

**AN ANALYSIS OF THE MATURITY OF PROJECT MANAGEMENT AS A  
DISCIPLINE**

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### **ABSTRACT**

Project management (PM) is a career that annually attracts many people, despite not providing project managers with the same professional status as a medical doctor or chartered accountant. These disciplines are globally recognised as being mature and professional.

The purpose of this article is to investigate and analyse the maturity of the PM discipline. Many organisations invest resources in PM, believing that it can be used to complete all new initiatives successfully. Several surveys have shown that many projects still fail to deliver the expected results. In order to understand the reason for projects still failing, the maturity of the discipline needs to be investigated.

The article follows a qualitative research approach and uses a literature survey to determine what constitutes a mature discipline. Using the findings of this survey, an analysis is done of PM as a discipline. The result is an objective, independent assessment of the maturity of PM and an indication of whether it can be considered a profession.

The benefit of this article is that it provides evidence on the maturity of the PM discipline. It also highlights the areas that must be focused on, from a PM perspective, to ensure that PM evolves into a more mature and professional discipline.

## **1 Introduction**

The purpose of this article is to assess the maturity of project management (PM) as a discipline for it to be recognised as a profession. Wang (2002) claims that “a mature profession has a true sense of professional community and its members are bound together by a sense of their professional identity and a set of shared common values”. According to Morris, Crawford, Hodgson, Shepherd and Thomas (2007), PM can be seen as either a semi-profession or a commercialised profession.

Several surveys (IT Cortex, n.d.; Frese, 2006) suggest that projects are often considered unsuccessful. This sometimes creates the impression that PM is immature and therefore cannot be considered as a profession. This applies to construction projects, such as the Gautrain (Van Wyk, 2008), and to information technology (IT) projects, such as eNaTIS (Coetzee, 2007), and is not limited to a specific industry.

Modern-day PM is accredited to the US navy when it initiated the Polaris missile project in the early 1950s (Marchewka, 2006). Since then, various developments have taken place, for example the introduction of PERT (Schwalbe, 2007). PM was introduced to the IT field in the early 1980s. The focus of PM up to then was to provide schedule and resource dates to top management in the military and construction industries (Schwalbe, 2007:2). Thus, it can be concluded that PM as a discipline has been practised for more than 50 years and has evolved significantly from its early days.

The maturity of PM as a discipline should not be confused with the maturity of an organisation in the application of PM. The latter is referred to as PM maturity and various models exist to measure the maturity of an organisation in relation to PM. PM maturity models (PMMMs) are important assessment tools for the PM profession (Jugdev & Thomas, 2002). Maturity models themselves identify organisational strengths and weaknesses and provide information for benchmarking. Jugdev and Thomas (2002) also claim that there is no correlation between process capability and project success of many maturity models.

## **2 Research Methodology**

Although literature is inundated with articles regarding PM maturity (Walker, 2005; Bower & Walker, 2007; Kwan-Sik Na, Li, Singh & Kim, 2007; Midler & Silberzahn, 2008), there is no research or evidence indicating whether PM itself is a mature discipline.

Based on this lack of evidence, a literature review was done to determine the criteria that constitute a mature discipline. This was done by reviewing various journals in various

disciplines. The outcomes of the literature review provided the basis for assessing the maturity of the PM discipline, or any other discipline for that matter.

The article is divided into two sections. The first section determines what constitutes a mature discipline and provides criteria for assessing the maturity of any discipline. The second section uses these criteria to assess the maturity of the PM discipline.

The following section focuses on the criteria of a mature discipline and is based on an extensive literature review.

### 3 Literature Survey

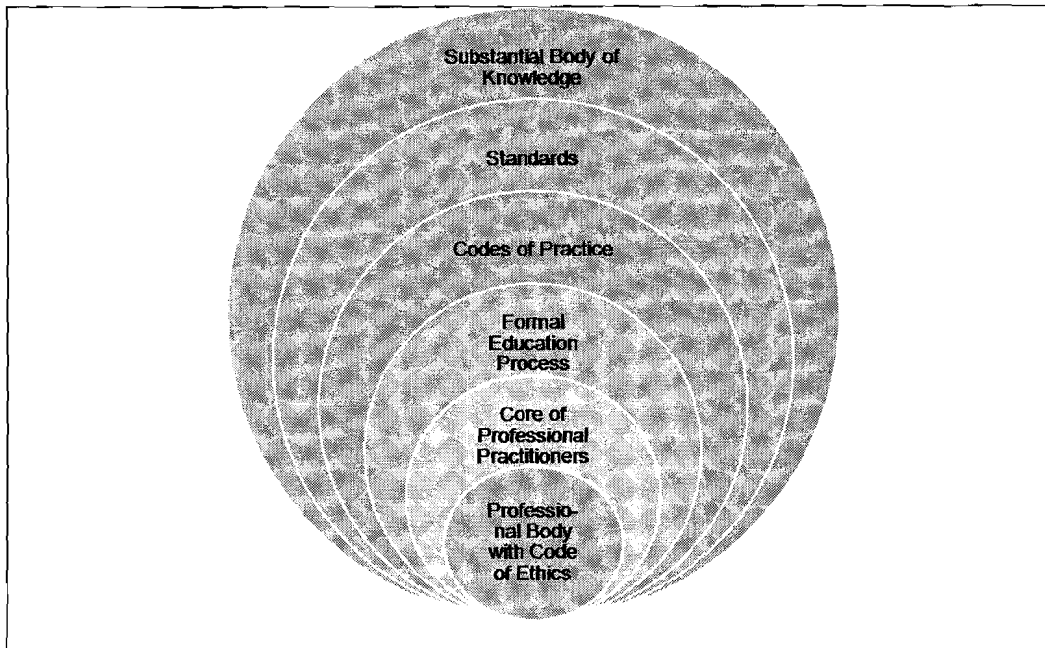
According to Crawford (2004), Charters (2006), Eve (2007) and Morris et al. (2007), professional disciplines must adhere to the following six criteria to be classified as mature:

- **A substantial body of knowledge exists.** This body of knowledge is based on scientific research and not just unsubstantiated opinion. Scientific research should be based on the methodological principle of reciprocal adequacy (Beukema & Valkenburg, 2007). This principle is based on the fact that scientific knowledge as well as common-sense knowledge are seen as complementary forms of knowledge. Scientific research and its outcomes are not prescribed by a single professional body but through a variety of professional bodies (Gale & Brown, 2003) and individuals. Gale and Brown continue to motivate that a variety of professional bodies is necessary to contribute to “critical debate and different perspectives”.
- **Standards exist.** A standard can be seen as a benchmark, criterion or measure (Bredillet, 2003). Standards consist of terminology, functions, process descriptions and organisational models (Ahlemann, Teuteberg & Vogelsang, 2009). It is based on sound scientific research and a general agreement by practitioners. The purpose of a standard is to promote clear and unambiguous communication between all interested parties, i.e. everyone is in agreement on the terminology, functions, process descriptions and organisational models.
- **Codes of practice exist.** These are a set of rules according to which practitioners in a particular profession are expected to behave (Pratten & Ashford, 2001). Codes of practice provide a common basis to develop, implement and measure effective management practices (Von Solms, 1998). A practice per se is the act or process of doing something. Thus a code of practice provides the rules regarding the doing of something.
- **A formal education process exists.** Education can be described as the process of assisting people to contribute to social, cultural and economic development in terms of the local and global context (Henderson, 2005). The education process supports the codes of practice and

standards that exist within a particular discipline. Qualifications and accreditations are issued by education and professional institutions based on an education and training process.

- **A core of professional practitioners exists.** A professional practitioner implies the application of a body of expert knowledge, which includes the standards, to situations in order to produce rational solutions to problems (Lester, 1995). This implies that a body of knowledge and standards do exist as discussed above. Professional practitioners are also expected to be in possession of a qualification in the discipline and to adhere to the code of practice, as discussed above. For a discipline to be considered a profession, a core of these professional practitioners must exist and together they should apply the body of knowledge and standards. What constitutes a core will vary by discipline.
- **A professional body with a code of ethics exists.** A professional body or community is a group of people who engage in some sort of work, whose identity is based on this work as well as the sharing of values, norms and perspectives (Wang, 2002). These values, norms and perspectives form the code of ethics of a professional body. A code of ethics can be thought of as a set of moral principles or guidelines, which govern behaviour of professional practitioners and which enshrine a set of values and beliefs (McNutt, 2002). A code of ethics is therefore concerned with what is good and bad as well as right and wrong in the practitioner's decision-making (McNutt & Batho, 2005). Professional bodies are represented by practitioners, academic researchers and other interested parties who act as custodians of the codes of practice, standards and body of knowledge, and who support and promote further research.

The interrelationship of these six criteria is illustrated in figure 1. As seen in this figure, the basis of the interrelationship is a substantial body of knowledge. Each criterion builds on the other criteria, indicating that full maturity of a discipline can only be achieved if all the criteria are realised.



**Figure 1:** Interrelationship between criteria of maturity

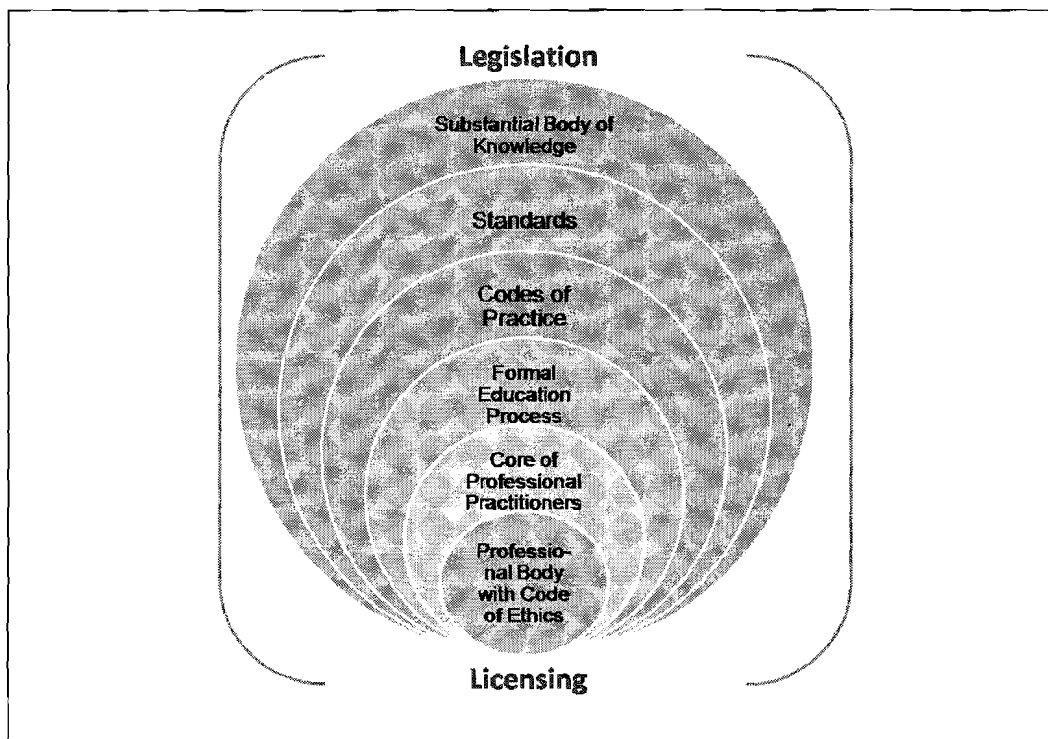
In 1996 Ford and Gibbs listed the above criteria for a mature discipline but also included two additional criteria, i.e. (i) legislation and (ii) licensing. These two criteria are incorporated into various professions, for example the medical, engineering and accounting professions where a practitioner must be licensed by a governing body to practise (Wright, Coleman & Glover, 1998; Casabona, 2003). A profession is further governed by legislation, for example Sarbanes-Oxley in the USA in the case of the accounting profession (Nagy & Cenker, 2007). These two criteria ensure accountability on the practitioner's side and protect the customer or patient. These two criteria can therefore be added to the previous list of six.

- **Legislation exists.** Legislation is the act of making or enacting laws. A country's parliament passes laws and these laws are then called legislation (Botha, 1994). According to Botha (1994), a distinction must be made between original and subordinate legislation. Original legislation is derived from the complete and comprehensive legislative capacity of a legislative body such as the South African government. Subordinate legislation is when the original legislation is not comprehensive enough and it is substituted by subordinate legislation to "provide the flesh" (Botha, 1994).
- **Licensing exists.** Licensing is mandatory if someone wants to practise as a professional, e.g. a doctor or an attorney. It requires that the individual have completed studies of a recognised body of knowledge at an accredited university and passed a demanding government

examination (Lukaszewski, 2006). It also requires that the individual agree to adhere to a specified code of ethical conduct and to be subject to penalties for violating that code.

Legislation provides the guidelines that force practitioners to adhere to the conditions or prerequisites of the law, while licensing ensures that a practitioner is competent in the relevant discipline (Reynolds, 2007). This implies that an individual can only be licensed if this is stipulated by legislation.

The above two criteria do not build on the other six criteria but rather govern those criteria, as illustrated in figure 2.



**Figure 2:** Eight criteria of maturity

For the purpose of this article, the eight maturity criteria listed above are used to assess PM as a discipline. These criteria can also be used for any other discipline.

#### **4 Results and Findings**

Each criterion, in the context of PM, was investigated and analysed in detail based on an extensive literature survey. The literature survey focused on what the PM discipline offers in relation to each of the eight criteria discussed earlier.

#### 4.1 *Body of Knowledge*

A body of knowledge (BOK) can be defined as a domain of essential information, mastery of which is required for success in a field or profession (Morris et al., 2007). The Project Management Institute (PMI) defines a BOK as generally recognised good practice (Project Management Institute, 2008).

The body of knowledge can be divided into the following three elements:

- **Journals:** Various international, peer-reviewed journals exist that promote scientific research in the field of PM. Among these journals are the *International Journal of Project Management* published by Butterworth-Heinemann (Elsevier, 2007), *The Project Management Journal* originally published by the Project Management Institute (Crawford, Pollack & England, 2006) and now in partnership with John Wiley & Sons, as well as the *International Journal of Managing Projects in Business* from Emerald (Walker, 2008). These journals are peer-reviewed to ensure that only scientific research results are published.
- **Books:** Recent years have also seen the publication of several books focusing on PM (Morgan & Sousa-Poza, 2005). Books are also emerging that focus on programme management (Reiss, Anthony, Chapman, Leigh, Pyne & Rayner, 2006) and virtual PM (Goncalves, 2007). Several large publishers such as Cengage Learning (n.d.), Wiley (n.d.), McGraw-Hill (n.d) and Pearson (n.d.) all publish several titles related to PM. Books also follow a peer-review process to ensure validity and correctness of their content.
- **Conferences:** The focus of many conferences is twofold: the first is practitioner oriented and the second is research oriented. There are various annual conferences such as the PMI's global conferences (Project Management Institute, n.d., *PMI global...*) and the IPMA's World Congress (International Project Management Association, n.d.) with the above focus. The PMI also hosts a research conference every second year where the aim is primarily to discuss new PM-related research findings (Project Management Institute, n.d., *PMI research...*). Submissions are peer-reviewed and, on acceptance, published as the conference proceedings (Makar, 2008).

The body of knowledge therefore represents the collective of all research-based publications.

#### 4.2 *Standards*

The second criterion of a professional discipline is the existence of and adherence to standards.

- **Standards:** These are best practices for what should be done to manage a project (Schwalbe, 2007:86). The PMI publishes *A guide to the project management body of knowledge*



*(PMBOK® Guide) – 4<sup>th</sup> edition* (Project Management Institute, 2008), and the Association for Project Management (APM) publishes the United Kingdom's equivalent called the *APM body of knowledge APMBOK – 5<sup>th</sup> edition* (Morris, Jamieson & Shepherd, 2006). These publications are seen as industry standards, as the PMBOK® Guide was adopted by the American National Standard Institute as ANSI/PMI 99-001-2000 (Project Management Institute Mid-Missouri, 2001). The Office of Government Commerce in the United Kingdom publishes a methodology called PRINCE (Office of Government Commerce, n.d.). The Project Management Association of Japan (PMAJ) published *A guidebook of project & program management for enterprise innovation*, also called the P2M, in 2001. The focus of this publication is for Japanese organisations to become as competitive as the organisations in the USA (Project Management Association of Japan, n.d.). The Global Alliance for Project Performance Standards (GAPPS) focuses on the development of agreed frameworks that serve as a basis for the review, development and recognition of local standards that will facilitate the mutual recognition and transferability of PM qualifications (Global Alliance for Project Performance Standards, 2007).

#### **4.3 Formal Education Process**

The formal education process is the third criterion of the maturity criteria and consists of the following elements:

- **Qualifications:** Qualifications are qualities or accomplishments which qualify or fit an individual for a certain position or function (Oxford English Dictionary, n.d.). They confer the status of a recognised practitioner of a profession or activity on an individual after completion of a qualification. Various universities and educational institutions provide education resulting in formal qualifications in the field of PM. In South Africa, qualifications must be accredited by the South African Qualifications Authority (SAQA) (South African Qualifications Authority, n.d.). There are various PM qualifications that are accredited by SAQA. International universities such as the University of Québec (University of Quebec, n.d.), the University of Technology in Sydney and Landshut University of Applied Sciences in Germany (Hochschule Landshut, n.d.) also offer PM qualifications.
- **Certifications:** Certification is to make certain of a fact or to guarantee the truth about something (Oxford English Dictionary, n.d.). In the context of PM, it refers to the skill, knowledge and competence of a person. Both the PMI and APM have certifications whereby people can be certified as professional project managers (Crawford, 2006). According to Wang (2002) and Gedansky (2002), the Project Management Professional (PMP) certification

of the PMI contributes to the fact that PM should be considered a profession. The certification is not a once-off assessment but must be kept current through active participation and self-development to ensure that the recipient keeps up to date with the latest developments and trends. The PMAJ certifies project managers against the P2M standard (Project Management Association of Japan, n.d.). Certification can also be achieved in PRINCE2 and the APMBok (Association for Project Management, n.d.).

- **Training:** The aim of training is to acquire skilled behaviour (Sloman & Philpott, 2006), for example training in the use of a scheduling tool to assist in project planning. Training differs from education in the sense that training focuses on gaining a skill and education focuses on remembering facts and understanding concepts (Kurtus, 1999). The PMI offers a global list of approved training providers and their courses (Project Management Institute, n.d., *Find a registered...*) called Registered Education Providers (REP). To be a REP, education providers need to comply with certain requirements and all courses offered need to be assessed for quality. The same service is provided by Project Management South Africa (PMSA) (Project Management South Africa, n.d.) and the APM (Association for Project Management, n.d.).

#### **4.4 Professional Practitioners**

Professional practitioners must have relevant qualifications and/or certifications and are expected to contribute towards updating the codes of practice and standards. A distinction needs to be made between certified and qualified practitioners:

- **Certified Practitioners:** A certified practitioner is someone who applies the body of knowledge and is awarded a certificate by a specific non-academic organisation such as the PMI. The PMI is a professional body with 327 250 PM professionals as at the end of April 2009 (PMI Today, 2009), representing 125 countries (Project Management Institute, n.d., *History...*). In Japan, the PMAJ has over 2 500 certified project managers (Project Management Association of Japan, n.d.).
- **Qualified Practitioners:** A qualified practitioner is someone who applies the body of knowledge and is awarded a qualification by a specific academic institution such as a university. Qualifications include formal bachelors or postgraduate university degrees in the field of PM (Crawford & Pollack, 2007).

It must be noted that in some fields and industries, certification and qualifications are recognised as a prerequisite to practise as a professional project manager. For example, in the construction

industry, a project manager must have a formal engineering qualification but only a PM certification.

#### **4.5 Professional Bodies**

A professional body consists of practitioners, academic researchers and other interested parties and is the fifth criterion.

- **Global Professional Bodies:** A global professional body consists of practitioners and academic researchers based throughout the world, i.e. more than one continent or geographical region. The PMI originated in the USA but evolved into a global body with various chapters throughout the world. The APM is based in the United Kingdom and has a global membership of 15 000 (Association for Project Management, n.d.).
- **National Professional Bodies:** A national professional body consists of practitioners and academic researchers based in one country or geographic region. The PMSA increased its members from 400 in 1997 to over 1 200 in 2007 (Project Management South Africa, n.d.). The Australian Institute of Project Management has a membership of over 6 000 PM practitioners (Australian Institute of Project Managers, n.d.).
- **Regional Professional Bodies:** A regional professional body consists of practitioners and academic researchers based in one specific region. Due to the size of some countries, such as the USA, South Africa and Australia, some of the national bodies have regional branches or chapters, for example South Africa and Australia each have eight regional branches (Project Management South Africa, n.d.; Australian Institute of Project Managers, 2007).

#### **4.6 Codes of Practice**

These are a set of rules according to which practitioners in a particular profession are expected to behave (Pratten & Ashford, 2001). Examples of codes of practice include the manner in which a work breakdown structure (Project Management Institute, 2006) is derived and used to determine costing and resources or earned value management (Project Management Institute, 2005), which are used to determine project performance (Schwalbe, 2007:285).

#### **4.7 Legislation**

Legislation is the act of making or enacting laws. In South Africa, project managers in the construction and built environment must be registered with the South African Council for the Project and Construction Management Profession (SACPCMP). The SACPCMP (South African Council ..., 2006) was established to provide for statutory professional certification, registration and regulation of project and construction management professions to protect public interest and

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advance construction and PM education. Apart from this, there is currently no legislation that governs the PM discipline in other fields such as IT.

#### 4.8 Licensing

Project managers do not need a licence to practise as a project manager per se. Although project managers in the construction and built environment must be affiliated with the SACPCMP in South Africa, it is not required of any project manager to be licensed to practise as a project manager.

A summary of the eight criteria is provided in the following table, which gives a holistic view of the PM discipline with regard to the criteria of a mature discipline.

Criteria	Elements	Examples
<b>Substantial Body of Knowledge</b>	Journals	<ul style="list-style-type: none"> <li>• <i>International Journal of Project Management</i></li> <li>• <i>Project Management Journal</i></li> <li>• <i>International Journal of Managing Projects in Business</i></li> </ul>
	Books	<ul style="list-style-type: none"> <li>• PMI Bookstore</li> <li>• Course Technology</li> <li>• McGraw-Hill</li> <li>• Prentice Hall</li> </ul>
	Conferences	<ul style="list-style-type: none"> <li>• PMI Global Congress</li> <li>• PMI Research Congress</li> <li>• IPMA World Congress</li> </ul>
<b>Standards</b>	PMI APM	<ul style="list-style-type: none"> <li>• PMBOK® Guide</li> <li>• APMBOK</li> <li>• P2M</li> </ul>
<b>Codes of Practice</b>	Project Management Institute	<ul style="list-style-type: none"> <li>• WBS</li> <li>• EVM</li> </ul>
<b>Formal Education Process</b>	Qualifications	<ul style="list-style-type: none"> <li>• Bachelor's degrees and diplomas</li> <li>• Postgraduate degrees</li> <li>• Master's degrees</li> <li>• Doctoral degrees</li> </ul>
	Certifications	<ul style="list-style-type: none"> <li>• PMP certification</li> <li>• CAPM certification</li> <li>• APMBOK certification</li> <li>• MSP certification</li> </ul>
	Training	<ul style="list-style-type: none"> <li>• List of registered education providers from PMI</li> <li>• List of registered education providers from PMSA</li> <li>• List of registered education providers from APM</li> </ul>
<b>Core of Professional Practitioners</b>	Certified	<ul style="list-style-type: none"> <li>• PMI</li> <li>• APM</li> <li>• PMAJ</li> </ul>
	Qualified	<ul style="list-style-type: none"> <li>• Degree in engineering for civil industry</li> </ul>

published. Although there are various codes of practice, more are required from other PM professional bodies. The formal education process criterion is satisfied as illustrated in table 1. Various qualifications, certifications and training are available for PM practitioners. The core of professional practitioners criterion is also satisfied as there are a large number of certified and qualified practitioners registered with the various professional bodies.

The sixth criterion, professional body with code of conduct, is mature due to the fact that various national and regional bodies do exist, as illustrated in table 1.

For PM to be formally recognised as a profession, legislation will be required to govern the profession and practitioners must be licensed to practise. As per figure 3, that is currently not the case. The PM profession is neither governed by legislation nor does a practising project manager require a licence. There are several arguments in favour of, but also against, legislating and licensing PM practitioners. Benefits of legislation are that the greater community will understand what PM is, how project managers should behave as well as the qualifications a project manager needs in order to practise. Disadvantages of legislation include personal liability when a project fails and fewer PM practitioners to do all the projects.

Based on the information in table 1 and figure 3, this implies that academic institutions should offer PM qualifications and provide the basis for the arguments against legislation. It will be costly to legislate PM as universities must first go through the process of curriculaing PM degrees. Another factor that must be taken into consideration is that legislation and licensing must be based on one standard and currently there are several standards available within the realm of PM.

The conclusion that can be made from the information provided in this article is that PM can be seen as a relatively mature discipline but many of the criteria need to evolve further. It therefore cannot be considered a profession in the traditional sense.

## **5 Conclusion**

The article reports on an analysis of the maturity of PM as a discipline. Criteria to determine the maturity of a discipline were provided and, based on these criteria, the remainder of the article focused on assessing the maturity of the PM discipline.

The conclusion that can be drawn from the results presented in this article is that PM is a relatively mature discipline but needs to evolve further in order to be classified as a profession. This is based on the fact that the PM discipline adheres to the majority of the criteria for a mature

discipline. The information provided indicates that two of the criteria are fully mature, i.e. a substantial body of knowledge and standards. On the other hand, we have two criteria that are immature and that need to be addressed, namely legislation and licensing. The remaining four criteria need to evolve to mature criteria and the focus of the PM discipline should be to mature these four criteria and then focus on legislation and licensing.

The value of this research is that it analyses the maturity of PM as a discipline. The benefit is that organisations can rely on PM as a discipline to implement changes or strategies. The downside is that PM cannot be blamed for failures.

PM as a whole is a relatively mature discipline but it also consists of various industries such as construction and IT. Future research should focus on each of these industries within the PM discipline to determine if these are mature and need to be measured against the same criteria that were used to determine PM discipline maturity.

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