Assessing the Managerial Perception of Relative Significance of Ten Knowledge Areas on Project Success – A Case from Pakistan

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ABSTRACT: The study examines the project managers" perception of the comparative importance of the ten PM knowledge areas, as identified by the fifth edition of the *PMBOK® Guide,* for project success in Pakistan. Project management practitioners from both manufacturing and services sectors of the country were being surveyed and preliminary findings are reported.

Keywords: Project Management; PMBOK; Knowledge Areas; Importance; Pakistan

INTRODUCTION

Project Management is relatively a new field of study. It emerged from within management and „developed by middle of 20th century" (Peng et al., 2007). Today, it is an interdisciplinary field that is related to management and engineering alike. It is an application of engineering techniques on temporary organizations (projects) to manage the work effectively and efficiently to achieve pre-stated objectives (deliverables). „Forty years ago project management was confined to U.S. Department of Defense contractors and construction companies. Today, the concept behind project management is being applied in such diverse industries and organizations as defense, construction, pharmaceuticals, chemicals, banking, hospitals, accounting, advertising, law, state and local governments, and the United Nations" (Kerzner, 2009, p. 2).

Crawford (2005) writes, "as organisations define more of their activities as projects, the demand for project managers grows, and there is increasing interest in project management competence…Concern for project management competence has led to the development of standards for project management knowledge and practice that are used for assessment, development and certification. Development of such standards has been largely qualitative, based on the collective opinion of experienced practitioners as to what project personnel need to know and what they need to be able to do in order to be considered competent". Thus, an important dimension of a profession is standardization and a body of knowledge, being developed by professional associations, helps in the standardization of the knowledge and practice associated with a profession (see Crawford, 2005; Crawford and Pollack, 2007; Morris et al., 2006). „Since the mid 1970s, project management

associations around the world have made serious attempts to conduct themselves as professional Associations" (Morris et al., 2006). The Project Management Institute (PMI) is one such association with its chapters in different countries. In 1990s, it released first ever "a guide to Project Management Body of Knowledge" (PMBOK guide), a work initially identifying nine Project Management Knowledge Areas (PMKAs). In its fifth edition, PMI increased knowledge areas from nine to ten. Other than defining a body of knowledge areas, „the *PMBOK® Guide* also provides and promotes a common vocabulary within the project management profession for using and applying project management concepts" (PMI, 2013).

It should be noted that though the *PMBOK® Guide* (PMI, 2013) identifies Knowledge Areas „it does not indicate the relative importance of each of these Knowledge Areas" (Zwikael, 2009). One of the earliest works done on the measurement of relative importance of the Project Management Knowledge Areas was done by Zwikael (2009) on a sample primarily from developed countries. His work included nine knowledge areas and „revealed that the Knowledge Areas with the greatest impact on project success were Time, Risk, Scope, and Human". Review of literature suggested that there was a need to conduct similar research in developing countries like Pakistan as there was scarcely any work available to assess the Managerial Perception of the Relative Significance of the Ten Project Management Knowledge Areas throughout a Project in Pakistan. Throughout the paper „the Guide" refers to the *PMBOK® Guide*.

1. LITERATURE REVIEW

Most of the studies concerning a body of knowledge in project management literature are concerned with the theory and application of knowledge areas but very few authors have worked to measure the relative importance of the knowledge areas in developing countries (see Zwikael, 2009). However, the studies on the project mangers" perception of the relative importance of the knowledge areas throughout a project in developing countries, like Pakistan, were quite close to insignificant. Thus a study was required to fill this gap within literature and strives to find answer for which Knowledge Areas receive more attention relative to others in the eyes of project management practitioners in Pakistan.

1.1. What is PMBOK?

„The project management body of knowledge (PMBOK) is the sum of knowledge within the profession of project management" (Peng et al., 2007). „An important element of a profession is ownership of a body of knowledge that is distinctive to the professional group" (Morris et al., 2006).

„Standardization can increase the legitimacy afforded to a profession" (Crawford and Pollack, 2007). „Project management standards are being used extensively throughout the world in training and development, professional certification programmes and corporate project management methodologies on the assumption that there is a positive relationship between standards and effective workplace performance" (Crawford, 2005). „A separate body of knowledge is important in the development of professional standards" (Crawford and Pollack, 2007). „Project management associations have spent considerable time and effort in developing Bodies of Knowledge (BOKs) and their associated certification programs, and indeed the popularity of these has been notable" (Morris et al., 2006). Project Management Institute (PMI), *founded in 1969* (Peng et al., 2007), is one such renowned association that had „*over 210,000 members as of March 2006*" and *over 180,000 'project management professionals' in early 2006* (Morris et al., 2006). Today, as per the PMI"s Annual Report (2013), around 3 million people „in nearly every country of the world" are associated with the Institute and it has produced over 600,000 certified professionals.

PMI published the first edition of the *PMBOK® Guide* in 1996 (Peng et al., 2007). „*A Guide to the Project Management Body of Knowledge (PMBOK® Guide)* directly contributes to the process of standardization, partly through official recognition as a standard, and partly through expressed intent" (Crawford and Pollack, 2007).

1.2. What is a Project?

According to the Oxford Advanced Learner"s Dictionary (OALD), project is derived from the Latin word *projectum* meaning „something prominent". The dictionary defined project as „a planned piece of work that is designed to find information about something, to produce something new, or to improve something".

According to the fifth edition of *PMBOK® Guide* (PMI, 2013), „a project is a temporary endeavor undertaken to create a unique product, service, or result" with „a definite beginning and end."

1.3. What is Project Management?

Project management is relatively new approach to management (Kerzner, 2009, p. 2). „Even though it is often cited that projects have been managed since the pyramids, it is only in the second half of the 20th century that project management began to emerge as a distinct field of practice with its own tools, techniques, and concepts" (Crawford and Pollack, 2007). According to a *research in 2013*, *51 million people across the globe* are *engaged in the management of projects* (PMI"s Annual Report, 2013).

According to the fifth edition of *PMBOK® Guide* (PMI, 2013, p. 5), "Project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. Project management is accomplished through the appropriate application and integration of the 47 logically grouped project management processes, which are categorized into five Process Groups" that are "Initiating, Planning, Executing, Monitoring and Controlling, and Closing."

1.4. What are Project Management Knowledge Areas?

According to the fifth edition of *PMBOK® Guide* (PMI, 2013, p. 60), „a Knowledge Area represents a complete set of concepts, terms, and activities that make up a professional field, project management field, or area of specialization." These are as follow:

1.4.1. *Project Integration Management (PIM)*

According to the fifth edition of *PMBOK® Guide* (PMI, 2013, p. 63), „Project Integration Management includes the processes and activities to identify, define, combine, unify, and coordinate the various processes and project management activities within the Project Management Process Groups". As per the Guide, its processes include:

- Developing of Project Charter,
- Developing of Project Management Plan,
- Directing and Managing Project Work,
- Monitoring and Controlling Project Work,
- Performing Integrated Change Control, and
- Closing of Project or Phase.

1.4.2. *Project Scope Management (PSM)*

According to the fifth edition of *PMBOK® Guide* (PMI, 2013, p. 105), „Project Scope Management includes the processes required to ensure that the project includes all the work required, and only the work required, to complete the project successfully". It is „primarily concerned with defining and controlling what is and is not included in the project", as per the Guide, and includes following processes:

- Plan Scope Management
- Collect Requirements
- Define Scope

- Create Work Breakdown Structure

- Validate Scope

- Control Scope

1.4.3. Project Time Management (PTM)

According to the fifth edition of *PMBOK® Guide* (PMI, 2013, p. 141), „Project Time Management includes the processes required to manage the timely completion of the project". As per the guide it includes following processes:

- Plan Schedule Management

- Define Activities

- Sequence Activities

- Estimate Activity Resources

- Estimate Activity Durations

- Develop Schedule

- Control Schedule

1.4.4. Project Cost Management (PCoM)

According to the fifth edition of *PMBOK® Guide* (PMI, 2013, p. 193), „Project Cost Management includes the processes involved in planning, estimating, budgeting, financing, funding, managing, and controlling costs so that the project can be completed within the approved budget." As per the Guide, it includes following processes:

- Plan Cost Management

- Estimate Costs

- Determine Budget

- Control Costs

1.4.5. Project Quality Management (PQM)

According to the fifth edition of *PMBOK® Guide* (PMI, 2013, p. 227), "Project Quality Management includes the processes and activities of the performing organization that determine quality policies, objectives, and responsibilities so that the project will satisfy the needs for which it was undertaken. Project Quality Management uses policies and procedures to implement, within the project"s context, the organization"s quality management system and, as appropriate, it supports

continuous process improvement activities as undertaken on behalf of the performing organization." As per the Guide, it includes following processes:

- Plan Quality Management
- Perform Quality Assurance
- Control Quality

1.4.6. Project Human Resource Management (PHRM)

According to the fifth edition of *PMBOK® Guide* (PMI, 2013, p. 255), "Project Human Resource Management includes the processes that organize, manage, and lead the project team." As per the Guide, it includes following processes:

- Plan Human Resource Management
- Acquire Project Team
- Develop Project Team
- Manage Project Team

Nevertheless, „the project team is comprised of the people with assigned roles and responsibilities for completing the project‟, as per the Guide.

1.4.7. Project Communications Management (PCmM)

According to the fifth edition of *PMBOK® Guide* (PMI, 2013, p. 287), „Project Communications Management includes the processes that are required to ensure timely and appropriate planning, collection, creation, distribution, storage, retrieval, management, control, monitoring, and the ultimate disposition of project information.‟ As per the Guide, it includes following processes:

- Plan Communications Management
- Manage Communications
- Control Communications

As per the Guide:

> "The communication activities involved in these processes may often have many potential dimensions that need to be considered, including, but not limited to:
> - Internal (within the project) and external (customer, vendors, other projects, organizations, the public);
> - Formal (reports, minutes, briefings) and informal (emails, memos, ad-hoc discussions);
> - Vertical (up and down the organization) and horizontal (with peers);
> - Official (newsletters, annual report) and unofficial (off the record communications); and
> - Written and oral, and verbal (voice inflections) and nonverbal (body language)."

1.4.8. Project Risk Management (PRM)

According to the fifth edition of the *PMBOK® Guide* (PMI, 2013, p. 309), „Project Risk Management includes the processes of conducting risk management planning, identification, analysis, response planning, and controlling risk on a project. The objectives of project risk management are to increase the likelihood and impact of positive events, and decrease the likelihood and impact of negative events in the project." As per the Guide, it includes following processes:

- Plan Risk Management
- Identify Risks
- Perform Qualitative Risk Analysis
- Perform Quantitative Risk Analysis
- Plan Risk Responses
- Control Risks

1.4.9. Project Procurement Management (PPM)

According to the fifth edition of *PMBOK® Guide* (PMI, 2013, p. 355), „Project Procurement Management includes the processes necessary to purchase or acquire products, services, or results needed from outside the project team." As per the Guide, it includes following processes:

- Plan Procurement Management
- Conduct Procurements
- Control Procurements
- Close Procurements

1.4.10. Project Stakeholder Management (PSM)

Since the first launch of the *PMBOK® Guide*, there were only nine knowledge areas. However, Project Stakeholder Management was only added in the Guide in its fifth edition. According to the fifth edition of *PMBOK® Guide* (PMI, 2013, p. 391), „Project Stakeholder Management includes the processes required to identify the people, groups, or organizations that could impact or be impacted by the project, to analyze stakeholder expectations and their impact on the project, and to develop appropriate management strategies for effectively engaging stakeholders in project decisions and execution." As per the Guide, it includes following processes

- Identify Stakeholders
- Plan Stakeholder Management
- Manage Stakeholder Engagement
- Control Stakeholder Engagement

2. METHODOLOGY

Crawford and Pollack (2007) have highlighted an interesting dilemma concerning project management. They showed, "project management knowledge and practice are often considered to be generic and suitable for standardization. However, projects are also viewed as fundamentally unique pieces of work. This paradox of project uniqueness lies at the heart of project management." In their study they stressed that „there is a significant difference in project management practice between industry sectors" and „as project management is being practiced in an ever-increasing range of contexts, it is no longer clear that all project managers manage projects in comparable ways". Zwikael (2009) has argued that „different Knowledge Areas have unequal impact on project success". Building upon these works, this prelude study was undertaken to see the relative importance of key Knowledge Areas for project management practitioners working in two different sectors i.e., manufacturing (product-based) sector and services sector of Pakistan. In the study, organizations operating in manufacturing sector are called Product-based Organizations (POs) and organizations operating in services sector are called Service-based Organizations (SOs).

Most of the respondents were already familiar with most of the definitions and concepts either mentioned or not mentioned in the study related to project management approach. However, they were provided a refreshing course on all of the definitions and key concepts necessary for the effective conduction of the research. A workshop was organized in Lahore for Project Management practitioners, academicians and managers from hi-tech public and private organizations, both profitable and non-profitable. 104 individuals were invited and 33 individuals came to participate. Most of the respondents were from the city and were male. However, few Islamabad-based respondents too participated in the study. They were provided one and a half hour training on key terms and their definitions present in our questionnaire. Each of the participants was at least masters.

Each of the ten Project Management Knowledge Areas was defined in the light of the fifth edition of *PMBOK® Guide* (PMI, 2013) using multimedia presentation by a Project Management Expert and moderated by one of the authors. After the presentation and questions-answers session, the participants were interviewed individually using a questionnaire that contained close-ended questions and it was ensured, they couldn't discuss it among themselves, to minimize peer pressure. At the end we found 31 questionnaires that were properly filled.

In the questionnaire, five-point likert scale was used ranging from 1 (Least Important) to 5 (Most Important). Questions were like, "How will you rate the relative importance of Project Risk Management for the project success, as compare to other Knowledge Areas, in light of your organization?" etc.

3. RESULTS AND DISCUSSION

Following are the tables comprising statistics associated with the data collected using the questionnaire in the light of the aforementioned methodology. Table 1 has been generated by using SPSS (version: 18).

Table 1. Statistics

		PIM	PSM	PTM	PCM	PQM	PHRM	PCMM	PRM	PPM	PSHM	Sector
N	Valid	31	31	31	31	31	31	31	31	31	31	31
	Missing	0	0	0	0	0	0	0	0	0	0	0
Mean		3.97	4.19	4.26	4.32	4.35	3.97	4.35	3.74	3.81	3.94	1.23
Std. Error of Mean		0.188	0.17	0.185	0.156	0.158	0.17	0.151	0.197	0.199	0.207	0.076
Median		4	4	5	4	5	4	4	4	4	4	1
Mode		4	5	5	5	5	4	5	4	4	5	1
Std. Deviation		1.048	0.946	1.032	0.871	0.877	0.948	0.839	1.094	1.108	1.153	0.425
Variance		1.099	0.895	1.065	0.759	0.77	0.899	0.703	1.198	1.228	1.329	0.181
Range		4	4	4	4	4	4	4	4	4	4	1
Minimum		1	1	1	1	1	1	1	1	1	1	1
Maximum		5	5	5	5	5	5	5	5	5	5	2

Source: Self-administered Survey, 2015

Following table shown number of responses against each Project Management Knowledge Areas (PMKAs).

Table 2. Number of responses against each Project Management Knowledge Area

	PIM	PSM	PTM	PCoM	PQM	PHRM	PCmM	PRM	PPM	PSHM
Least Important	1	1	1	1	1	1	1	1	2	2
Less Important	3	0	2	0	0	1	0	4	1	1
Neutral	2	5	1	2	2	5	1	5	7	6
Important	15	11	11	13	12	15	14	13	12	10
Most Important	10	14	16	15	16	9	15	8	9	12
TOTAL	31	31	31	31	31	31	31	31	31	31

Source: Self-administered Survey, 2015

Data showed that the distribution is skewed to left with most of the responses are against "Important" and "Most Important", as shown in Fig. 1, revealing that project management practitioners irrespective of the sector in which they are working are significantly reluctant to regard "other Knowledge Areas" (Knowledge Areas other than the important ones) less important or least important for the project success.
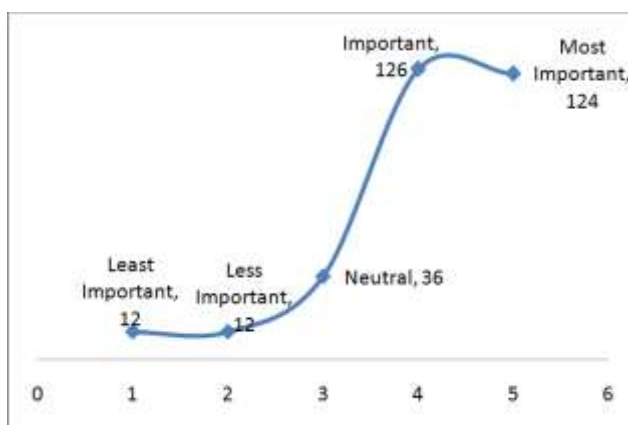

Fig 1: Illustration of Skewness in Data Distribution

By plotting the data in term of percentage we get the following graph:
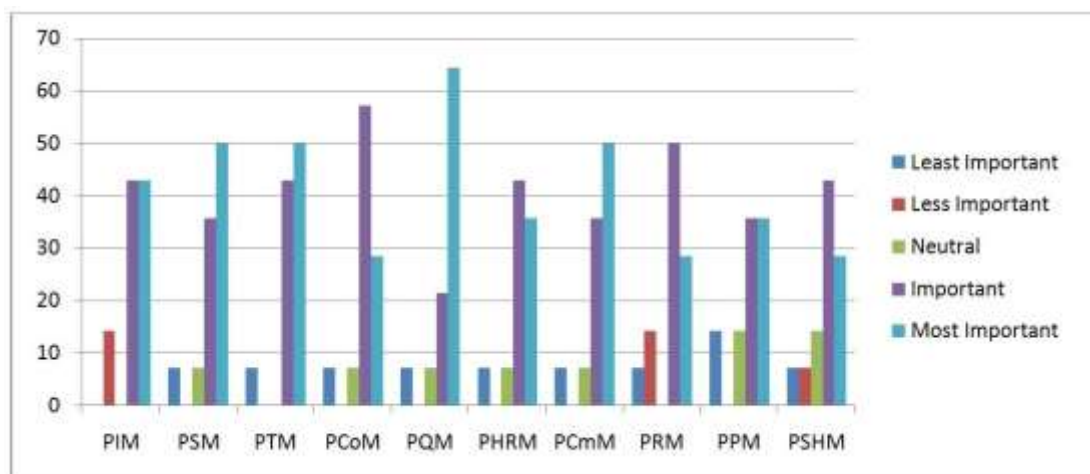
Fig 2: Illustration of Number of responses against each Project Management Knowledge Area

3.1. Overall Relative Importance of the Knowledge Areas

The collective relative importance of the Project Management Knowledge Areas for Project Managers working irrespective of the fact that organization was manufacturing or service sector, we get following graphs:
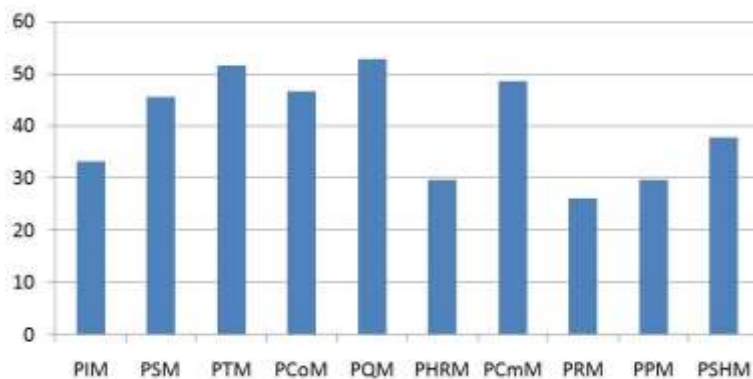
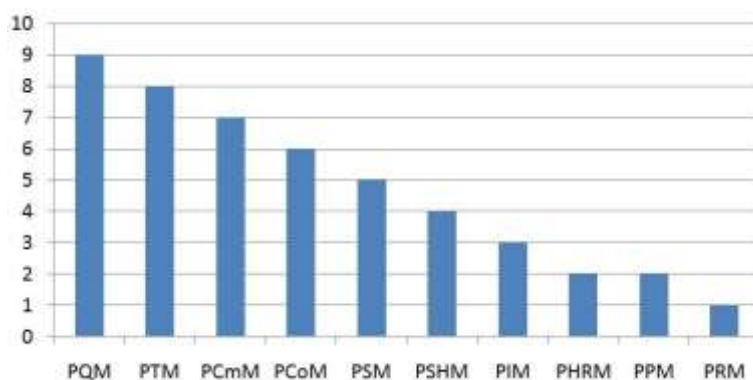**Fig 3: Illustration of overall Relative Importance of the Knowledge Areas**

Fig 4: Illustration of overall Relative Importance, ranked in ascending order, of the Knowledge Areas

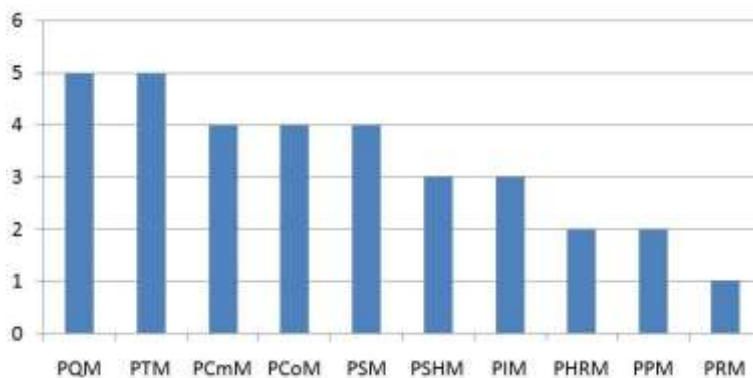By approximating the nearest scores, we get following graph:

Fig 5: Illustration of overall Relative Importance, ranked in ascending order, of the Knowledge Areas by approximating nearest scores

It shows, overall Project Quality Management is most important for organizations and Project Risk Management is the most ignored area by the Project Managers in Pakistan. By approximating the nearest scores, we get that overall Project Quality Management and Project Time Management scored almost similar importance. Project Communications Management, Project Cost Management and Project Scope Management scored almost similar importance. Project Stakeholders Management and Project Integration Management scored almost similar importance. Project Human Resource Management and Project Procurement Management scored almost same importance. Quite unexpectedly, Project Risk Management was paid least attention by the respondents. However, as per expectations, Management of Quality, Time and Cost for the projects scored well. Whether it was due to the education (e.g., academic books) that stresses relatively high importance on this „troika" of Project Management literature or due to the respondents" (Project Managers) practical experience that taught them the real importance of the „troika" was not clear. Thus it defined an area for further/future research.

By "approximating" the nearest scores, the authors mean that the responses were ranked in ascending order starting from 1 and then assigned one unique rank to responses within one category or class.

3.2. Relative importance of the Knowledge Areas for POs

Relative importance of the Knowledge Areas for the Project Management Practitioners working in Product-based Organizations (POs) was gauged by considering "Most Important", extreme value, to get better insight of the scenario.
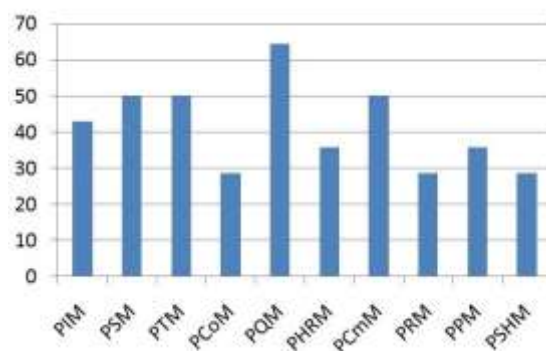

Fig 6: Illustration of Relative Importance of the Knowledge Areas for POs
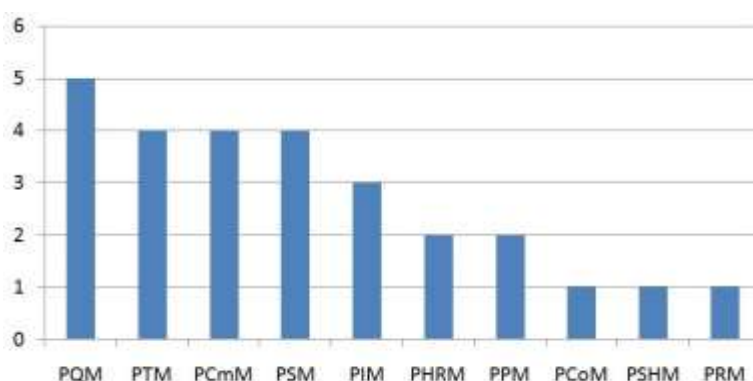
Fig 7: Illustration of Relative Importance, ranked in ascending order, of the Knowledge Areas for POs

For Products-based organizations (POs), Project Quality Management was rated most important by the respondents. After it, Project Time Management, Project Communications Management and Project Scope Management were rated most important. This tier was followed by the Project Integration Management in importance. Afterwards, Project Human Resource Management and Project Procurement Management became the fourth most important tier. Project Cost Management, Project Stakeholders Management and Project Risk Management were alike rated least important. Most stunning finding was that Project Cost Management was not in the top most tiers. The results didn‟t vary by approximating nearest scores over the data for POs.

3.3. Relative importance of the Knowledge Areas for SOs

Relative importance of the Knowledge Areas for the Project Management Practitioners working in Service-based Organizations (SOs) was gauged by considering "Most Important", extreme value, to get better insight of the scenario.
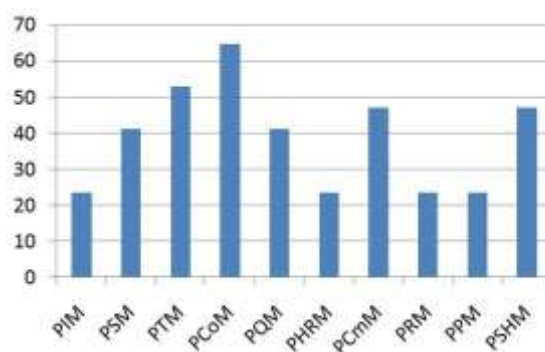

Fig 8: Illustration of Relative Importance of the Knowledge Areas for SOs
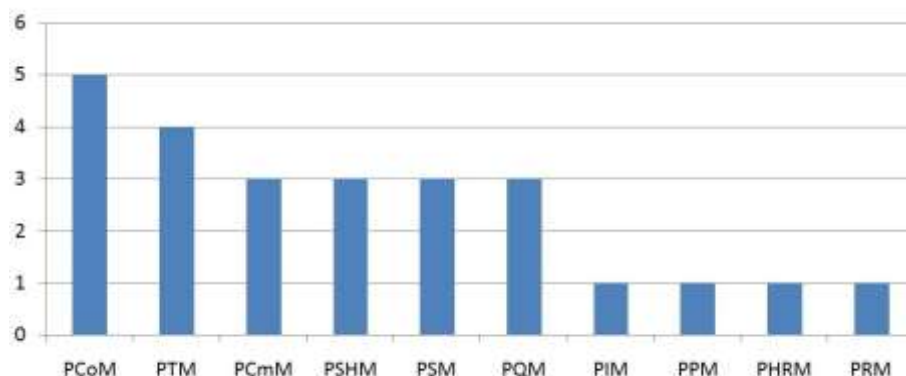
Fig 9: Illustration of Relative Importance, ranked in ascending order, of the Knowledge Areas for SOs

For Service-based organizations (SOs), Project Cost Management was rated most important by the respondents followed by Project Time Management. After them, Project Communications Management, Project Stakeholders Management, Project Scope Management and Project Quality Management were rated most important. This tier was followed by Project Integration Management, Project Procurement Management, Project Human Resource Management and Project Risk Management and alike rated least important. Most stunning finding was that Project Quality Management was not in the top most tiers. The results didn"t vary when "almost same" approach was applied on the data for SOs.

Further, the results (as shown in Fig. 7 and Fig. 9) revealed that for respondents (project management practitioners) working in manufacturing (product-based) organizations, project team (PHRM) is more important than clients (PSHM) and for those working in services sector, clients (PSHM) are paid more attention than project team (PHRM). Cost Management was regarded relatively most important by the respondents from services sector and least important by the respondents from manufacturing sector. However, Risk Management was paid least attention by most of the respondents from both sectors.

Careful observation of Figures 7 and 8 (and related data) revealed that there exists few trends in perceived importance as organization moves from one form to another (that is, from product-based to service-based or vice versa) of almost same. For Project Risk Management, though ranked low, and Project Time Management, though ranked relatively higher, the trend of perceived importance is almost same (shown by the symbol "~") whether an organization switches or not from one form to the other. However for others, trend either decreases (shown by the symbol "-") or increases (shown

by symbol "+"). In the Table 3.1, "~" depicts perceived importance is almost same in both product-based & services based organizations. Whereas, "+" means likely increase in perceived importance as an organization moves from product-based to a service-based entity or vice versa and "-" depicts likely decrease in perceived importance as an organization moves from product-based to a service-based entity or vice versa. Increase in the number of symbols ("+" or "-") depicts likely increase or decrease (respectively) in the significance of perceived importance of a knowledge area by Project management practitioners.

Table 3. Ranking of Service-based and Product-based organization along with the "almost same", "increasing" and "decreasing" trends in perceived importance as organization moves from one form to the other.

	Ranking for SOs	From SOs to POs	Ranking for POs	From POs to SOs
PRM	1	~	1	~
PTM	4	~	4	~
PHRM	1	+	2	-
PPM	1	+	2	-
PIM	1	++	3	--
PQM	3	++	5	--
PSM	3	+	4	-
PCmM	3	+	4	-
PSHM	3	--	1	++
PCoM	5	----	1	++++

Source: Self-administered Survey, 2015

4. CONCLUSION

Does the quest to „*standardize'* the „*project management knowledge and practice'* lead to better management of projects? Do different project management practitioners really need "one shoe fits all" approach to manage different projects successfully? To address the underlined concepts behind these questions and to see whether quest for „standardization" is aligned with the priorities of project managers or not, the study was undertaken. The study reveals which Project Management Knowledge Areas particularly seek attention and which are overseen by Project Managers operating in manufacturing and services sectors of Pakistan.

The study reveals that Project" Quality Management, Time Management, Communication Management, Cost Management and Scope Management are most important for project managers, in general. However, for project mangers operating in services sector, cost and time are of primary concern and for project managers operating in manufacturing sector, quality, time, communication and scope seek most of their attention. Quite surprisingly, it was observed that management of risks is mostly overlooked by the project management practitioners in Pakistan. And thus it can be argued that by ignoring the importance of risks, Pakistani project managers are, though not deliberately, might be increasing the cost of achieving the project deliverables. Thus why projects in Pakistan usually overran the cost is not beyond understanding (see Azhar et al., 2008; Ejaz et al., 2011; Nawaz et al., 2003; Shad et al., 2011).

The study also revealed that most of the project managers are reluctant in undermining the complete significance of any Knowledge Area for project success. Further, it was found that for project management practitioners working in manufacturing sector, the people working on the project are more likely to be important than clients and owners of the project"s final deliverables, to achieve those deliverables successfully. However, for project management practitioners working in services sector, the clients and owners of the project"s final deliverables are more likely to be important than the people working on the project, to achieve those deliverables successfully. Thus why the philosophies of customer relationship management and customer satisfaction seek more attention in literature on marketing (considering marketers as service providers) rather than literature on production or engineering (considering owner of these processes as products providers) is not afar thoughtful. It was found that Project Cost Management is considered number of times more important by project managers from service sector than by ones from manufacturing sector. However, Project Risk Management is one the areas that are considered relatively least important by most of the project management practitioners from both sectors.

The study is of particular importance for project management practitioners who wish to seek which area of a body of knowledge is most important to them and how to priorities these knowledge areas depending on the sector they are working in. Building upon this work, future researchers can expand the scope of their study, by increasing the sample size and by considering the organizational size, to confirm the generalizability and validity of the research outcomes. Also, weather the research outcomes will change or remain same if the study is conducted in other countries is also yet to be seen.

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