

Just-In-Time Training– Using a Model of Project Results versus Team Enablers to Identify Post-PMP® Training

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Our prior work suggested that Project Results can be predicted by assessing the degree of competence in project management skills. Our two-dimensional model, which calls for progressively providing enabling skills to team members, splits the nine knowledge areas of the PMBOK® into two dimensions: Project Results and Enablers with the basic premise that there is a cause – effect relationship between the two dimensions. This paper confirms the importance of “soft” project management skills and concluded that we need to train the appropriate people (those with some experience) at the appropriate time (when they have the need and interest) in the appropriate way (old-fashioned low tech methods for soft skills). We conclude by asking if the PM profession requires a certification of competency in soft skills and if so, who will provide such certification.

Keywords & Phrases: Project Management Hard Skills, Project Management Soft Skills, Project Management Training, Performance Measurement, Project Maturity Model, Project Management Body of Knowledge

Introduction

For some time, we have been developing what we call a two-dimensional model for measuring project performance and project management training. The model was initiated as a quality management tool and has evolved through the recent activity regarding Project Maturity Models to the current stage of predicting project outcomes and the content, timing and format of training.

The initial data for the model, shown in Figure 1 below, was accumulated over 20 years of experience in the management of major capital projects. The graph, a version of which was reported by McConachy and Bourne [3], shows our observations of the relative success of twelve major projects with ‘Enablers’ on the x-axis and Project Results on the y-axis. Enablers (called team spirit in [3]) include both competence to perform the tasks required to realize the scope as well as both such “hard” project management skills as managing scope, quality, schedule and budget and such “soft” project management skills as communication, team building and conflict resolution. With one exception, the ratings fell within a range of performance which is shown between an upper limit and a lower limit. Although this relationship may seem intuitive, project sponsors want to see data before investing in new methods of improving project performance.

The “soft” management skills we refer to are the same ones required by any competent manager. What is different about our project management groups is that they are all accidental managers. As we shall see later, we have an advantage in being

the accidental profession where none (or at least very few) of us start our careers with the intention of being project managers. We are usually trained initially in some other field like programming or engineering to use our two sample groups. Unlike students of business who study management early in their career training, project managers do not see themselves (and are not seen) as managers until they become responsible for the work of others.

Two-dimensional Performance Measurement

McConachy and Bourne [3] developed the Qualidex model for measuring Project Performance, identifying gaps in competencies and providing training targeted at these deficiencies. They took the multiple aspects of quality and separated them into two distinct categories. Conventional Quality had a technical orientation and sought increasing control of project parameters. Contemporary Quality had a psychological orientation and looked for ways to improve work processes such that better performance in conventional quality is achieved. The Qualidex concept proposed that there was a relationship between the two dimensions; that is, the greater the involvement and commitment of the team to the project goals (Contemporary Quality), the greater the likelihood of meeting project requirements of specifications, schedule and budget (Conventional Quality).

The nine criteria for measuring Contemporary Quality were split into two parts. For measuring motivation, six criteria were surveyed while the metrics for measuring skills training used three criteria. The current performance in both the Conventional and Contemporary dimensions was

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measured and a targeted training program was developed .

Incorporating the PMBOK® Knowledge Areas

The two-dimensional quality model was easily transformed into a project management model when we developed a training program for the same client. The Guide to the Project Management Body of Knowledge or PMBOK ® [2] identifies nine knowledge areas without identifying either the relative importance of the knowledge areas or any relationships between them. For the PMBOK® version of the two-dimensional model, we split the nine knowledge areas of the PMBOK® into the two dimensions - Project Results and Enablers - while maintaining the basic premise of all the models that

there is a cause-effect relationship between the two dimensions.

Along the x-axis of Figure 1 is the Progression of Enablers. First in the hierarchy of Enablers are the seven “hard” knowledge areas of the PMBOK® – the core four (Scope, Time, Cost and Quality) plus Risk, Procurement and Integration. Along the y-axis are the core four ‘hard’ PMBOK® knowledge areas that constitute Project Results: Scope, Quality, Time, and Cost. The second step in the progression of Enablers contains the two ‘soft’ areas of the PMBOK® - Communications and Human Relations - which include such items as team building, rewards and recognition and conflict resolution.

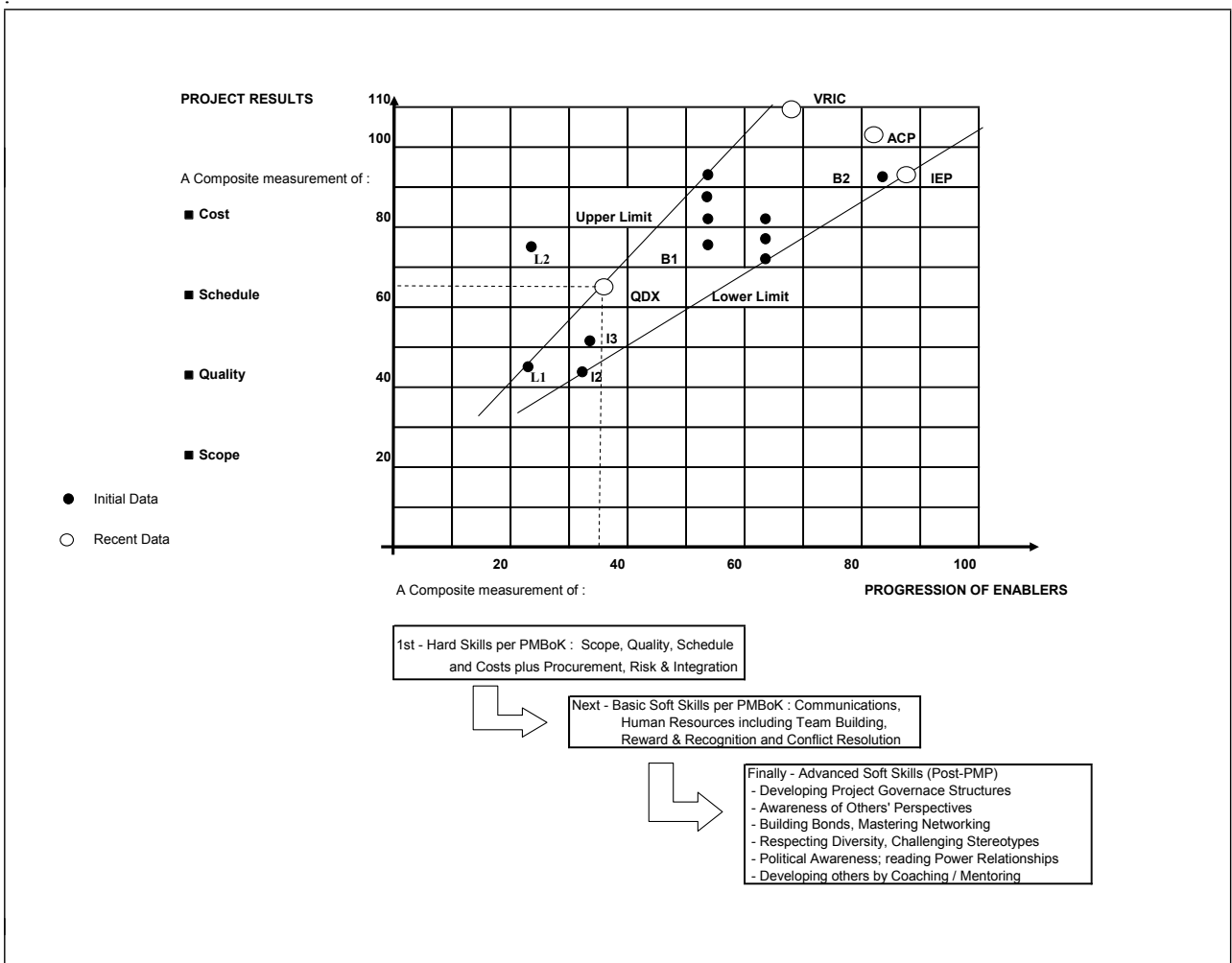


Figure 1 - A PMBOK® Model for Performance Measurement and Project Management Training

Generally, the measures of Project Results are the variances from the goals or budgets set out in the project plan for the four core PMBOK® knowledge

areas - Scope, Quality, Time and Cost. Measuring the Enablers is not so simple. Primarily, we assessed capability on hard and soft skills by the

use of surveys which ask about formal training and opinions of competency.

Similar Approaches in the Literature

McConachy and Caine [4] reviewed the project management literature for other models quantifying performance or separating components of the PMBOK® and they confirmed that splitting the knowledge areas of the PMBOK® provided a suitable model for measuring project performance and people enablers. The authors determined Goleman's [1] work on emotional intelligence was most relevant to the importance of Enablers. Goleman surveyed 160 companies and determined that two-thirds of the abilities deemed essential for effective performances were emotional competencies whereas IQ and expertise only represented one-third of the competencies. "The difference between those at the high end and low ends of the emotional intelligence scale is very large, and being at the top confers a major competitive advantage." ([1] p.20) Thus 'soft' skills matter even more for success in 'hard' fields.

Initial Data on Relative Importance of Enablers

The first question we had was whether our data on relative importance was consistent with the literature. The metrics of our Contemporary Quality survey for the Qualidex described above were divided into two parts – training (hard skills) and motivation (soft skills). Our survey group had weighted training in hard skills at 30% and the development of soft skills at 70%. In the fall of 2001, we attended two workshops to identify the requirements for design/build project managers (results not published yet). The first group of local senior managers identified the most desirable characteristics of project managers in two distinct categories – 10 to 15 Technical Competencies and 10 to 15 Personal Attributes. Considering the relative importance of these two parts, the consensus of this group was that the technical competencies (hard skills) accounted for 30 to 40% while the personal attributes (soft skills) accounted for about 60 to 70% of the total value.

The second workshop had a broader geographic composition. Almost all the attendees were senior members of the two North American associations undertaking this study. This group divided their desirable attributes into the same two categories listed above and there was considerable overlap of attributes with the first workshop. A secret ballot

approach was used to get this group's assessment of the relative importance of the two categories. The average ratio between technical competencies and personal attributes exactly matched Goleman's results and closely matched the results of both the first workshop and our Qualidex measurements. As summarized below, our data was consistent with the literature.

Relative Importance of Soft Skills:

Goleman [1]	67%
Qualidex Survey [3]	70%
1st Workshop	60 to 70%
2nd Workshop	67%

How Much of What Training?

Since the impact of the soft-skill enablers was apparently greater than that of the hard-skill ones, were project managers getting the optimum amounts of training in these different skill sets? As noted before, the nine knowledge areas of the PMBOK® could be classified into seven hard areas and the two soft areas. Since our experience is that the level of training for the Project Management Professional (PMP®) certification is the same for each knowledge area, the PMP® training has 78% of the content on the hard skills that account for about a third of the impact on project success. According to our model, Project Management (PM) training should be a progression of enabling skills. The first requirement is for competence or knowledge of the basic hard skills. After competence in hard skills, one can move up the hierarchy of Enablers. Our approach to measuring the soft skills has been the type of self-assessment surveys developed for the Qualidex. Since soft skills are apparently more important than hard skills, we have added a range of post-PMP® training items under the heading 'Emotional Intelligence' to indicate the need for much greater training effort in this dimension. Note that the boundaries between these groups of Enablers are very fluid and a great deal of over-lap is to be expected and encouraged.

Even for business management students, there is a concern about when and what to teach them. Henry Mintzberg [4], a professor at McGill University in Montreal, Canada says in his new book *Managers not MBAs: A hard look at the soft practice of managing and management development*, that conventional Masters of Business Administration (MBA) degree programs train the wrong people in the wrong ways with the wrong

consequences. The wrong people are the relatively young who have little experience in managing others. Executive MBA programs which are by nature part-time training for managers with some experience, appear to get the right people. The wrong ways refers to only teaching business functions like marketing, finance and analysis rather than the soft skills of management. With experienced students, the classroom time should be used to provide the theoretical basis for the students' real work and should focus on the development of wisdom (common sense, understanding, tact) in the students. Students should share their learning with other students and with their colleagues at their workplace. This emphasis on interaction would favour in-person class time rather than e-learning methods which are adequate for learning factual information. If this represents the latest thinking in training managers, we should be designing our PM training programs with that in mind.

Does PM training meet Mintzberg's criteria?

Since project managers are the accidental profession, most of our students are mature and have some work experience in their chosen field before entering the project management field. However, the PMP® training that we are familiar with is focused on providing the factual information necessary to pass a four-hour multiple-choice exam. As stated above, the PMP® program is heavy on the hard skills.

Timing of Training

After the workshops in 2001, we continued to informally survey groups with respect to their views on the relative importance of hard and soft skills to project success. We noticed when we did a survey field trial with younger people in less-senior positions (working students in a post-graduate program), the average of relative importance moved towards a 50 hard skill / 50 soft skill split. Since our Workshop results that had shown higher importance for soft skills were almost exclusively with senior managers, we decided to look at the implications of the time or career position sensitivity on the relative importance of hard and soft skills. We suspected this had significant implications for training. If younger managers in the earlier stage of their career do not see the importance and/or benefits of soft skills, the

training should not be provided until they are in or approaching the stage where research shows the majority will be interested and motivated. According to Mintzberg "Only those who already have managerial responsibility can be educated and developed as managers". ([5] p. 242) We had an expectation that the interest in and assessed importance of soft skills would increase with experience.

We had the data from the Workshops that supported the 60 to 70% importance from our work with senior managers. We had one sample of a younger, less-experienced group that would support the premise that the appreciation of the importance of soft skills is more equally balanced by these mid-career individuals. Although we had anecdotal information that recent graduates of technical training (programmers and engineers for example) would have little if any appreciation of the benefits of soft skills, we did not have any data.

Methodology

We needed to test our premise about the optimum timing for training of PM skill sets with practitioners. Surveys were developed, tested, and revised several times before being presented to our two sample groups. Comments were encouraged during field trials and in the two surveys. Approximately 100 surveys were conducted: 20 field trials and 40 from each of the two groups. The first sample group consisted of members of the Society of Project Management Professionals, a society that provides ongoing educational programs for their members so that they can maintain their certification as Project Management Professionals (PMPs) from the Project Management Institute (PMI). All were PMPs who had received formal project management training; most worked in the information technology field.

The second sample group (non-PMPs) was a broader mix of people involved in construction project management. Most were members of a class of part-time students at British Columbia Institute of Technology; some were quite experienced, others had no work experience in the PM field.

Summary of Survey Results

Following is a tabulation of the survey results:

Item	Society of PMP's	Non – PMP Group
Average Current Position (2 is all technical, 3 is some management, 4 is all management)	3.1	2.5
Average Time in Current Position – years	4.2	4.4
Average Time in Project-related Work –years	14.6	9.6
Percent Male in Survey	78%	98%
Importance of Hard Skills in meeting Project Objectives * (Average / Standard Deviation)	36% / 15% *	40% / 15% *
Importance of Basic Soft Skills in meeting Project Objectives	33% / 9% *	31% / 11% *
Importance of Advanced Soft Skills in meeting Project Objectives	31% / 10% *	29% / 13% *
Combined Importance of Basic & Advanced Soft Skills	64%	60%
Combined Importance of Basic & Advanced Soft Skills – Males only (30)	62%	N.A.
Combined Importance of Basic & Advanced Soft Skills – Females only (8)	65%	N. A.
Training Hierarchy – Basic Hard, Advanced Hard, Basic Soft, Advanced Soft?	N.A .	78% No
Position for PMP® Training (Hard Skills & Basic Soft Skills). See legend	3.16	N.A.
Position for Post - PMP® Training (Advanced Soft Skills). See legend above	3.13	N. A.

Figure 2 - Summary of Survey Results

Relative Importance of Soft Skills

The results of this survey confirmed the earlier results: soft skills are considered very important for successful projects. To be consistent with our initial surveys, we combined the importance of ‘PMBOK®-level soft skills’ and ‘Post-PMP® soft skills’ from the

PMPs as well as the ‘basic soft skills’ and ‘advanced soft skills’ from the non-PMPs to determine their collective importance to the two groups. The first group (certified PMPs) rated their importance at 64% and the second group (involved in project management but no certified training) rated the importance of soft skills at 60%. When the variances in the data are considered, we would conclude that there is no significant difference between PMP® survey participants and non-PMP® survey participants with respect to their rating of the importance of soft skills.

We could not find any correlation between the experience level or the current position and the importance of soft skills. Amongst both our survey groups, most appreciated the benefits of soft skills regardless of their level of experience or time in project-related work.

The students we surveyed were students of part-time evening courses with a wide range of ages and experience. They showed an unexpected appreciation of soft skills. The results could be different when there is not a mix of age groups in the sample.

When to Provide PM Training

We found that the PMP® sample group generally thought PM training should be at the career stage when they are seeing the need for the skills. On our

“position” rating scale, the group members are just into the stage where they “lead a multi-discipline group – some project management work and some work in their primary discipline”.

Hierarchy of Training

A question asked of participants in some of the survey field trials was “Should Training be Hierarchical – Basic Hard, Advanced Hard, Basic Soft, Advanced Soft?” The results were mixed and we concluded that the question should have been worded differently. However, we received many valuable comments on this question:

- The soft skills in particular are difficult for people to learn unless they are in a position to practice them.
- Soft skills should follow hard skills. There is little point in developing a happy/motivated PMO team if no one can perform a risk assessment or manage scope.
- Project Managers need to be developed with “Basic” hard and soft skills concurrently first. Depending on the stakeholder mix can then focus next on advanced hard vs. soft, although again the project manager should be developed on both fronts concurrently.
- I believe that soft skills of any type cannot be learned until a person has a certain amount of experience and maturity, so the soft skills cannot be obtained until later.

Male versus Female Ratings of Soft Skills

One survey participant commented “As females stereotypically rate ‘soft skills’ as more important, gender question is really sexist!”. We agree that this stereotype is the conventional wisdom but the data from the PMP® group does not support the view. Although the sample size is small and limited to

those with formal PMP® training, when the variances are considered, we would conclude that there is no significant difference between male PMP® participants (62%) and female PMP® participants (65%) with respect to their rating of the importance of soft skills. This may not be true in the general population or even among practicing project managers as a group. As there was only one female in the non-PMP® group, the differences were not analysed.

How to deliver Just-In-Time Training?

Smith [6] addresses the techniques for project management training in his paper “Just-in-time Training for Project Managers”. He discusses the modularization of project management training whereby online e-learning can provide managers with the tools they need to manage projects. In our opinion he is addressing the earlier team enablers, the hard skills that can be mastered through ‘learning objects’ whereby ‘the project manager will just need to set aside an hour or so to come up to speed’ ([6], p. 5).

For soft skill development, a different kind of training is required. Mintzberg [5] maintains that managers don’t need the ‘boot camp’ approach; instead “thoughtful reflection on experience in the light of conceptual ideas is the key to managerial learning”, and “sharing their competencies raises the managers’ consciousness about their practice.... This requires, not the popular new educational technologies (Internet learning and CD-ROMs, etc.) which can take the learners in precisely the opposite direction, but good old-fashioned low technology, personal and intense”. ([5] pp.253-257) Advanced soft skills need to be learned differently than hard skills.

Recognition of Post-PMP® Training

At present the PMP® certification from PMI is the most popular recognition of project management training - at least in North America. PMI, which has over 130,000 members in 69 countries, had certified almost 80,000 PMPs as of April 2004. As of the fall of 2003 when the Certificate of Additional Qualification program was retired, PMI has not announced any plans for post-PMP® certification. Does the PM profession require a certification of competency of soft skills beyond that presently provided by PMI? Can these skills be tested and verified? The International Project Management Association (IPMA), which is comprised of over thirty National Associations representing approximately 20,000 members primarily in Europe but also in Africa and Asia, has a 4-level Certification program. Their 42 basic knowledge areas which are required for their entry level certification, are analogous to PMI’s PMBOK®. For the three higher level certifications, Registered

Project Management Professional, Certificated Project Manager and Certificated Program Director, the requirements are not only knowledge and experience but what they call “personal attitude” which they measure with 8 personal attributes that are not unlike the post-PMP® skills we identified earlier. So, if Europe, Asia, and Africa are recognizing these personal attributes, who will do so in North America?

We believe that for project managers to be recognized as professionals, there will be a requirement for certification of PM knowledge in specific fields of practice and that certifiable capabilities to manage people will be necessary.

Conclusions

From the surveys:

1. We have reinforced our evidence that PM practitioners believe that soft skills significantly affect project performance and are about twice as important as hard skills.
2. We could not find any correlation between the experience level or the current position and importance of soft skills. All considered soft skill highly important.
3. For the PMP group, there is no significant difference between male participants and female participants with respect to their rating of the importance of soft skills. This may not be true in the general population.
4. The PMP sample group generally thinks PM training should be at the position or career stage when they are seeing the need for the skills.
5. We did not see any significant difference between PMPs and non-PMPs in their rating of the importance of soft skills.

This paper has been an incremental refinement in our earlier work on predicting Project Results by assessing the degree of competence in the various groups of skill than enable high performance. This paper confirms the importance of ‘soft’ project management skills and concludes that we need to train the appropriate people (experienced) at the appropriate time (when they have the need and interest) in the appropriate way (old-fashioned low tech methods for soft skills).

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