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LOCALE-SPECIFIC CATEGORIZATION OF IT PROJECTS FOR PROPER PROJECT MANAGEMENT

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ABSTRACT

In this paper we aim to show that not only are the project management techniques important for small-scale projects, but following proper project management techniques is one of the most important requirements. However, there come slight variations in implementing project management techniques in small projects as compared with larger projects. Therefore, proper categorization of projects holds the key to success in many situations. Our paper will show that categorization of a project as small-scale or large-scale should always be locale specific. In this regards, we develop a criteria and evaluate how the projects are categorized as small-scale and large-scale in different parts of the world with focus on IT projects. This research concludes that some methods cannot be used for projects of different scales.

Keywords: Project Management, Categorization, Information Technology, Locale Specific, IT Projects in Pakistan

INTRODUCTION

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Project Management techniques play a critical role in timely completion of any project. They allow the project manager to control all aspects of development from design and analysis to deployment. Proper implementation and execution of these techniques can be the difference between success and failure in any sort of project (Pinto & Slevin, 1988). A preconceived notion about project management techniques is that they are necessary only for large scale projects as cost of failure can be very high in them. On the other hand, general consensus is that small scale projects can be developed without following the proper project management techniques. Small scale projects are generally developed under very tight time and budget constraints and are only effective if they are delivered on time. The progress of such projects need to be monitored very carefully and any decision regarding the direction of the project need to be made very quickly. As such these projects make ideal candidates to be controlled using proper project management techniques. In this paper we aim to show that not only the project management techniques are important for small scale projects, but also following proper project management techniques is in fact one of the most important requirement for them. We also show that, techniques and process used to properly manage a small scale software project can be quite different from the ones used in managing larger scale projects. This claim raises an important question as to how can we categorize a project as small scale or large scale project. Our paper will show that categorization of a project as small-scale or large-scale should always be locale specific.

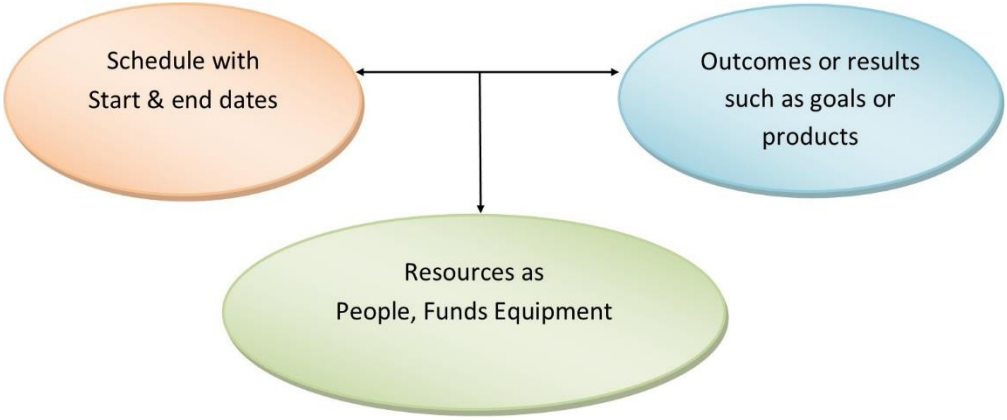
Organizational activities can be categorized either as operations or projects. Operations comprise day to day routine works containing no end date e.g. services, accounting or production etc. Projects on contrary are longer; contain more complexity and are often onetime schemes like launching new entities or extending business units; projects may also include joint endeavour with other organizations and upgrading of existing products (Algahtani, 2012). Fig. 1 shows the elements essential for any type of project. It is important to distinguish a project from other work as project must have certain characteristics like stakeholders' needs, uniqueness, and risk factor; if any work consists of any of these characteristics it must be managed as project regardless of size or other criteria (Elizabeth & Larson, 2007).

Project Management can be regarded as fine managerial practices set forth by any organization to achieve the goals in addition to on time and within budget delivery of products (Milosevic & Srivannaboon, 2006). Methods of project management have been evolved from industry practices and international standards. These methods have effectively implemented in companies for large-scale information technology projects to guarantee success. Unluckily,

mostly project management methodologies are developed for large projects. Experiences of industry experts clearly show that while trying to implement these methods for smaller projects it don't work rather proved to have counter productivity (Elizabeth & Larson, 2007). Small or medium companies don't have any existing methodology for project management and skilled labour to make use of practices present in large organizations (O'Sheedy, 2012). Often smaller projects are assumed effortless to organize, having less resources and have low priority by organizations (Rowe, 2007).

FIGURE 1

Necessary Elements in Every Project either Large or Small



This is a fact that failures in large projects are more realized and their costs do have much impact but smaller projects do fail as well and the net cost of failure incurred by these small projects can be significantly equated to the larger projects or even more than large projects as accumulated over certain period of time (Elizabeth & Larson, 2007). Therefore due to budget, time inflexibility, and other constraints, small-scale projects must be managed properly. The realizations of management of small-scale IT projects have come to forefront in recent times. Different researchers have proposed distinct approaches to manage small-scale IT projects. Some authors present models or frameworks adapted from traditional project management techniques and tools but they try to maintain the compatibility with traditional ones (Rowe, 2007; Bentley, 2009; Brodnik & Leip, 2008), while some authors emphasized on using software development methods in the management of small-scale software development projects, like agile methods, which are especially designed for small and changing projects. These methods are less formalized and small teams have produced software very efficiently by timely adjusting changes in projects (Schwaber, 2004; Chin, 2004; BenassiI & Amaral, 2011). One recent attempt by Daniel O'Sheedy in his PhD theses (O'Sheedy, 2012) has combined the best features of both the well-established traditional project management methods and newer

agile development methodologies in small and medium enterprise (SME) environment to form a framework for small-scale projects. This combined framework is tested on two SMEs projects and found beneficial in those particular situations.

One key issue for companies while implementing project management techniques is to differentiate the projects from operations. Companies generally find it confusing and difficult to segregate processes of a project from day to day operations. It is important to note that project management techniques should only be applied to projects and not to operations. Applying project management techniques on operations causes adverse effects on budget. A lot of time is also wasted in planning as operations have no definite deadlines and stakeholders are not affected requiring no risk management for operations. On the other hand ignoring processes of projects as operations will ultimately lead to failure in project management. There may cause unfavourable effects if a project is not recognized as project as lack of planning, non-identification of risks and other projected related issues (Elizabeth & Larson, 2007). Similarly, Rowe (2007) clearly mentioned that the certain tasks and assignments must be considered as projects to have better definition of expectations by stakeholder, improved use of resources and such like project related benefits. To overcome this problem organization may review its activities through historical data and problems faced when projects were not recognized; a checklist may be prepared for future reference (Pérez-Ezcurdia & Marcelino-Sádeba, 2012).

Once a project is properly identified, the most important task is to categorize a project as large, medium, small or micro. This classification is very important as different project management techniques and methods would be used to tackle different categories of project more efficiently. Literature surveys of different sources such as various research studies, books, organizations and commissions highlight diverse parameters and different criteria to categorize a project as described in section V (Major Criteria Lists). The research materials suggest classification of projects on the basis of headcounts, duration, budget, complexity of work and Return on Investments (ROI) etc. This research paper aims to show that categorization of projects should always be specific to the locale of the project because users expectations, time to market, development cost, resource utilization and scheduling etc. vary from locale to locale. A comparison of projects in local industries of Pakistan from Information Technology (IT) perspective is presented in section V for comparison with projects in other regions of Europe and North America.

Requisite Background Knowledge

This section provides a quick reference of the knowledge required to properly understand and digest the proposed research idea. It not only provides standardized definitions for Medium, Small and Micro IT projects but also explains their importance within an organization. In addition, this section also focuses on the proper use of Project Management within the context of an IT project.

Medium, Small and Micro IT Projects

Organizations have different kinds of projects which they categorize as large or small projects according to their specific criteria. A project might be regarded as small due to budget or time constraints or simple due to less complexity. It is important to point out that a project may be categorized as a small project but it may have large future consequences for the organization such as improving overall reputation of the company or providing new opportunities for revenue (Parkes, 2011).

The term Information Technology encompasses diverse range of applications from data processing and information dissemination to a range of dedicated computer applications designed particularly for the organization. Generally researchers of different domains used different terms to represent Information Technology (IT) such as Information Systems (IS), Information Communication Systems (ICT) and Cyberspace (Ghobakhloo, 2012). In his research Morteza claims that a proper definition of IT should also include building or enhancing the infrastructure of above mentioned systems to improve the usefulness of every individual or the organization at large.

In recent decades Information Technology projects have changed the shape of business especially with respect to user or customer relationship such as online support and help desk etc. Information technology has become one of the most fast-moving and changing industry of the current era and as such requires proper software project management. Project Management for IT projects should be firmly founded on the same principles of standardized project management knowledge, tools and techniques used to successfully complete industrial projects (Schwalbe, 2010).

Most companies generally categorized IT projects into Large, Medium, Small or Micro level projects to properly apply the project management techniques. In this paper we are only focused on Small, Medium and Micro level projects as they are generally neglected in larger organizations. By and Large, in such organizations they are not viewed as projects or are not given priority and care they require for successful completion. Their future effects are not assessed for the company or any of its larger projects, although these smaller projects may have

hidden links and unforeseen impact on these larger projects. In addition, a small project can also be a part of large project for proper control (Rowe, 2007).

Information technology has revolutionized the world. The use of information technology products or results in various departments has produced excellent results through cost reductions, resource allocation and stronger customer links etc. These advantages become more critical and significant in the case of SMEs (McFarlan & Nolan, 2003). The unfavourable effects due to non-recognition or not managing small projects in large organizations can be minimize easily as they have resources and modern business strategies but the real challenge are faced by small and medium enterprises (SMEs) as they cannot afford this issue. SMEs are meant to handle small and medium projects. Therefore these require distinction among medium, small and micro projects as different project management techniques might be applied to them. Therefore proper categorizations of IT projects are critical to SMEs. Many researchers have taken keen interest in IT adoption of SMEs in different respects.

Project Management in IT Context

Concept of project management is as old as history of human beings and even dates back to pre-historical era like building of pyramids or Great Wall of China etc. In modern era, as the projects have increased in sizes and complexity, the organizations conducting those projects such as construction and defence organizations introduced project management techniques to ensure success (Morris, 1997). Information technology came into its own in 1960's when IT projects grew in number and many organizations started to build their IT infrastructure. Different sectors of industry tried to find specific methods to manager IT projects. European countries introduced management methods like Prince2 (Turner, 2007) in England, V-model (Höhn & Höppener, 2008) in Germany and Hermes (FSUIT, 2003) in Switzerland.

The most prevalent method that provides the guidelines for project management is Project Management Body of Knowledge (PMBOK) by Project Management Institute (PMI) in America. This method is now being used in almost every sector and in every industry. IT industries has also opted and adopted this methodology very successfully in managing complex and large IT projects.

Project management research in IT industry has been in diverse domains and some research is only from software or IT perspective while others from broader spectrum of Project Management. Project Management methodologies, techniques and tools became popular in large multinational organizations for managing large-scale project successfully but the main

drawback appears when trying to implement these methods for small-scale projects and especially in SME environment as considered to be having too much documentation and too bureaucratic in nature. Small projects have some unique challenges and suffer from common troubles (Rowe, 2007; Elizabeth & Larson, 2007). The common challenges faced by small-scale project are summarized in table 1.

The project management techniques and tools have been thoroughly probed for large projects in large organizations but very little research has been focused on small-scale projects in SME environment due to the problems present above and heterogeneous nature of these organizations. The focus of researchers have now turned towards smaller projects to analyse which project management techniques can full fill the needs of smaller projects especially in SMEs (Turner, 2007).

TABLE 1

Common Issues/Problems Faced in Small-Scale Projects

Issues/Problems Faced	Causes	Effects
Wasted effort Overlooked requirements	Lack of Planning	Higher Costs
Underestimating Scope Overestimated Expectations Ignoring Risks	Schedule not Maintained or Followed	Deadlines Missed
Lack of Status Reviews No Midterm Results Presented	Lack of communication	Sponsor left or show no interest
No Formal End of Project	Lack of proper Project Management	Missed opportunities and No Lessons Learned

LITERATURE REVIEW

Shenhar (2001) provided the first ever attempt to change the prevailing opinion that all projects are inherently the same and that one size fits all; before this paper there was no plan or criteria that could distinguish amongst different types of projects. Shenhar (2001) provided a conceptual model for differentiation among different projects; this research provide the initial step in discriminating different projects and demonstrated that every project should be handled differently; it suggested that every organization should add a formal step of project categorization. However this research categorized different projects on technical basis having different level of complexity and technical competency involved. As a very first step, this

research paper was really an effort to give some idea about the classification of projects but needed more parameters to distinguish projects like schedule duration, budget and other market related issues.

For projects at smaller scale with small teams, agile methods of development are considered to be more suitable. Schwaber (2004) and Chin (2004) almost at same time proposed that small-scale projects occurring in SMEs should use agile methods for project management. Schwaber (2004) only emphasized on agile methods with scrum while Chin (2004) compared agile project management with traditional Project Management methods. Schwaber (2004) presented a series of case studies in the form of real-life stories; however hedid not describe the explanation and insight into scrum, therefore it is very difficult for any novice to implement scrum straight away after studying this book. Chin (2004) provided documentation of processes which are used by practitioners in real life. Both books provide guidelines from practical implementation of agile methods but these do not categorize projects on any explicit criteria rather assumes that projects are small or medium-scale. There is also possibility of categorization at small and medium scales as clear distinction among medium, small and very small (micro) projects. Agile methods depend on nature of organization as well. Agile methods are suitable to project based organization and not to a small organization organized functionally but these research studies did not reveal this fact.

Brodnik, Plouse and Leip (2008) proposed that small-scale projects can be handled by designing processes that take less duration; authors provided a model that lessened the documentation and achieved better results as well; these presented a specific company environment where there existed only small projects and also mentioned that difference between small and very small projects; they proposed a realistic and practical methodology to manage smaller projects but still they did not devise any method to categorize different projects.

Rowe (2007) suggested different techniques and tools for small and simple projects and devised a criteria for definition of small projects; she distinguished small and simple projects but suggested that both forms can be treated with same project management techniques; she proposed a project management model called as Small and Simple Project Management (SSPM) model for management of small and simple projects; this model is basically adapted from PMBOK; the author provided a criterion, which defines parameters for describing small projects; according to the author cost is relative term that is dependent on income of organization; she proposed that project can be categorized on duration, headcounts, no of

technical area and other such parameters. She suggested a good number of parameters to define a project but she did not propose any category of very small projects; simple projects can be equated to very small projects but still they are different as a simple project can have more participants than a small project but then the simple projects will be less complex than small ones; she did not mention medium project category as well; no difference was make between types of projects as design and development or simple installation projects.

In a recent research at PhD O'Sheedy (2012), tried to combine standard project management methodologies and agile project management framework to develop success of information technology projects in SME environment; he provided a new management method basis on theoretical hypothesis that mixture of standard and agile practices will produce a better methodology to handle small-scale projects; he proved his research on action research methodology by applying his framework on two SMEs; the author also commented that an IT implementation projects in SMEs is such a research area which is ignored by a large number of researchers; therefore, he used this area to prove his research work; his work presents an excellent mixture of traditional methods and agile methods for proper project management in SME; he used criteria based on European Commission as his research belonged to SMEs based in Austria; this implies that author used locale specific criteria but not deliberately to determine the categorization of his small and medium organizations.

The research by Pérez-Ezcurdia and Marcelino-Sádeba (2012) provided lists of criteria and parameters for classification of projects; this paper gathered characteristics for categorization of different projects based on proposals by different researches; it does not only mention these criteria but also provide a comparison how different features related to distinct projects an organization should handle based on size of organizations or projects; this research paper defined the size of medium organization between 50 and 250 members, which is quite correct in certain locale but the locale of a developing country like Pakistan would have that headcounts for large projects, on the other hand that might be a small project in locale like America. There are also some other criteria like return on investment and balance sheet which might become more prominent in many circumstances as in some locale the project could provide more return on investment than other and categorized entirely different.

No doubt, proper use of project management techniques and tools is the real key to success for any type of project. Over the years, different methods and standards have been evolved for large, medium, small and very small projects as discussed in previous section. These methodologies and standards handle each of these projects uniquely for proper project

management. However, there remain obvious issues which must be answered and that in essence outline the problem statement of this research.

The question is how to categorize projects as Small, Medium or Micro for different locales? This in reality defines projects as small, large or micro on specified regional settings. We can break this problem in further two sub-categories that constitutes further two research questions stated as:

a) What criteria should be adopted to categorize projects? (locale focused criteria)
b) What are the parameter values for the selected criteria?

These research questions require establishing the fact that categorization of projects must exercise the locale-specific criteria that must emerge from locale parameters. Furthermore, the possible parametric values for various locales could be figured out in order to clearly categorize any project as large or small-scale.

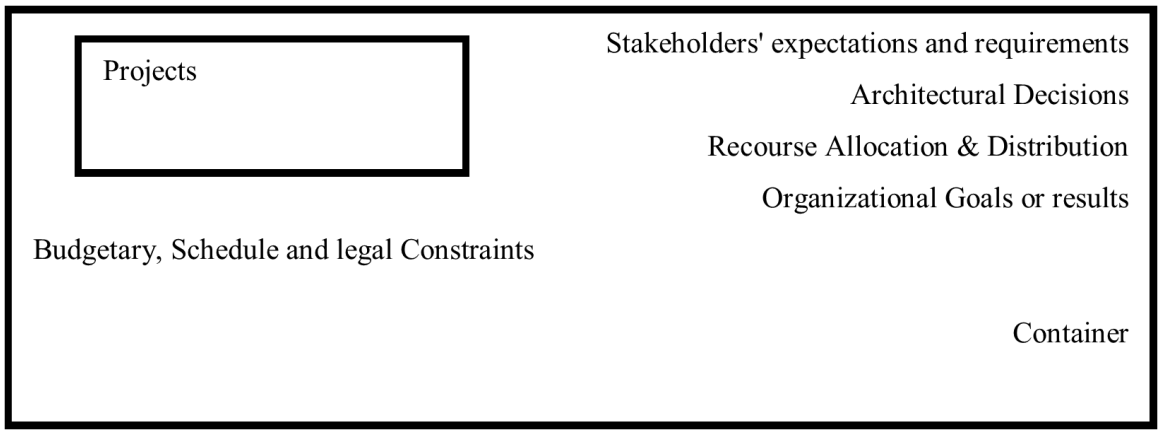
PROPOSED SOLUTION

This paper suggests that the questions being asked in previous section can be answered easily using locale-specific approach in categorization of various types of projects. Before assimilating the stated method and presenting any framework, first we perceive the concept of locale and how it affects or drives the projects. According to famous dictionaries like Merriam-Webster, Oxford, and Cambridge. Locale is defined as a vicinity or neighbourhood, where something happens or supposed to be happened. It is allied with particular set of events or characteristics.

In project perspective locale constitutes the working environment for almost every activity and attribute of a project that includes culture, region, religion, regulations, people, technologies, facilities and resources etc. in some new dimension. This comprises the pre-built effects of cultural variations, regional diversities, people behaviour and availability of technologies etc. So locale drives certain activities and characteristics like business opportunity can only be assessed by taking into account the customer needs and expectations living inside some certain local region. On the other hand there might be some budgetary or legal constraints due to which that opportunity becomes unviable. So in that respect locale may provide some services or facilities and on the other hand may provide certain hurdles. We have presented its analogy with container for components like different middleware components in container or fish in aquarium as shown in the figure 2.

FIGURE 2

Locale Services and Constraints for Any Project



Source. Gorton, I. (2006). *Essential software architecture*. Springer Science & Business Media, pp.60

Figure 2 clearly identifies some of the locale-specific characteristics of any project that shows how container can drive certain features or activities of a project. As we can see that the essential elements that constitutes a project i.e. stakeholders needs, schedule and resource acquisition are seriously affected by the specified locale. As we know that project requires deadlines not to be missed, no budgetary overrun and minimum utilization of resources to have maximum return on investment, that's why a project must be handled carefully according to that specific locale inherent characteristics. Now the question arises how to handle carefully any project? The answer is fairly simple that every project must have to be categorized according to the specified features of that local region or must be locale-specific. This implies that if we are to accomplish certain project in developed countries like USA or UK that might consider being a small or very small project. On the other hand that same project maybe a large or medium one for developing countries like Pakistan. For example if there are 249 people working on an information technology project, it may consider as small project in UK and large project in Pakistan. In another situation, any project that may consider being a large in UK due to high return on investment and customer's expectations might be taken as smaller one in Pakistan due to less return on investment and low customer's expectations. This categorization phenomenon shall certainly provide the opportunity to properly manage a project by using project management techniques and standards with respect to their category as large, medium, small or micro.

On broader spectrum if we see any organization or any organizational unit, they always survive in particular local region and is severely affected by that locale. They must focus on specific locale for accomplishment of organizational goals and productivity. Locale

encompasses socio-economic, political, technological and other aspects that drive any organization within. These local conditions manipulate schedule, budget, resources and return on investment directly, which are essences for any project. In the case of information technology projects these stated elements become very stringent because certain factors like time to market becomes very much critical. For example, if any multi-national multi-regional company foresee very low labour cost for any particular project in certain local region that can provide more profit margin. However, that locale lacks the required technology or due to regional or religion reasons like Eid holidays in Muslim countries may cause the schedule to miss and especially in the case of small and medium projects. These effects maybe tolerable in multi-national company but SME would not tolerate at all. Therefore, there is a need to tackle such situations properly. These demands a clear picture of project and categorize them accordingly. We have devised a framework for categorization of projects in figure 3.

FIGURE 3

Framework for Categorization of Projects

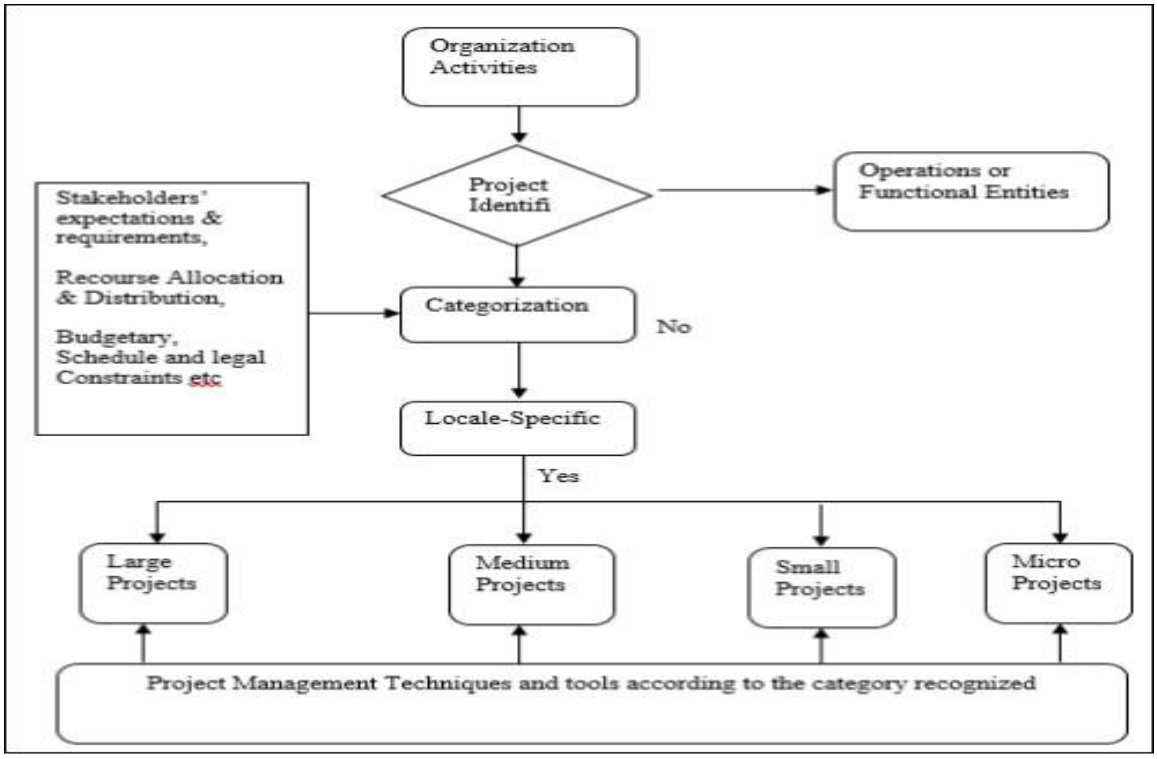


Figure 3 presents a framework that at first distinguishes operations from projects, and then categorizes projects on the basis of locale-specific characteristics. In next sub-section a comprehensive criteria will be derived by visiting various criteria of different authors and picking locale-specific criteria amongst them. New criteria will be discovered and at last we will try to fill the criteria by taking distinct local regions.

Major Criteria Lists

In the previous sub-section we have proved that categorization of projects must be performed on the basis of specified locale. In this regard we have presented a framework that categorizes the projects on specific locale but there is a need of certain criteria that appropriately represent locale-specific characteristics. In this sub-section we will not only review the criteria proposed by several authors previously but also select only those criteria that are locale-specific. In addition we will provide some new criteria as well. Finally a list of those criteria will be provided which are locale-specific at the end of this sub-section.

Recent research article by Pérez-Ezcurdia and Marcelino-Sádeba (2012) presented a number of criteria by different authors; first presented criteria is of AFITEP, which was presented by Francophone Association of Project Management, Spain in 2000; according to these criteria if we want to differentiate smaller projects from larger ones, we have to abide by the following measures:

a) Time length of the project: For small projects the range is small and gives as , time duration> few weeks and same as time duration > few weeks
b) Allocation of hours to work: Small projects have limits as: Hours > 500 and small hours <5000
c) Technicians Allocation: For small projects this range is very low and even utilized for other projects as well
d) No of persons taking part in the project: For small these range from one, two or three and rarely more
e) Estimated Conceived Cost: Not determined for small projects due to impossibility or its usual conduct
f) Coordination with the rest of organization: Significant coordination required and even subtle introduction of other departments

In the same paper, Perez-Ezcurdia and Marcelino-Sadeba (2012) proposed their own criteria as well which is very short but valuable and takes project size with respect to organizational income, points are:

a) Percentage of budget allocated for project as per annual income of the organization: For large greater than 10%, for Medium Sized Project greater than 5% and less than 10% and for small size it's less than 5%.

b) Percentage of dedicated hours required of the annual hours of organization: Large project require more than 10% for this, Medium Projects need greater than 5% and less than 10% for this purpose and small scale require less than 5% value.
c) Percentage number of team members from company's overall technical and management teams: The value set for large projects is more than 10%, greater than 5% and less than 10% for medium and less than 5% for small projects.

According to Rowe (2007), it is very difficult to define a small project; she believed that a project is small if it's easy, otherwise there is no other way than to describe a small project; she wrote cost could be the one but cost is not absolute term but dependant on income of organizations; time constrains can be used categorization of projects and she defined criteria for small projects as follow:

a) Small projects are short time in nature, in her book she used less than 6 months' time frame for a project being small one. Effort hour contributed to these projects are usually not full time.
b) Project has 10 or fewer headcounts in team managing that project.
c) Areas of expertise for small projects are much less.
d) Single goal is set for the project and solution can be achieved promptly.
e) Scope and description for such projects are very narrow in nature.
f) These projects do not have an effect on more than one unit and one personnel responsible for decision making.
g) These projects have Information access and don not require any automation in solutions for outside sources.
h) Project manager acts as project leader as well as decision maker solely for small projects.
i) Political influence is not a hindrance for these levels of projects.
j) Small projects can produce deliverable without much interdependence among different skill areas.
k) Cost constrains for these projects must not increase 75000 US dollars and availability of fund is guaranteed.

TABLE 2

Criteria Distinction on Locale Specific Basis

Criteria list	Locale specific		
	Yes	No	Comments
Time Constrains	✓		a) Time line (hours,months,weeks) of Project b) Dedicated hours against total time of the organization
Budgetary Amounts	✓		a) Estimated cost in local currencies b) Budget allocation against annual income
Total Headcounts	✓		a) No of people taking part in the project b) Nature as part time or full time c) No of people from total organizational strength
Skill areas		✓	
Single objective and easy achievable solution		✓	
Communication Complexity		✓	Within specific local region it is not a concern
Scope and definition		✓	Always narrow for any locale
Roles		✓	Not affect any locale
Political Influence		✓	It seems locale-specific but depends on party policies and other factors more than locale.
Interdependences among skills		✓	
Risk Involved	✓		Risk starts from requirements and remains after delivery, varies from locale to locale
Stakeholder types		✓	
Visibility		✓	
Formalization	✓		These changes from locale to locale

According to Rowe (2007) if any of the criteria is not fulfilled the project cannot be ranked as small project. Another good set of suggestions is initiated by Larson (2012) where author provided criteria list for differentiating between small and large projects on the factors as:

a) Time in Number of hours or in Months: medium-large having Hours $\geq$ 1000 or months > 9 while small have Hours < 1000 or Months $\leq$ 9.

b) Budgetary Amount in Dollars: In one example as medium-large having Dollars $\geq$ 100000, in other examples as Dollars $\geq$ 200000, similarly small having Dollars < 100000 and Dollars < 200000.

c) Risks Involved in Numbers or Types: In one example as Sizeable, in other example as any risk for medium –large and for small ones low-moderate or no risks.

d) Stakeholders in Numbers or Types: In one example as greater than 2, in other example as directorate level or above for medium –large and for small I or 2 and managerial level or below.
e) Visibility in Level: Usually high in large projects and not distinguishable in smaller ones.
f) Formality Level: Named formality as Project Manager, sponsor etc. for large projects and informal for small.

We have presented some of the criteria set by different authors, now we present union of all these criteria with comments which one is more locale-specific than other as in Table 2. Tables 2 presents the overall criteria suggested by distinct authors and interpret projects as locale or not. We mentioned earlier that categorization must be on locale-specific. Therefore, only those criteria can represent the true categorizations that are more locale-specific. So we will choose only those locales from above criteria in next section for assigning values on locale based.

Other criteria may also be taken into account as seem more locale-specific e.g. stakeholder expectations varies with locale due to awareness and other factors like many developing countries use paper work side by side and demand less features; stakeholder (Sponsor or customers or users) expectations also encompass functionality, complexity and expected performance of project as these emerge from stakeholder expectations. Therefore, we have bundled functionality, complexity and expected performance into stakeholder expectations. Another important criterion is return on investment, in some locale if one project is recognized as large then company can tolerate return on investment for longer time but for small it should be quicker.

Evaluation of Criteria

In this section we evaluate the criteria presented in previous section by assigning different parameter values. These values will change the categorization of projects in different locale. According to Turner (2007) size of company is directly proportional to size of projects that it handles; therefore, SME may provide the desired values for the categorization of small and medium projects but SMEs are much heterogeneous in nature as manufacturing, services etc. and there are definitions by many agencies in the same locale. For example, in Pakistan, Small and Medium Enterprises Development Authority (SMEDA) has one definition that suggests the upper limit for SME should be less than 250 employees. It means 249 falls into SME but which nature of industry this is for? Can any SME in Pakistan depute 249 employees

in information technology projects? It might be correct in manufacturing unit but in IT department, it's not possible.

It is a common observation and through the company project or company profiles become clear that 50 or even less can be a large IT project in Pakistan. There are many other definitions in Pakistan as well like State bank of Pakistan, SME bank present different parameter values for small projects. Table 3, 4, 5 summarizes the selected criteria along with different parameters that were developed in research studies through observation, reading different companies profiles and interacting with IT professionals.

The parameter values present in Table 3, 4 and 5 clearly show that projects with similar criteria scores are categorized differently by virtue of their locale. This can most easily be illustrated by looking at the time constraint. When evaluating the parameter values of this constraint for different locales it becomes quite evident that a time-wise small project in America may be considered a med level project in UK and a large project for a developing country in Asian region such as Pakistan. Likewise other constraints such as budget and manpower limitations change the definitions and dimensions of a project initiated in countries located within distinct parts of the world. Therefore the projects manager must employ proper management techniques according to a locale specific categorization in order to successfully complete the project.

TABLE 3

Parametric Values of Locale-Specific Criteria in America

Criteria List	Locale-Specific Parameter Values for America			
	Large	Medium	Small	Micro
Time Constrains (months)	>12	≤ 12	≤ 9	≤ 5
Budgetary Amounts ($)	>20M	≤ 20M	≤ 10M	≤ 5M
No. Of Head-counts (Numbers)	> 500	≤ 500	≤ 250	≤ 100
Risks Involved	Mild or low	Low to Moderate	Moderate to Sizeable	Sizeable
Formalization	100%	50-90%	10-50%	0-10%
Stakeholder Expectations	Lots of additional Features	Some additional Features	No additional Features	No additional Features
	Complex GUI design	Simple with some functionalities	Simple with less functionalities	Very Simple

Criteria List	Locale-Specific Parameter Values for America			
	Large	Medium	Small	Micro
	Intolerable Error Expectations	Tolerable to some extent	Tolerable to some extent	Tolerable
Return on Investment	Long-Term	Medium-Term	Short-Term	Short-Term

TABLE 4

Parametric Values of Locale-Specific Criteria in UK

Criteria lists	Locale-Specific Parameter Values for UK			
	Large	Medium	Small	Micro
Time Constrains (months)	> 9	≤ 9	≤ 6	≤ 2
Budgetary Amounts (£)	>10M	≤ 10M	≤ 1M	≤ 0.5M
No. Of Head-counts (Numbers)	> 250	≤ 250	≤ 100	≤ 10
Risks Involved	Mild or low	Moderate	Moderate to sizeable	Sizeable
Formalization	100%	50-70%	10-50%	0-10%
Stakeholder Expectations	Lots of additional Features	Some additional Features	No additional Features	No additional Features
	Complex GUI design	Simple with less functionalities	Simple with less functionalities	Very Simple
	Intolerable Error Expectations	Tolerable to some extent	Tolerable	Tolerable
Return on Investment	Long-Term	Medium to short-Term	Short-Term	Short-Term

TABLE 5

Parametric Values of Locale-Specific Criteria in Pakistan

Criteria lists	Locale-Specific Parameter Values for Pakistan			
	Large	Medium	Small	Micro
Time	> 6	≤ 6	≤ 2	≤ 0.5
Budgetary	>1M	≤ 1M	≤ 0.5M	≤ 0.1M
No. Of Head-	> 100	≤ 100	< 50	2 - 5
Risks	Mild or	Moderate to	Sizeable	Sizeable
Formalization	50-100%	20-50%	10-20%	0%
Stakeholder Expectations	Some of	No	No additional	No additional
	Simple	Simple with	Simple with	Very Simple
	Tolerable	Tolerable	Tolerable	Tolerable
Return on	Long to	Short-Term	Short-Term	Short-Term

CONCLUSIONS AND RECOMMENDATIONS

In this research paper we have illustrated that deployment of project management techniques is very important in any sort of project. There are different techniques to handle distinct projects. These techniques require different methods for different category of projects. This research categorizes various projects as large, medium, small or micro. To carry out this classification, it is proved that locale-specific criteria must be used in categorization of projects. We have constructed a locale-specific framework, through which categorization occur. We have reviewed criteria suggested by different authors and proposed our own locale-specific criteria as well. At the end we have tried our best to provide parameter values for locales and demonstrated how parameter value of distinct criteria have changed the categorization in diverse locale. For this purpose we have established a comparison between Pakistan and other countries to prove our proposition. This research provides policy and helps in decision making for industry practitioners to categorize their projects. Researchers can take advantage in identifying and establishing project management techniques based on locale-specific categorization of projects. In future different project management techniques may evolve on the proposed locale-specific criteria and further parameters can be taken into account to control the dynamics of project management in various categories.

REFERENCES

Algahtani, A. & Arshad, M. R. B. (2012). Do status-checking meetings during project monitoring deliver a successful start-up? *International journal of economics and management sciences, 1*(7), 57-63.

BenassiI, J. L. G. & Amaral, D. C. (2011). Method to describe the product vision in an agile project management context. *Journal of Product Innovation Management, 21*(3), 392-403.

Bentley, C. (2009). *Prince2o Revealed*, Routledge.

Chin, G. (2004). *Agile project management: how to succeed in the face of changing project requirements*. AMACOM Div American Mgmt Assn.

Elizabeth & Larson, R. (2007). Managing Small Projects - Five Critical Steps to Tech Success. Technical report, Project Management Institute, North Alabama Chapter.http://www.northalabamapmi.org/information/best-practices.html

FSUIT (2003), *Management and Execution of projects in Information and Communication Technologies (ICT)*. Swiss Federal Strategy Unit for Information Technology (FSUIT), CH-3003 Berne.

Höhn, R. & Höppener, S. (2008). *Das V-Modell XT: Grundlagen, Methodik und Anwendungen*. Springer DE.

Larson, E. (2012). Managing small projects; the critical steps. Online: http://www.projecttimes.com/articles/managing-small-projects-the-critical-steps.html.

Brodnik, M. A. R. K., Plouse, R., & Leip, T. (2008). Why do I need all that process? I'm only a small project. *CrossTalk*.

McFarlan, F. W. & Nolan, R. L. (2003). *Why IT does matter*. Online. http://hbswk.hbs.edu/item/3637.html.

Milosevic, D. Z., & Srivannaboon, S. (2006). A theoretical framework for aligning project management with business strategy. *Project Management Journal*, *37*(3), 86-98.

Misuraca, G., Rossel, P., Glassey, O., Paul G., Nixon, V. N. K., & Rawal, R., ed. (2010). *12 Overcoming barriers to innovation in E-Government*. Taylor & Francis.

Morris, P. W. G. (1997). *The management of projects*. Thomas Telford.