Maturity in Project Management Series

The Brazilian Experience: General Results

By Russell Archibald and Darci Prado

The Brazilian Experience with PPPM (Portfolio, Program and Project Management) Maturity is distinguished by longevity (since 2005); by frank acceptance by the PPPM community and the range of participants (the 2012 survey had 434 participating organizations); by the huge amount of results made available on the web site, and by the consistency of those results. In this article we will show some general results of the 2012 PM Maturity Research effort.

In the Brazilian Experience we have several elements which have improved the understanding of the value of PPPM for organizations, namely:

- A maturity model (Prado-PMMM) launched in 2002 that has been intensively used. This model was described in some detail in our Maturity Series article in the March 2014 issue of the PM World Journal.

- A proven model of categorization of projects (Archibald – Project Category Model). This model was presented in our Series article in the April 2014 issue of this PM World Journal.

- A website launched in 2005 containing:
  - The questionnaire (40 questions) for the evaluation of PPPM maturity within the responding organization. The user receives the result immediately after completing the questionnaire;
  - A second questionnaire (28 questions) to obtain the basic characteristics of the organization being evaluated and its project performance indicators;
  - The results of several previous studies since 2005;
  - Extensive benchmarking information that is available online to enable anyone to compare the PM maturity of their organizational departments with similar departments of other organizations, while maintaining complete confidentiality of individual responding organizations;
  - Many other relevant documents.
  - Everything is accessible without cost.

1 The Project Management Maturity series of articles by Russell Archibald & Prof Darci Prado is based on their extensive research on this topic in Brazil, the United States and other countries. Russ is one of the pioneers in the project management field and the originator of the Archibald Project Categorization Model. Darci is the developer of the Prado Project Management Maturity Model which has been successfully implemented by many organizations in Brazil. More about this model and related research can be found at http://www.maturityresearch.com/.
A survey of maturity launched in 2005, with the participation of over a hundred volunteers who assisted in creating the site, analyzing the database, charting, document composition, etc.

The survey results have remained consistent over the years. Importantly, the research has shown that there is a strong relationship between maturity and success (as further discussed below).

A book (in Portuguese) that teaches you how to work with the subject, including how to assemble a Growth Plan.

Participation in various conferences to disseminate results.

Publication of the results of the research by several authors using various means of communication.

Adoption of the model within various consulting organizations and by various educational institutions.

As a result:

A large number of organizations have undertaken the assessment of their PPPM maturity and valid, practical growth and improvement plans were created and implemented;

A large number of students have used the model in their MBA and MSc theses. We even have PhD students who used the model in their theses. Some of these works are in the Virtual Library page on the site www.maturityresearch.com.

All this has created strong credibility for the Brazilian PPPMM Experience.

In this article we will show some results in the 2012 survey related to leading indicators and some of the groups that the database allows. The indicators are:

- Maturity
- Success
- Delay
- Cost Overrun

The groups will be the following:

- 4 Organization Types
- 11 Project Categories (according to Archibald Model)
- 28 Business Areas
- Organization Size
1. The Brazilian PM Maturity Research Program: Main Results

This program was initiated by the authors in 2005 and by 2012 it involved several volunteers and 434 participating organizations, including companies, governmental agencies (both directly managed and indirectly managed), and non-governmental organizations/NGOs. The total of projects involved is 8,680. Four major reports are available for download free online (www.maturityresearch.com):

- General Report: includes analysis of all types of organizations, all categories of projects and all business areas;
- I.T. Report: dedicated only to I.T. category of projects;
- Construction Industry Report: dedicated only to Engineering & Construction categories of projects;
- Organizational Change Report: dedicated only to projects that are related with redesign of processes / business, reduction expenses program, acquisition and integration of competing companies, etc.

1.1 - Main Maturity Results

The survey showed the following average results:

- PM Maturity: 2.60 (scale 1-5)
- Project Success:
  - Total Success Rate: 49.7%
  - Partial Success Rate: 35.2%
  - Failure Rate: 15.1%
- Delay: 28.0%
- Cost overrun: 15.0%

To fully understand the Prado-PM Maturity Model, it would be better if the reader could read the third article (March 2014) of this series that describes the model in some detail. To facilitate the understanding, we include at the end of this article a summary of the Prado-PMMMM and Archibald Categorization Model.

Figure 1 shows how the participants were distributed among the five maturity levels and Figure 2 shows the overall, average adherence to the maturity dimensions used within the Prado Maturity Model.
Figure 1. Percentage of Brazilian Organizations by Maturity Level in 2012 [1].
The global average for all project categories was 2.60.

Figure 2. 2012 Overall, Average Adherence by Brazilian Organizations to the Six Maturity Dimensions of the Prado PM Maturity Model [1].
2. Organization Types

The research grouped the participants into four organization types:

- Private companies
- Government – Direct Administration
- Government – Indirect Administration
- NGO - Non Governmental organizations.

The table below shows the main numbers for the organization types. Figures 3, 4, 5 and 6 are related with this table.

According to the above table and figures 3, 4, 5 and 6 we may conclude that:

- Private companies have the best indicators;
- Government – Direct Administration has the worst indicators.

Figure 3. Average PM Maturity by Organization Type [1].
Figure 4. Success by Organization Type [1].

<table>
<thead>
<tr>
<th>Organization Type</th>
<th>Success</th>
<th>Partial Success</th>
<th>Total Success</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Companies</td>
<td>51,4%</td>
<td>41,3%</td>
<td>58,9%</td>
</tr>
<tr>
<td>Government - Direct Administration</td>
<td>20,0%</td>
<td>41,0%</td>
<td>39,0%</td>
</tr>
<tr>
<td>Government - Indirect Administration</td>
<td>20,8%</td>
<td>37,9%</td>
<td>41,3%</td>
</tr>
<tr>
<td>NGO - Non Government Organizations</td>
<td>14,2%</td>
<td>34,4%</td>
<td>20,9%</td>
</tr>
</tbody>
</table>

Figure 5. Delay by Organization Type [1].
3. Project Categories

The research grouped the participants into the following project categories, according to the Archibald Model:

1. Aerospace/Defense Projects
2. Business & Organization Change Projects
3. Communication Systems Projects (data, voice, image)
4. Event Projects
5a. Engineering/Architecture Design Projects
5b. Facility design/procurement/construction
6. Information Systems (Software) Projects
7. International or Regional Development Projects
8. Media & Entertainment Projects
9. Product and Service Development Projects
10. Research and Development Projects
11. Other categories

The below table shows the main numbers for the project categories (we are showing data only for those categories with at least 12 participants). Figures 7, 8, 9 and 10 are related with this table.
According to the above table and Figures 7, 8, 9 and 10 we may conclude that:

- Business and Organizational Changes has the best indicators;
- Design has the worst indicators.
Figure 8. Success by Project Categories [1].

Figure 9. Delay by Project Categories [1].
4. Business Areas

The research grouped the participants into the following business areas:

1. Agriculture, Cattle Raising, Silviculture and Forest Culture
2. Food and beverage
3. Banking, finance and insurance
4. Trading
5. Construction
6. Consulting
7. Defense, Security and Aeronautics
8. Distribution (Water, gas)
9. Education
10. Electronics
11. Engineering
12. Electrical Energy (Production and/or Distribution)
13. Pharmaceutical
14. Mining
15. Metallurgy and Steelmaking
16. Paper and Cellulose
17. Oil and Gas
18. Chemical
19. Refractories, Ceramic and Glass
20. Health
21. Information Technology (Hardware & Software)
22. Telecommunications
23. Textile
24. Transportation, Storage & Services, Logistics
25. Tourism & Sports
26. Automotive & Automotive Parts
27. Clothing, Footwear, Fashion and Sports Equipment
28. Other

The table below shows the main numbers for the business areas (we are showing data only for those areas with at least 12 participants). Figures 11, 12, 13 and 14 are related with this table.

<table>
<thead>
<tr>
<th>BUSINESS AREA</th>
<th># of Respondents</th>
<th>Percentual</th>
<th>Maturity</th>
<th>Total Success</th>
<th>Partial Success</th>
<th>Failure</th>
<th>Average Delay</th>
<th>Average Cost Overrun</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>35</td>
<td>8,1%</td>
<td>2,44</td>
<td>48,1%</td>
<td>40,2%</td>
<td>11,8%</td>
<td>28%</td>
<td>22%</td>
</tr>
<tr>
<td>Consulting</td>
<td>47</td>
<td>10,8%</td>
<td>2,96</td>
<td>64,5%</td>
<td>27,6%</td>
<td>7,9%</td>
<td>11%</td>
<td>9%</td>
</tr>
<tr>
<td>Defense, Safety and Aerospatial</td>
<td>9</td>
<td>2,1%</td>
<td>2,53</td>
<td>38,8%</td>
<td>31,3%</td>
<td>30,0%</td>
<td>36%</td>
<td>15%</td>
</tr>
<tr>
<td>Education</td>
<td>16</td>
<td>3,7%</td>
<td>2,10</td>
<td>55,6%</td>
<td>33,3%</td>
<td>11,1%</td>
<td>29%</td>
<td>15%</td>
</tr>
<tr>
<td>Electrical Energy</td>
<td>30</td>
<td>6,9%</td>
<td>2,68</td>
<td>35,0%</td>
<td>40,6%</td>
<td>24,4%</td>
<td>24%</td>
<td>13%</td>
</tr>
<tr>
<td>Engineering</td>
<td>37</td>
<td>8,5%</td>
<td>2,72</td>
<td>46,8%</td>
<td>38,4%</td>
<td>14,8%</td>
<td>30%</td>
<td>11%</td>
</tr>
<tr>
<td>Information Technology (Hw &amp; Sw)</td>
<td>81</td>
<td>18,7%</td>
<td>2,73</td>
<td>56,9%</td>
<td>31,6%</td>
<td>11,6%</td>
<td>24%</td>
<td>14%</td>
</tr>
<tr>
<td>Telecommunications</td>
<td>13</td>
<td>3,0%</td>
<td>2,20</td>
<td>45,4%</td>
<td>41,7%</td>
<td>12,9%</td>
<td>30%</td>
<td>13%</td>
</tr>
<tr>
<td>Logistics</td>
<td>19</td>
<td>4,4%</td>
<td>2,45</td>
<td>48,1%</td>
<td>36,6%</td>
<td>15,3%</td>
<td>31%</td>
<td>17%</td>
</tr>
</tbody>
</table>

According to the above table and Figures 11, 12, 13 and 14 we may conclude that:

- Consulting has the best indicators;
- Defense, Safety and Aerospatial has the worst indicators.
Figure 11. PM Maturity by Business Areas in Brazil [1].

Figure 12. Success by Business Areas [1].
Figure 13. Delay by Business Areas [1].

Figure 14. Cost Overrun by Business Areas [1].
5. Organization Size (Annual Gross Revenue or Budget)

The research grouped the participants into the following revenue or budget groups:

- Under US$ 250,000
- From US$ 250,000 to US$ 1 million
- From US 1 million to R$ 5 millions
- From US$ 5 millions to US$ 50 millions
- From US$ 50 millions to US$ 500 millions
- Above US$ 500 millions

The table below shows the main numbers for the organization sizes based on revenue or budgets. Figures 15, 16, 17 and 18 are related with this table.

<table>
<thead>
<tr>
<th>Annual Gross Revenue or Budget</th>
<th># of Respondents</th>
<th>Percentual</th>
<th>Maturity</th>
<th>Total Success</th>
<th>Partial Success</th>
<th>Failure</th>
<th>Average Delay</th>
<th>Average Cost Overrun</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; US$ 250,000</td>
<td>35</td>
<td>8,1%</td>
<td>2,79</td>
<td>66,0%</td>
<td>26,0%</td>
<td>7,9%</td>
<td>16%</td>
<td>9%</td>
</tr>
<tr>
<td>From US$ 250,000 to US$ 1 million</td>
<td>38</td>
<td>8,8%</td>
<td>2,62</td>
<td>51,3%</td>
<td>36,6%</td>
<td>12,1%</td>
<td>27%</td>
<td>13%</td>
</tr>
<tr>
<td>From US 1 million to R$ 5 millions</td>
<td>54</td>
<td>12,4%</td>
<td>2,44</td>
<td>53,4%</td>
<td>35,6%</td>
<td>11,0%</td>
<td>26%</td>
<td>18%</td>
</tr>
<tr>
<td>From US$ 5 millions to US$ 50 millions</td>
<td>112</td>
<td>25,8%</td>
<td>2,55</td>
<td>55,1%</td>
<td>35,1%</td>
<td>9,8%</td>
<td>26%</td>
<td>14%</td>
</tr>
<tr>
<td>From US$ 50 millions to US$ 500 millions</td>
<td>77</td>
<td>17,7%</td>
<td>2,62</td>
<td>44,3%</td>
<td>39,8%</td>
<td>15,9%</td>
<td>33%</td>
<td>14%</td>
</tr>
<tr>
<td>Above US$ 500 millions</td>
<td>118</td>
<td>27,2%</td>
<td>2,65</td>
<td>42,0%</td>
<td>34,4%</td>
<td>23,6%</td>
<td>30%</td>
<td>18%</td>
</tr>
<tr>
<td>General Totals</td>
<td>434</td>
<td>100,0%</td>
<td>2,60</td>
<td>49,7%</td>
<td>35,2%</td>
<td>15,1%</td>
<td>28%</td>
<td>15%</td>
</tr>
</tbody>
</table>

According to the above table and Figures 15, 16, 17 and 18 we may conclude that:

- Small companies have the best indicators;
- Big companies have the worst indicators.
Figure 15. Global PM Maturity by Organization Size as Indicated by Annual Gross Revenue or Budget [1].

Figure 16. Success by Organization Size as Indicated by Annual Gross Revenue or Budget [1].
Figure 17. Delay by Organization Size as Indicated by Annual Gross Revenue or Budget [1].

Figure 18. Cost Overrun by Organization Size as Indicated by Annual Gross Revenue or Budget [1].
6. The Prado PM Maturity Model

The principal criteria used in the design of the model are [2]:

- Use the same levels (1 to 5) of the model SW-CMM developed by Carnegie-Mellon University for software development.
- Have simplicity (questionnaire with only 40 questions) and universality (application to all types of organizations and the entire list of project categories).
- Relate the maturity of the organization to its ability to execute projects successfully.
- Enable direct indications of where PM practices need improvement in order to grow the organization’s PM maturity and project success rate.

The five levels and seven dimensions of PM maturity in the Prado PMM Model are shown in Figure 19.

<table>
<thead>
<tr>
<th>LEVELS</th>
<th>DIMENSIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Initial</td>
<td>1. Technical (PM) and Contextual Competence</td>
</tr>
<tr>
<td>2. Known</td>
<td>2. Use of Methodology</td>
</tr>
<tr>
<td>3. Standardized</td>
<td>3. Computerization</td>
</tr>
<tr>
<td>4. Managed</td>
<td>4. Use of appropriate organizational structure</td>
</tr>
<tr>
<td>5. Optimized</td>
<td>5. Alignment with the organization's business</td>
</tr>
<tr>
<td></td>
<td>6. Behavioral Competence</td>
</tr>
</tbody>
</table>

Figure 19. Levels and Dimensions of the Prado PM Maturity Model [2].

The five levels are characterized as follows:

1. **Initial**
   - Little knowledge of the subject
   - Lack of methodology and/or management models
   - Use of intuition in management of projects.

2. **Known – Isolated Initiatives**
   - Start creating a new culture to build skills.

3. **Standardized**
   - Implementation of a standardized platform for project management:
     - Organizational Structure (Governance)
     - Methodology
     - Computerization
     - Strategic Alignment
   - Skills (behavioral competence) development.
4. Managed
   - Improvement of the platform: the standards work
   - Anomalies identified and eliminated
   - Effective human relationships
   - Consolidation of alignment with the organization's business.

5. Optimized
   - Results in high efficiency (optimization of terms, scope, quality and costs)
   - High efficiency of management processes
   - Wisdom
   - Low stress
   - Low noise
   - Something natural.

7. The Archibald Categorization Model

Because there is usually a wide variation within one organization in its PM maturity for
different types or categories of projects, the most useful measure of PM maturity relates
to each specific project category. To accomplish this PM maturity measurement on a
globally consistent basis the Brazilian PM Research Project has adopted the widely
accepted project categorization model developed by Archibald [3] with these 10 basic
project categories:

1. Aerospace/Defense
2. Business & Organizational Change
3. Communication Systems
4. Events
5. Facilities
6. Information Systems
7. International Development
8. Media & Entertainment
9. Product/Service Development
10. Research & Development.

There are several sub-categories within each of these; for the Brazilian research, for
example, within the Facilities category the PM maturity is measured for “engineering
design” and “construction and assembly” projects. The benchmarking results at the project
category level are averaged for a given organization when one organization has assessed its
maturity for more than one project category. More detailed discussion of the purposes and
methods of project categorization can be seen in reference 3.
8. Final Considerations

In future articles in this series we will deepen the presentation of results of the Brazilian Experience for some different categories of projects.

It is Important to point out that the model has also been used successfully in Italy, Portugal, Spain, USA and Mexico. In Italy, a survey was conducted along the lines of the Brazilian research.

---

This is the sixth of a series of articles on PPPM Maturity.
Click on these titles to read the previous five articles:

Feb. 2014: The Importance of Knowing Your Project, Program, and Portfolio Management Maturity: PPPMM
Mar. 2014: Foundations of the Prado-PM Maturity Model
Apr. 2014: PM Maturity for Project Categories
May 2014: Maturity, Success and Competitiveness

---

References

About the Authors

Russell D. Archibald

San Miguel de Allende, Mexico

Russell D. Archibald: PhD (Hon) ESC-Lille (Fr), MSc (U of Texas) & BS (U of Missouri) Mechanical Engineering, PMP, Fellow PMI and Honorary Fellow APM/IPMA (member of the Board of IPMA/INTERNET 1974-83), held engineering and executive positions in aerospace, petroleum, telecommunications, and automotive industries in the USA, France, Mexico and Venezuela (1948-1982). Russ also had 9 years of active duty as a pilot officer with the U.S. Army Air Corps (1943-46) and as a Senior Pilot and Project Engineer with the U. S. Air Force (1951-58.) Since 1982 he has consulted to companies, agencies and development banks in 16 countries on 4 continents, and has taught project management principles and practices to thousands of managers and specialists around the world. He is co-author (with Shane Archibald) of Leading and Managing Innovation: What Every Executive Team Must Know About Project, Program, and Portfolio Management (2013); author of Managing High-Technology Programs and Projects (3rd Edition 2003), also published in Russian, Italian, and Chinese; other books (in English, Italian, Japanese, and Hungarian); and many papers on project management. Website: [http://russarchibald.com](http://russarchibald.com)  E-mail: russell_archibald@yahoo.com

Darci Prado, PhD

Belo Horizonte (MG) Brazil

Darci Prado is a consultant and partner of FALCONI (ex-INDG) in Brazil. He is an engineer, with graduate studies in Economical Engineering at UCMG and PhD in Project Management from UNICAMP, Brazil. He has worked for IBM for 25 years and with UFMG Engineering School for 32 years. He holds the IPMA Level B Certification. He was one of the founders of Minas Gerais State and Parana State PMI chapters, and he was member of Board Directors of Minas Gerais State PMI chapter during 1998-2002 and member of the Consulting Board during 2003-2009. He was also the president of IPMA Minas Gerais State chapter during 2006-2008. He is conducting a Project Management maturity research in Brazil, Italy, Spain and Portugal together with Russell Archibald. He is author of nine books on project management and is also author of a methodology, a software application, and a maturity model for project management. Darci can be contacted at darciprado@uol.com.br.