancing the firm's growing reputation as experts in performance measurement. Our aim is to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

Thank you for responding to the 3rd and most recent survey that was distributed, and giving a rating of the 5 soft skills and their definitions provided based on how important you feel they are when working as part of a project team in the construction industry.

One of the responses you provided was considered an outlier in the context of all the responses received – the **'3'** that you awarded for **Collaboration**. Can you explain why you awarded this score please? Just to recap, the definition for Collaboration in the question was "Demonstrates teamworking ethic and building positive working relationships".

UK35:Yeah, I think that's probably more from personal experience on projects. I think because I've just not had very collaborative contractors working with me, but we still managed to deliver a building

that was a successful project and to achieve the budget and program. Good collaboration isn't necessarily always possible.

MP: Why do you think that is? Is it possible to deliver a successful project without collaborative colleagues?

UK35:I think to some extent the other skills that were outlined supersede collaboration. Without the collaboration aspect, you can still deliver successful projects.

MP: Have you worked on projects that have been quite contractual in their nature?

UK35: Yeah definitely, that's true of one project I'm working on at the moment where collaboration just isn't a priority. The contractor puts in compensation events for very small values, compared with a contractor on another project I'm working on where they are much more collaborative. They are both achieving the same outcomes though in the sense that they are both on programme and budget. It's interesting because on the project where there is poor collaboration, the relationship with the client is very strained, and with the other the contractor's relationship with the client is excellent – despite the outcomes being the same.

I would change my answer to a 4 in retrospect, as a collaborative contractor is the difference between a happy or dissatisfied client which is part of what makes a project successful. I'd say though that without the other attributes being undertaken well, collaboration is not possible.

MP: Thanks for explaining your scoring, I've made the amendment you've requested.

I mentioned in the Briefing Sheet, the results of the research will be used within my doctorate thesis, and if you would like to see a copy of the final thesis please let me know. As I mentioned in my initial email, it's requested that you commit to being part of the study throughout its duration – there will just be 1 more short online questionnaire. Thank you again for being part of the study, I really appreciate it.

UK35: No problem, thank you.

Round 3 scoring

Soft Skill	Round 3 Response	Response following Interview
a) Effective Communication	**5**	**5**
b) Leadership	**3**	**3**
c) Collaboration	**3***	**4**
d) Flexibility	**3**	**3**
e) Trust and Respect	**5**	**5**

*Score identified for review

Interview No. 22

Interview Participant: **UK32**
Office: **London, UK**
Date and Time: **7th October 2020 at 3.30pm GMT**
Meeting Medium: **Telephone**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information, and the reason for wanting to speak following Round 3 questionnaire. Participants all agreed to the sessions being recorded for later review. The table below indicates the response selected for further discussion (5 = Very important, 4 = Important, 3 = Moderate importance, 2 = Low importance, 1 = Not important).

Soft Skill	Round 3 Response
a) Effective Communication	**5**
b) Leadership	**4**
c) Collaboration	**5**
d) Flexibility	**3**
e) Trust and Respect	**3***

*Score identified for review

MP: I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. As you know, you were invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. Y*ou are free to withdraw at any time.* By taking part in this study you are helping to further the current understanding of an important subject and enhancing the firm's growing reputation as experts in performance measurement. Our aim is to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

Thank you for responding to the 3rd and most recent survey that was distributed, and giving a rating of the 5 soft skills and their definitions provided based on how important you feel they are when working as part of a project team in the construction industry.

One of the responses you provided was considered an outlier in the context of all the responses received – the **'3'** that you awarded for **Trust and Respect**. Can you explain why you awarded this score please? Just to recap, the definition for Trust and Respect in the question was "Seeks to build mutual trust and respect, being open with project participants".

UK32:As a consultant, I'm working with other consultants or other project team members, and often working with people that we might have a personality clash with. But that shouldn't stop you from getting your work done. That shouldn't stop your professionalism. Maybe I saw the question

wrongly but from my perspective, it was a case of I didn't see the fact that I liked, trusted or respected the person to be a benefit or hindrance to me getting my job done or getting work delivered for a client.

MP: Thank you. When you say it shouldn't stop your professionalism, what does that what does that mean? What does professionalism mean to you?

UK32:I guess for me it means common courtesy, politeness, and maintaining industry standards like ISO or any sort of certification. I expect that even if I don't like someone on a project, they would provide it to a professional standard.

MP: Just to understand your role a little bit more, I noticed you work in information management. What does your role involve?

UK32: I'm in a unique role where I serve both the business internally and clients externally in managing common data environments.

MP: When you serve the business, these are effectively colleagues, so might trust and respect already be inherent because they are colleagues?

UK32:That's an interesting question, yeah that is possible.

MP: Thanks for the explanation.

I mentioned in the Briefing Sheet, the results of the research will be used within my doctorate thesis, and if you would like to see a copy of the final thesis please let me know. As I mentioned in my initial email, it's requested that you commit to being part of the study throughout its duration – there will just be 1 more short online questionnaire. Thank you again for being part of the study, I really appreciate it.

UK32:Thanks, Michael. Have a good day.

Round 3 scoring

Soft Skill	Round 3 Response	Response following Interview
a) Effective Communication	**5**	**5**
b) Leadership	**4**	**4**
c) Collaboration	**5**	**5**
d) Flexibility	**3**	**3**
e) Trust and Respect	**3***	**3**

*Score identified for review

Interview No. 23

Interview Participant: **UK52**
Office: **London, UK**
Date and Time: **5th October 2020 at 2pm GMT**
Meeting Medium: **Telephone**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information, and the reason for wanting to speak following Round 3 questionnaire. Participants all agreed to the sessions being recorded for later review. The table below indicates the response selected for further discussion (5 = Very important, 4 = Important, 3 = Moderate importance, 2 = Low importance, 1 = Not important).

Soft Skill	Round 3 Response
a) Effective Communication	**4**
b) Leadership	**1***
c) Collaboration	**5**
d) Flexibility	**3**
e) Trust and Respect	**3***

*Scores identified for review

MP: I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. As you know, you were invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. Y*ou are free to withdraw at any time.* By taking part in this study you are helping to further the current understanding of an important subject and enhancing the firm's growing reputation as experts in performance measurement. Our aim is to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

Thank you for responding to the 3rd and most recent survey that was distributed, and giving a rating of the 5 soft skills and their definitions provided based on how important you feel they are when working as part of a project team in the construction industry.

Two of the responses you provided were considered outliers in the context of all the responses received – the **'1'** that you awarded to **Leadership**; and the **'3'** that you awarded for **Trust and Respect.** Looking first at Leadership, the definition provided was "Demonstrates mentoring skills, shows decisiveness and takes accountability" - can you explain why you awarded the score of '1' please?

UK52: I think if the definition was framed differently, I would have rated it differently. In the context of a team, I don't see leadership as being rated highly. 'Demonstrate mentoring skills', that's fine

– but my issue is with 'shows decisiveness and takes accountability'. There is a difference between leading a team, and being part of a team – as part of a collective team, I don't rate those highly at all.

MP: Are there elements of leadership required in all roles?

UK52:I think there is a problem here that if you get people that are not the leader of that team, you may get some strong personalities that come through. Sometimes people show decisiveness and accountability, particularly decisiveness, in a way that is undermining to the person that really is leading the team. I've seen a lot of cases where I've seen people flexing their authority, which sometimes comes across as off putting to the team and can be quite disruptive and can undermine the actual leader of the team.

MP: Could this be dependent on the needs of the project and the specific project team, where leadership is a skill that participants may need to flex up or down?

UK52:I think it plays back very much to making sure that you've got the responsibility matrix for the team right, therefore you will naturally get the project manager that will lead and offer that decisiveness for the team. I think collectively the team works a lot better then because you see that one focal point that filters all of the information through and does not necessarily rely on everyone being a leader.

I'm sure it would vary around the world, how people would relate to that being important to them. I did a stint working in Malaysia and they would certainly put leadership right up there and rate it very importantly - you just get told a decision has been made!

MP: Thanks for explaining your thinking on that one. The other soft skill that I wanted to discuss was 'Trust and Respect'. Just to recap the definition, it was "Seeks to build mutual trust and respect, being open with project participants". You gave it a '3', moderate importance. Why did you rate it a '3'?

UK52:I think it goes back to probably my naivety about the industry, in so much as I would expect trust and respect to underpin everything, and people to have a mutual trust and respect as professionals in our professional environment. I don't see it as being that important because it should be there already. Now, I know we don't live in a perfect world, but if you're part of a professional body, particularly the RICS or APM, then there has to be trust and respect anyway, in my view.

MP: Why do you think that?

UK52:Because I think as professionals, we should have mutual trust and respect - and we shouldn't really place that big of an importance on it.

MP: Thanks for your explanation. I mentioned in the Briefing Sheet, the results of the research will be used within my doctorate thesis, and if you would like to see a copy of the final thesis please let me know. As I mentioned in my initial email, it's requested that you commit to being part of the study throughout its duration – there will just be 1 more short online questionnaire.

UK52:Yeah, I will complete it, and sorry for the delayed response, but I do try because I'm fascinated and quite keen to see the outcome of it because it's been quite thought provoking, to be honest.

MP: Brilliant, thank you again for being part of the study, I really appreciate it.

UK52:Thank you.

Round 3 scoring

Soft Skill	Round 3 Response	Response following Interview
a) Effective Communication	**4**	**4**
b) Leadership	**1***	**1**
c) Collaboration	**5**	**5**
d) Flexibility	**3**	**3**
e) Trust and Respect	**3***	**3**

*Score identified for review

Interview No. 24

Interview Participant: **US5**
Office: **Atlanta, USA**
Date and Time: **21st September 2020 at 5pm GMT**
Meeting Medium: **Telephone**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information, and the reason for wanting to speak following Round 3 questionnaire. Participants all agreed to the sessions being recorded for later review. The table below indicates the response selected for further discussion (5 = Very important, 4 = Important, 3 = Moderate importance, 2 = Low importance, 1 = Not important).

Soft Skill	Round 3 Response
a) Effective Communication	**5**
b) Leadership	**4**
c) Collaboration	**5**
d) Flexibility	**3**
e) Trust and Respect	**2***

*Scores identified for review

MP: I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. As you know, you were invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. Y*ou are free to withdraw at any time.* By taking part in this study you are helping to further the current understanding of an important subject and enhancing the firm's growing reputation as experts in performance measurement. Our aim is to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

Thank you for responding to the 3rd and most recent survey that was distributed, and giving a rating of the 5 soft skills and their definitions provided based on how important you feel they are when working as part of a project team in the construction industry.

One of the responses you provided was considered an outlier in the context of all the responses received – the **'2'** that you awarded for **Trust and Respect.** The definition provided was "Seeks to build mutual trust and respect, being open with project participants" - can you explain why you awarded the score of '2' please?

US5: I think that it relates to Trust & Respect being a much more subjective KPI in relation to the others put forward; there are plenty of projects that I've worked on where I have a very good working relationship with other team members whom my colleagues have not trusted/ respected

but we've managed to make the project work. Similarly, there's projects where the relationship between myself and the client's representatives have been very strained, most often due to them not having a full understanding of what's going on, but we've made the project work regardless.

MP: Do you have any examples of what has happened when a relationship has become strained with a client or any other member of the project team?

US5: The trust aspect gets highlighted when they continually ask for more pricing analysis, as they believe we're not doing a thorough enough job, while the respect aspect can be seen when they're continually late to meetings or simply miss the meeting with no notice or apology or haven't prepared for reviews, etc.

MP: Thanks Cameron. As I mentioned in the Briefing Sheet, the results of the research will be used within my doctorate thesis, and if you would like to see a copy of the final thesis please let me know. As I mentioned in my initial email, it's requested that you commit to being part of the study throughout its duration – there will just be 1 more short online questionnaire. Thank you again for being part of the study, I really appreciate it.

US5: No problem, thanks.

Round 3 scoring

Soft Skill	Round 3 Response	Response following Interview
a) Effective Communication	**5**	**5**
b) Leadership	**4**	**4**
c) Collaboration	**5**	**5**
d) Flexibility	**3**	**3**
e) Trust and Respect	**2***	**2***

*Score identified for review

Interview No. 25

Interview Participant: **UK27**
Office: **Tunbridge Wells, UK**
Date and Time: **21st September 2020 at 4pm GMT**
Meeting Medium: **Telephone**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information, and the reason for wanting to speak following Round 3 questionnaire. Participants all agreed to the sessions being recorded for later review. The table below indicates the response selected for further discussion (5 = Very important, 4 = Important, 3 = Moderate importance, 2 = Low importance, 1 = Not important).

Soft Skill	Round 3 Response
a) Effective Communication	**5**
b) Leadership	**5**
c) Collaboration	**3***
d) Flexibility	**4**
e) Trust and Respect	**4**

*Scores identified for review

MP: I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. As you know, you were invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. Y*ou are free to withdraw at any time.* By taking part in this study you are helping to further the current understanding of an important subject and enhancing the firm's growing reputation as experts in performance measurement. Our aim is to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

Thank you for responding to the 3rd and most recent survey that was distributed, and giving a rating of the 5 soft skills and their definitions provided based on how important you feel they are when working as part of a project team in the construction industry.

One of the responses you provided was considered an outlier in the context of all the responses received – the **'3'** that you awarded for **Collaboration.** Can you explain why you awarded this score please? Just to recap, the definition for Collaboration in the question was "Demonstrates teamworking ethic and building positive working relationships".

UK27: I do think all five attributes have merit but for me, a PM has to show leadership and be an effective communicator, and sometimes being a leader means dictating and instructing which

isn't necessarily deemed 'collaborative'. Yes building a team is important but I believe everyone should know their job and understand the requirements of the project from the Brief, scope of works, and PM instructions, and can do this independently even though they are part of a wider team. So I deemed collaboration to be of lower importance than the others, rather than being of low importance if that makes sense.

MP: It does. Thanks Kevin. As I mentioned in the Briefing Sheet, the results of the research will be used within my doctorate thesis, and if you would like to see a copy of the final thesis please let me know. As I mentioned in my initial email, it's requested that you commit to being part of the study throughout its duration – there will just be 1 more short online questionnaire. Thank you again for being part of the study, I really appreciate it.

UK27: Thanks Michael.

Round 3 scoring

Soft Skill	Round 3 Response	Response following Interview
a) Effective Communication	**5**	**5**
b) Leadership	**5**	**5**
c) Collaboration	**3***	**3**
d) Flexibility	**4**	**4**
e) Trust and Respect	**4**	**4**

*Score identified for review

Appendix N:

Email example to Delphi Round 4 Participants and Round 4 Questionnaire

From: Michael Parker
Sent: 27 November 2020 14:53
To: [redacted]
Subject: Questionnaire 4 of 4 - Gleeds Research Study on Performance Measurement

Dear [redacted],

Thank you for responding to the 3rd questionnaire in August as part of our research into soft skills on projects. I am pleased to say this email contains the link to the **4th and final questionnaire** of the study, thank you so much for your patience with the process to date and for remaining committed since the first questionnaire in March - your involvement continues to be vital to the success of the study.

In the 3rd questionnaire you were asked to provide a *rating* of 1-5 against the five soft skills that we had converged upon, based on how important you felt they were when working as part of a project team in the construction industry. In this 4th and final questionnaire there is **one question;** it asks you to **review** the average ratings from all respondents across the business to the five soft skills (see table below), to **reconsider** whether you would make any changes to the rating scores you previously submitted (reminder below) after having seen these average ratings, and to again **provide a rating** for the five soft skills.

The 4th and final questionnaire is on this link: https://www.surveymonkey.co.uk/r/GleedsResearchSurvey4. Please can you complete the online questionnaire by **5pm on Thursday 3rd December.** For information, the average time to complete this questionnaire in the previous round was **under 2 minutes**.

Soft Skill	Average Rating (1-5)	[redacted]
a) Effective Communication	4.92	**5**
b) Leadership	4.26	**5**
c) Collaboration	4.63	**5**
d) Flexibility	4.26	**4**
e) Trust and Respect	4.58	**5**

(*where a rating of 1 = Not Important, 2 = Low Importance, 3 = Moderate Importance, 4 = Important, 5 = Very Important. You can award each score to **more than one** soft skill if you wish, or not at all.)

Best regards,

Mike

Michael Parker | Associate Director | Gleeds Advisory Ltd
M: + 44 (0)7718 804237
michael.parker@gleeds.co.uk

Aston Business School

Questionnaire 4 - Research Study

1. Personal Details

* 1. First and Last Name (e.g. Michael Parker) 0

* 2. Gleeds Office Location (city and country) 0

2. Soft Skills Question

* 1. This survey follows the Round 3 questionnaire three months ago where you provided a rating score from 1-5 on the following soft skills and their definitions, based on how important you feel they are when working as part of a **project team** in the construction industry.

The consolidated average scores from all responses across the UK, USA and India businesses have been provided to you in an email. Please take a moment to review these scores. In the drop-down lists below, please reconsider whether you would change any of the ratings you previously provided in Round 3, and again enter a rating score of 1-5 for each soft skill using the following definitions:

5 = Very important
4 = Important
3 = Moderate importance
2 = Low importance
1 = Not important

Note: You can award each score to **more than one** soft skill if you wish, or not at all. 0

	Rating
a). Effective Communication: Appropriate engagement with relevant stakeholders at all levels including written, verbal and body language (including presentation).	
b). Leadership: Demonstrates mentoring skills, shows decisiveness and takes accountability.	
c). Collaboration: Demonstrates teamworking ethic and building positive working relationships.	
d). Flexibility: Ability to problem solve and adaptability to new and different ways of working.	
e). Trust & Respect: Seeks to build mutual trust and respect, being open with project participants.	

Comments (if you would like to further explain any responses):

Appendix O:

Interim analysis to determine Delphi Round 4 interviewees

		a). Effective Communica			b). Leadership: Demonst			c). Collaboration: Demond			d). Flexibility: Ability to pre			e). Trust & Respect: Seek		
ID	Country	R3	R4	Diff	R3	R4	Diff	R3	R4	Diff	R3	R4	Diff	R3	R4	Diff
IN1	India	5	5	0	4	4	0	4	4	0	3	4	1	3	4	1
IN2	India	5	5	0	3	4	1	4	4	0	5	5	0	4	4	0
IN3	India	5	5	0	5	5	0	5	5	0	4	4	0	5	5	0
IN4	India															
IN5	India	5	5	0	5	4	-1	4	4	0	5	5	0	5	4	-1
IN6	India	5	5	0	5	5	0	5	5	0	5	5	0	5	5	0
IN7	India	5	5	0	5	5	0	4	4	0	4	4	0	5	5	0
IN8	India	5	5	0	5	5	0	5	5	0	5	5	0	5	5	0
IN9	India	5	5	0	4	5	1	4	4	0	4	4	0	5	5	0
IN10	India	4	5	1	4	4	0	5	5	0	4	4	0	5	5	0
IN11	India	5	5	0	5	5	0	5	5	0	5	5	0	5	5	0
IN12	India															
IN13	India	5	5	0	4	4	0	4	4	0	3	4	1	5	5	0
IN14	India	5	5	0	5	5	0	5	5	0	3	4	1	5	5	0
IN15	India	5	5	0	5	5	0	5	5	0	5	5	0	5	5	0
IN16	India	5	5	0	4	4	0	5	5	0	4	4	0	5	5	0
UK1	UK	5	5	0	3	4	1	5	5	0	4	4	0	5	5	0
UK2	UK	5	5	0	4	4	0	4	4	0	4	3	-1	4	4	0
UK3	UK	5	5	0	5	5	0	5	5	0	5	5	0	5	5	0
UK4	UK	5	5	0	5	5	0	5	5	0	5	4	-1	5	5	0
UK5	UK	5	5	0	5	5	0	4	5	1	3	4	1	4	4	0
UK6	UK															
UK7	UK	5	5	0	4	4	0	5	5	0	3	3	0	5	5	0
UK8	UK															
UK9	UK	5	5	0	5	5	0	5	5	0	5	5	0	5	5	0
UK10	UK															
UK11	UK															
UK12	UK	5	5	0	5	5	0	3	4	1	4	4	0	4	4	0
UK13	UK	5	5	0	5	5	0	5	5	0	5	5	0	5	5	0
UK14	UK															
UK15	UK	5	5	0	5	5	0	5	5	0	5	5	0	5	5	0
UK16	UK	4	5	1	5	5	0	4	4	0	4	3	-1	5	4	-1
UK17	UK															
UK18	UK	5	5	0	5	5	0	5	5	0	5	5	0	5	5	0
UK19	UK	5	5	0	5	5	0	4	4	0	4	4	0	4	4	0
UK20	UK															
UK21	UK	5	5	0	3	3	0	5	5	0	4	4	0	5	5	0
UK22	UK															
UK23	UK	5	5	0	5	5	0	5	4	-1	4	4	0	5	5	0
UK24	UK	4	4	0	3	3	0	4	4	0	4	4	0	5	5	0
UK25	UK	5	5	0	4	5	1	4	5	1	5	5	0	5	5	0
UK26	UK	5	5	0	4	4	0	4	4	0	3	4	1	4	4	0
UK27	UK	5	4	-1	4	4	0	5	5	0	4	4	0	4	4	0
UK28	UK	5	5	0	5	5	0	5	5	0	4	4	0	4	4	0
UK29	UK															
UK30	UK															
UK31	UK	5	5	0	5	5	0	5	5	0	5	5	0	5	5	0
UK32	UK	5	5	0	4	5	1	5	5	0	5	5	0	4	5	1
UK33	UK	5	5	0	4	5	1	5	4	-1	4	4	0	4	4	0
UK34	UK															
UK35	UK	5	5	0	4	4	0	5	5	0	3	4	1	3	3	0
UK36	UK	5	5	0	4	4	0	5	5	0	5	5	0	5	4	-1
UK37	UK	4	4	0	1	1	0	5	5	0	3	3	0	3	3	0
UK38	UK	5	5	0	3	3	0	4	4	0	3	3	0	5	5	0
UK39	UK															
UK40	UK	5	5	0	1	5	4	5	5	0	5	5	0	5	5	0
UK41	UK															
UK42	UK															
UK43	UK	5	5	0	5	4	-1	5	5	0	5	4	-1	5	5	0
UK44	UK	5	5	0	5	5	0	4	3	-1	4	4	0	4	3	-1
UK45	UK															
UK46	UK	5	5	0	5	5	0	5	5	0	5	5	0	5	5	0
UK47	UK															
UK48	UK	5	5	0	4	5	1	5	5	0	4	5	1	4	5	1
UK49	UK	5	5	0	4	4	0	4	5	1	4	4	0	4	5	1
UK50	UK	5	5	0	4	4	0	5	3	-2	5	4	-1	5	5	0
UK51	UK	5	5	0	4	4	0	4	4	0	5	5	0	4	5	1
UK52	UK	5	5	0	4	4	0	5	5	0	4	5	1	5	5	0
UK53	UK	5	5	0	3	4	1	5	5	0	5	5	0	4	4	0
UK54	UK	5	5	0	5	4	-1	5	4	-1	5	4	-1	5	5	0
UK55	UK	5	5	0	5	5	0	5	5	0	5	5	0	5	5	0
UK56	UK															
US1	USA															
US2	USA	5	5	0	3	3	0	5	5	0	5	5	0	4	4	0
US3	USA	5	5	0	4	4	0	5	5	0	4	5	1	5	5	0
US4	USA	4	5	1	4	5	1	4	4	0	4	4	0	5	5	0
US5	USA	5	5	0	4	4	0	5	5	0	3	3	0	2	3	1
US6	USA	5	5	0	5	5	0	4	4	0	4	4	0	5	5	0
US7	USA															
US8	USA	5	5	0	5	5	0	4	4	0	4	3	-1	4	5	1
US9	USA	5	5	0	4	4	0	5	5	0	5	5	0	4	4	0
US10	USA															
US11	USA	5	5	0	5	5	0	5	5	0	5	5	0	5	5	0
US12	USA															
US13	USA	5	5	0	5	5	0	5	5	0	4	4	0	5	5	0
US14	USA	5	5	0	3	3	0	5	5	0	4	4	0	4	4	0
US15	USA	5	5	0	5	5	0	5	5	0	4	4	0	5	5	0
US16	USA	5	5	0	5	5	0	5	5	0	5	5	0	5	5	0
US17	USA	5	5	0	4	5	1	4	5	1	5	4	-1	5	5	0

Green boxes denote increases in scores. Red boxes denote reductions in scores. Orange boxes indicate a reduction in scores considered necessary for interview.

Appendix P:

Delphi Round 4 Interview Transcriptions

Interview No. 26

Interview Participant: **UK16**
Office: **Cardiff, UK**
Date and Time: **15th January 2021 at 3pm GMT**
Meeting Medium: **Telephone**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information, and the reason for wanting to speak following Round 4 questionnaire. Participants all agreed to the sessions being recorded for later review. The table below indicates the Round 4 response selected for further discussion (5 = Very important, 4 = Important, 3 = Moderate importance, 2 = Low importance, 1 = Not important).

Soft Skill	Average Rating (Round 3)	UK16 (Round 3)	UK16 Round 4	Change
a) Effective Communication	4.92	**4**	**5**	**+1**
b) Leadership	4.26	**5**	**5**	**-**
c) Collaboration	4.63	**4**	**4**	**-**
d) Flexibility	4.26	**4**	**3**	**-1***
e) Trust and Respect	4.58	**5**	**4**	**-1**

*Score identified for review

MP: As a reminder following our previous conversation, I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. As you know, you were invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. Y*ou are free to withdraw at any time.* By taking part in this study you are helping to further the current understanding of an important subject and enhancing the firm's growing reputation as experts in performance measurement. Our aim is to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

Thank you for responding to the 4th and final survey that was distributed and again rating the 5 soft skills and their definitions provided, based on how important you feel they are when working as part of a project team in the construction industry. I noticed that in the final questionnaire you made **three changes** [see above]. The change I am most interested in is for the soft skill **Flexibility** where you reduced your score from **4/5** ("Important") to **3/5** ("Moderate Importance"). A reminder that **Flexibility** was defined as *"Ability to problem solve and adaptability to new and different ways of working".*

I'd be grateful if you could explain what your thoughts were in reducing the **Flexibility** score please?

UK16: My gut feel on that one would be that we all work to achieve something, to achieve the project goals. Sometimes you need to be flexible, sometimes you don't – in the end, you have to produce a deliverable. So you've got to look at it on a needs basis. In other words, it depends on the issue, but you can't always be as flexible as you'd like otherwise you wouldn't ever get somewhere. It's about making decisions and making progress at the end of the day. Does that make sense?

MP: I understand from what you've said that ultimately you've got hard objectives to meet and that those are inflexible. But 'flexibility' in the context of the question was more targeted at soft skills and behaviours required to deliver a successful project, rather than the flexibility of the outcomes – would you respond in same way in this context?

UK16: So what I'm saying is, I'm not not someone who is "wishy washy". I would not flex my behaviour at a whim. But yes, flexibility in general is important but I don't want to come across as someone that could be manoeuvred.

MP: Is that your view in general or on specific projects?

UK16: I think a '3' is a middle score, my current project is very tough and perhaps I've lost my collaborative edge a little bit because it's been quite a hard project in terms of being contractual even though with NBC, I can tell you its been horrendous and that might have resulted in my reduced score. Two and a half years of claims, and Covid hasn't helped.

MP: Great, thank you again for being part of the study, I really appreciate it.

UK16: Thanks Michael - take care and best of luck.

End of Round 4 scoring

Soft Skill	Average Rating (Round 3)	UK16 Round 3	UK16 Round 4	Round 4 – Following Interview
a) Effective Communication	4.92	**4**	**5**	**5**
b) Leadership	4.26	**5**	**5**	**5**
c) Collaboration	4.63	**4**	**4**	**4**
d) Flexibility	4.26	**4**	**3***	**3**
e) Trust and Respect	4.58	**5**	**4**	**4**

*Score identified for review (***no change following interview***)

Interview No. 27

Interview Participant: **UK50**
Gleeds Office: **London, UK**
Date and Time: **15th January 2021 at 4pm GMT**
Meeting Medium: **Telephone**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information, and the reason for wanting to speak following Round 4 questionnaire. Participants all agreed to the sessions being recorded for later review. The table below indicates the Round 4 response selected for further discussion (5 = Very important, 4 = Important, 3 = Moderate importance, 2 = Low importance, 1 = Not important).

Soft Skill	Average Rating (Round 3)	UK50 Round 3	UK50 Round 4	Change
a) Effective Communication	4.92	5	5	-
b) Leadership	4.26	4	4	-
c) Collaboration	4.63	5	3*	-2
d) Flexibility	4.26	5	4	-1
e) Trust and Respect	4.58	5	5	-

*Score identified for review

MP: As a reminder following our previous conversation, I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. As you know, you were invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. Y*ou are free to withdraw at any time.* By taking part in this study you are helping to further the current understanding of an important subject and enhancing the firm's growing reputation as experts in performance measurement. Our aim is to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

Thank you for responding to the 4th and final survey that was distributed and again rating the 5 soft skills and their definitions provided, based on how important you feel they are when working as part of a project team in the construction industry. I noticed that in the final questionnaire you made **two changes** [see above]. The change I am most interested in is for the soft skill **Collaboration** where you reduced your score from **5/5** ("Very Important") to **3/5** ("Moderate Importance"). A reminder that **Collaboration** was defined as *"Demonstrates teamworking ethic and building positive working relationships".*

I'd be grateful if you could explain what your thoughts were in reducing the **Collaboration** score please?

UK50:It was a little bit to do with just the way the world has changed this past year. In my role, collaboration was pretty much everything but I think following the pandemic the significance of family time means you can no longer rely on collaboration as it was before, due to having to wait on others who now have greater personal commitments – as a result I'm having to be more independent to get stuff done. Previously [before the pandemic and the necessity to work from home] I could have just walked over to someone's desk to resolve something that might now take much longer.

MP: So are the changes in scoring a direct result of you and your colleagues on projects now having to work from home?

UK50:I know giving it a '3' sounds a bit harsh, but that's where I am because it has made me step up and be less reliant on others – a lot of my projects last year I ended up having to push things through myself.

MP: OK thanks for explaining that one. Likewise with **Flexibility** then, just to remind you flexibility was defined as "*the ability to problem solve and adaptability to new and different ways of working*". You changed your scoring from a 4/5 to a 3/5.

UK50:Have I gone completely against the grain?

MP: There's no right or wrong answers that there's only your opinion.

UK50:I think a lot of that was due to some of the other people that was working with, because I found it irritating that I people at my own level did not appear to be working as hard from home. I was finding it really hard to make sure that they were actually working on something when they said they were, as they end up going "oh, yeah, I didn't get that done". I got annoyed with other people's assumption of what working flexibility was when actually we probably needed some rigidity that was necessary for the business.

MP: What difference did working from home make to flexibility in how they were working?

UK50:People viewed the outputs in a more relaxed manner, with regard to timing especially. They were less aware of it affecting other people's timetables and time scales, which I found increasingly frustrating because I would have my own milestones that would be affected. They would be working on their own clock, sending something through at 6.30pm on a Friday and assume I was working too!

MP: Is that is that a direct result of not just being able to see people between 8:30am and 5pm in an office?

UK50:There are some people who will need the flexibility regardless and that's cool, I've worked with a lot of people who had kids at home and that I can completely understand. But then other people take advantage of working at home and don't have any other reason for sending things late than they just don't like mornings! That's what I find just really frustrating. There has to be certain rules that people stick to, but maybe I'm just old…

MP: Not at all! That's a really interesting perspective.

UK50:Perhaps I did answer in frustration, but I do think 'flexibility' is less important now although the reasons might not be the obvious ones.

MP: From the way you've explained it, it's understandable. Thank you again for being part of the study, I really appreciate it.

UK50:Thank you Michael

End of Round 4 scoring

Soft Skill	Average Rating (Round 3)	UK50 Round 3	UK50 Round 4	Round 4 – Following Interview
a) Effective Communication	4.92	5	5	5
b) Leadership	4.26	4	4	4
c) Collaboration	4.63	5	3*	3
d) Flexibility	4.26	5	4	4
e) Trust and Respect	4.58	5	5	5

*Score identified for review (***no change following interview***)

Interview No. 28

Interview Participant: **UK44**
Gleeds Office: **Birmingham, UK**
Date and Time: **15th January 2021 at 5pm GMT**
Meeting Medium: **Telephone**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information, and the reason for wanting to speak following Round 4 questionnaire. Participants all agreed to the sessions being recorded for later review. The table below indicates the Round 4 response selected for further discussion (5 = Very important, 4 = Important, 3 = Moderate importance, 2 = Low importance, 1 = Not important).

Soft Skill	Average Rating (Round 3)	UK44 Round 3	UK44 Round 4	Change
a) Effective Communication	4.92	5	**5**	-
b) Leadership	4.26	5	**5**	-
c) Collaboration	4.63	4	**3***	**-1**
d) Flexibility	4.26	4	**4**	-
e) Trust and Respect	4.58	4	**3***	**-1**

*Scores identified for review

MP: As a reminder following our previous conversation, I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. As you know, you were invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. Y*ou are free to withdraw at any time.* By taking part in this study you are helping to further the current understanding of an important subject and enhancing the firm's growing reputation as experts in performance measurement. Our aim is to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

Thank you for responding to the 4th and final survey that was distributed and again rating the 5 soft skills and their definitions provided, based on how important you feel they are when working as part of a project team in the construction industry. I noticed that in the final questionnaire you made **two changes** [see above], to **Collaboration** and **Trust and Respect**.

Firstly, for **Collaboration** you reduced your score from **4/5** (" Important") to **3/5** ("Moderate Importance"). A reminder that **Collaboration** was defined as *"Demonstrates teamworking ethic and building positive working relationships".*

I'd be grateful if you could explain what your thoughts were in reducing the **Collaboration** score please?

UK44: I think one of the drivers was I had been involved in a major hospital project and some of the behaviours I've seen have been inconsistent. I suppose it's a natural tendency that you lean towards the client's side as a consultant, but I've seen behaviours that I don't think have been respectful enough of the main contractor. The NEC contract necessitates impartiality, but that's difficult when one party is the paymaster.

MP: Does that mean the quality of the outputs was the same despite behaviours having been poor?

UK44: I wouldn't say poor, but I'm saying that there was a degree of lip service given to them. Everybody was saying the same words, particularly on joint calls with the main contractor and the client. But the client's view is somewhat biased against the contractor due to the individuals appointed on the client side, having formerly been employed by the contractor and now seem to have an agenda against them – this is evident in a lot of the behaviours that I see right through the grades from Associate Director level to Director level. In siding with the client, this can inadvertently affect our attitude towards the main contractor.

So therefore, we all agree collaboration is great and we can all say the right things, but in the evidence that I see on the ground there is a large element of lip service. 'Collaboration' and the 'Trust and Respect' soft skills are just two sides of the same coin.

MP: So on that particular project only lip service has been given to it.

UK44: Yeah. Not on all issues, but on crucial issues.

MP: Do you have an example?

UK44: Earlier on this project we were racing against the clock because there was a general election coming up and there was the danger of purdah and they needed to get the budget signed off from the Treasury. So the final contract negotiations were done in in a rush. And I'm hearing from the both sides and I know they have an agenda as well, that there were really no designers, but they were put under massive pressure and were told "if you don't sign up now, we might not get the funding and there might be no project - and don't worry, we can sort things out collaboratively and amicably afterwards if there are gaps". And sure enough, there are gaps. And now people have different recollections of what was said. This is impacting on the trust and respect side as well. As I say, the two sides of the same coin.

MP: Thanks Tom. So, on **Trust and Respect**: you changed your score from a '4' to a '3'. The definition was "*seeks to build mutual trust and respect, being open with project participants*".

UK44: It's the same reasoning that I gave previously, I could see the duplicity that was going on in front of my eyes. Whilst saying to one party that they really appreciate what they've done etc, later you'd hear them being slated in private.

MP: Were these scores you would attribute in the industry in general, or was this scoring perhaps as a result of one specific project?

UK44: I think it would be fair to say I answered somewhat in frustration - but nevertheless it's still going to be a successful project. Generally speaking, in retrospect those scores should both have been a '4'.

MP: Thanks Tom, I'll make the amendment. Thanks very much for meeting with me, enjoy the weekend.

UK44: No problem Michael, it was good to talk.

End of Round 4 scoring

Soft Skill	Average Rating (Round 3)	UK44 Round 3	UK44 Round 4	Round 4 – Following Interview
a) Effective Communication	4.92	5	**5**	**5**
b) Leadership	4.26	5	**5**	**4**
c) Collaboration	4.63	4	**3***	**4**
d) Flexibility	4.26	4	**4**	**4**
e) Trust and Respect	4.58	4	**3***	**4**

*Scores identified for review (***both changed following interview***)

Interview No. 29

Interview Participant: **US8**
Gleeds Office: **New York, USA**
Date and Time: **19th February 2021 at 6.30pm GMT**
Meeting Medium: **Telephone**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information, and the reason for wanting to speak following Round 4 questionnaire. Participants all agreed to the sessions being recorded for later review. The table below indicates the Round 4 response selected for further discussion (5 = Very important, 4 = Important, 3 = Moderate importance, 2 = Low importance, 1 = Not important).

Soft Skill	Average Rating (Round 3)	US8 Round 3	US8 Round 4	Change
a) Effective Communication	4.92	5	**5**	-
b) Leadership	4.26	5	**5**	-
c) Collaboration	4.63	4	**4**	-
d) Flexibility	4.26	4	**3***	**-1**
e) Trust and Respect	4.58	4	**5**	**+1**

*Scores identified for review

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Thank you for responding to the 4th and final survey that was distributed and again rating the 5 soft skills and their definitions provided, based on how important you feel they are when working as part of a project team in the construction industry. I noticed that in the final questionnaire you made **two changes** [see above], to **Flexibility** and **Trust and Respect**.

For **Flexibility** you reduced your score from **4/5** (" Important") to **3/5** ("Moderate Importance"). A reminder that **Flexibility w**as defined as *"Ability to problem solve and adaptability to new and different ways of working".*

I'd be grateful if you could explain what your thoughts were in reducing the **Flexibility** score please?

US8: I think on reflection that project management requires some rigidity to perform well – it can actually be a major benefit if the team knows exactly what they're getting from you come rain or shine.

MP: Does that mean consistency has become a higher preference, even if you are less flexible as a result?

US8: Yes. Structure and repetitive behaviour are key to success in my opinion. While flexibility is needed at times, it is an exception rather than the rule.

MP: Has there been an experience on a recent project, or something else over the last few months, that has caused you to change your mind and hence your scoring?

US8: No, not that I can think of in particular.

MP: Thanks, I appreciate you taking the time to speak with me.

US8: No problem at all.

End of Round 4 scoring

Soft Skill	**Average Rating (Round 3)**	US8 **Round 3**	US8 **Round 4**	**Round 4 – Following Interview**
a) Effective Communication	4.92	5	**5**	**5**
b) Leadership	4.26	5	**5**	**5**
c) Collaboration	4.63	4	**4**	**4**
d) Flexibility	4.26	4	**3***	**3**
e) Trust and Respect	4.58	4	**5**	**5**

*Score identified for review (***no change following interview***)

Interview No. X30

Interview Participant: **UK2**
Gleeds Office: **Cardiff, UK**
Date and Time: **22nd February 2021 at 4.30pm GMT**
Meeting Medium: **Telephone**

All interviews commenced with MP recapping the purpose of the study as outlined in the Participant Briefing Information, and the reason for wanting to speak following Round 4 questionnaire. Participants all agreed to the sessions being recorded for later review. The table below indicates the Round 4 response selected for further discussion (5 = Very important, 4 = Important, 3 = Moderate importance, 2 = Low importance, 1 = Not important).

Soft Skill	Average Rating (Round 3)	US8 Round 3	US8 Round 4	Change
a) Effective Communication	4.92	5	**5**	-
b) Leadership	4.26	4	**4**	-
c) Collaboration	4.63	4	**4**	-
d) Flexibility	4.26	4	**3***	**-1**
e) Trust and Respect	4.58	4	**4**	-

*Scores identified for review

MP: As a reminder following our previous conversation, I am conducting the research as a student at Aston Business School's Work and Organisational Psychology Dept. at Aston University, which I am combining with working full time in Gleeds' Advisory team based in Birmingham. The research has been approved by the University's Research Ethics Committee. The research addresses the issue that project participants' soft skills on projects are either not measured or are at best measured poorly, unlike 'hard' indicators like cost and time. As you know, you were invited to take part in this study as part of an "Expert Group" of project professionals from across Gleeds' UK, USA and India businesses. Y*ou are free to withdraw at any time.* By taking part in this study you are helping to further the current understanding of an important subject and enhancing the firm's growing reputation as experts in performance measurement. Our aim is to positively impact project teams across the sector through the development of a new soft skills index to reflect the performance of project participants' soft skills. This will allow project teams to better understand their strengths and weaknesses and give an early warning mechanism for potential problems.

Thank you for responding to the 4th and final survey that was distributed and again rating the 5 soft skills and their definitions provided, based on how important you feel they are when working as part of a project team in the construction industry. I noticed that in the final questionnaire you made **two changes** [see above], to **Flexibility** and **Trust and Respect**.

For **Flexibility** you reduced your score from **4/5** (" Important") to **3/5** ("Moderate Importance"). A reminder that **Flexibility w**as defined as *"Ability to problem solve and adaptability to new and different ways of working".*

I'd be grateful if you could explain what your thoughts were in reducing the **Flexibility** score please?

UK2: A project is defined because it has a start and an end. Every aspect of the that project follows a process and my thought in answering the question was 'how flexible does a PM need to be when managing a process even if that process is change-based?'. If the PM implements the process you can still deliver a successful project when adapting all of the other skills that were asked about in the survey.

MP: Does that mean that the PM's role is almost that of a 'process facilitator' then, whereby the flexibility of the process and the relevant PM guidelines or professional standard determines the flexibility of the PM?

UK2: It is not often a PM is asked to do something new, they need to have demonstrated to a client that they have the relevant experience and that they have facilitated a process on multiple occasions, albeit with different scenarios and complexities. Following a new process or not following a process at all presents risks. The different ways of working maybe stipulated by the Client should be incorporated within a defined process that the team is required to work within and the PM is required to facilitate.

MP: Thanks Benet. Are there any reasons over the past few months why you think your answer might have changed?

UK2: I have recently been promoted [to Director] so I do have a wider remit and exposure to how others are working within what is now my team which may have affected my answer. I think it is a combination of things but as a project manager you must follow the processes be it business processes, framework processes, RIBA processes, business case processes, client specific processes and some processes are part of our Quality Assurance ISO accreditation and need to be followed. A good project manager will build up on these and ensure these are followed and if there is a need to deviate or be flexible then this is discussed. I suppose my concern is that in being flexible it could mean deviating away from the process which does need to be followed most of the time as they are there for a reason. Hope that makes sense.

MP: Thanks for the explanation, it does make sense particularly in light of your change in role which could imply a certain minimum standard that you would want PM's under your charge to reach? Thanks again for participating.

UK2: That's exactly right. No problem at all Michael, good luck with it all.

End of Round 4 scoring

Soft Skill	Average Rating (Round 3)	US8 Round 3	US8 Round 4	Round 4 – Following Interview
a) Effective Communication	4.92	5	**5**	**5**
b) Leadership	4.26	4	**4**	**4**
c) Collaboration	4.63	4	**4**	**4**
d) Flexibility	4.26	4	**3***	**3**
e) Trust and Respect	4.58	4	**4**	**5**

*Score identified for review (***no change following interview***)

Appendix Q:

Original Data for CPI Use Case Trial

[Data tables redacted from open access version of thesis]

Appendix R:

Analysis of the survey responses by region after Delphi Round 1

USA Responses	Rank	Frequency (No. votes)	Percentage of Respondents
Communication	1	14	82%
Flexibility	2	8	47%
Collaboration	=3	7	41%
Personability	=3	7	41%
Trust	5	6	35%
Leadership	=6	5	29%
Self-organised	=6	5	29%
Reliability	=6	5	29%
Empathetic	=9	4	24%
Conflict Mgmt	=9	4	24%
Detail-oriented	=9	4	24%
Enthusiasm	=12	3	18%
Motivational	=12	3	18%
Confidence	=12	3	18%
Listening	=15	2	12%
Innovation	=15	2	12%
Learning	=15	2	12%
Composure	=15	2	12%
Resilience	19	1	6%
Delegation	20	0	0%

i) Delphi Round 1 **USA** Results

India Responses	Rank	Frequency (No. votes)	Percentage of Respondents
Communication	1	16	100%
Collaboration	2	11	69%
Flexibility	3	10	63%
Trust	4	8	50%
Leadership	=5	7	44%
Enthusiasm	=5	7	44%
Motivational	=5	7	44%
Listening	8	6	38%
Conflict Mgmt	9	5	31%
Personability	=10	4	25%
Confidence	=10	4	25%
Empathetic	12	3	19%
Self-organised	=13	2	13%
Innovation	=13	2	13%
Learning	=13	2	13%
Resilience	=13	2	13%
Reliability	=17	1	6%
Delegation	=17	1	6%
Detail-oriented	=17	1	6%
Composure	20	0	0%

ii) Delphi Round 1 **India** Results

UK Responses	Rank	Frequency (No. votes)	Percentage of Respondents
Communication	**1**	49	88%
Leadership	**2**	34	61%
Flexibility	**=3**	31	55%
Collaboration	**=3**	31	55%
Empathetic	**5**	28	50%
Trust	**6**	23	41%
Conflict Mgmt	**=7**	21	38%
Listening	**=7**	21	38%
Self-organised	**9**	18	32%
Motivational	**10**	17	30%
Personability	**=11**	16	29%
Enthusiasm	**=11**	16	29%
Reliability	**=13**	9	16%
Confidence	**=13**	9	16%
Delegation	**15**	7	13%
Innovation	**=16**	6	11%
Composure	**=16**	6	11%
Learning	**18**	4	7%
Detail-oriented	**=19**	3	5%
Resilience	**=19**	3	5%

iii) Delphi Round 1 **UK** Results

All responses across UK/ USA/ India	Rank	Frequency (No. votes)	Percentage of Respondents
Communication	**1**	**79**	**88.76%**
Flexibility	**2**	**49**	**55.06%**
Collaboration	**3**	**49**	**55.06%**
Leadership	**4**	**46**	**51.69%**
Trust & Respect	**5**	**37**	**41.57%**
Empathetic	**6**	**35**	**39.33%**
Conflict Management	**7**	**30**	**33.71%**
Active Listening	**8**	**29**	**32.58%**
Personability	**9**	**27**	**30.34%**
Motivational	**10**	**27**	**30.34%**
Enthusiasm	**11**	**26**	**29.21%**
Self-organised	**12**	**25**	**28.09%**
Confidence	**13**	**16**	**17.98%**
Reliability	**14**	**15**	**16.85%**
Innovation	**15**	**10**	**11.24%**
Learning & Growth	**16**	**8**	**8.99%**
Delegation	**17**	**8**	**8.99%**
Composure	**18**	**8**	**8.99%**
Detail-oriented	**19**	**8**	**8.99%**
Resilience	**20**	**6**	**6.74%**

iv) Table X: Delphi Round 1 **Overall** Results

Despite the relatively small number of participants for the USA (17) and India (16) compared with the UK (56), there are some trends that can be identified when comparing against the overall results which were taken forward to Delphi Round 2:

- **USA** only had one soft skill that ≥50% participants selected, Communication (82%). Personability ranked joint 3rd, compared with 9th on the overall ranking. No participants from the USA wrote Delegation. This indicates a stronger alignment in the USA towards characteristics that are more approachable, open and sociable, but less recognition of appreciating one's own limitations.
- **India** participants selected the same top 5 as the overall Expert Group, albeit not in the same order. Personability ranked 10th in contrast with the USA and no participants

wrote Composure. 100% of participants identified Communication as being important. Trust ranked 4th, higher than the other countries, indicating a greater recognition of the need for showing respectfulness between parties.

- **UK** results show that in the top 5 soft skills, which all received ≥50% participants' votes, 'Empathetic' (50% selected) appears with a much higher percentage than from other countries (e.g. USA – 24%, India – 19%) which meant it did not feature in the top 5 soft skills overall. This indicates a greater appreciation of compassion and emotional intelligence in the UK construction industry than the other countries. The rest of the results are broadly similar to the overall results given the majority of the Expert Group were from the UK.