

PROJECT MANAGEMENT MATURITY LEVELS

AND ORGANIZATIONAL REVENUE IN NEW SOUTH WALES LOCAL GOVERNMENT

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Abstract: Local government in New South Wales (NSW) is responsible for the delivery of a variety of projects, each with variable success measures.

Due to the variation in success indicators, measurement of project management maturity (process and procedures) was sought. An industry-specific project management maturity model was used to assess maturity levels. Using a mixed-methods approach, the project management maturity levels of NSW local government were determined. Correlation analysis was used to determine that maturity and organizational revenue are related.

1. INTRODUCTION

Local councils within states, such as NSW or Victoria, comprise the third tier of the Australian government, after Federal and State, and are responsible for delivering a wide range of projects and services. As with any government organization, council officers must avoid wastage and misuse of funds and should seek ways to reduce costs to avoid scrutiny (Kloot, 2009; Pilcher, 2011). Inefficiency often results in contracting and outsourcing tasks, which was espoused as part of the New Public Management (NPM) reforms developed in the 1980s (Dunleavy et al., 2005). NPM sought to improve public management and organizational performance by introducing modern business practices into government organizations (Hammerschid et al., 2016). An example of such influence is the creation of economies of scale through the amalgamation of councils (Drew, Kortt, & Dollery, 2017). As council projects and services are directly related, improving project success can improve organizational performance. One of the difficulties associated with success improvement is that definitions of project success vary between projects and stakeholders (Davis, 2016; Lim & Mohamed, 1999; Zwikael & Smyrk, 2011). Government organizations have the added difficulty of multiple and diverse stakeholders (Boyne, 2004). As such, the measurement of project management maturity provides a subjective manner of determining NSW local government's capability to successfully deliver projects (Morris et al., 2016). To address this gap in the knowledge it is proposed to determine the project management maturity levels in NSW local government through a Project Management Maturity Model (PMMM).

2. LITERATURE REVIEW

2.1 GOVERNMENT PERFORMANCE

Under the NSW state government Integrated Planning and Reporting (IP&R) framework, councils are required to develop a ten-year Community Strategic Plan (CSP), a four-year Delivery Plan (DP), and a one-year Operational Plan (OP). Performance against the OP and financial statistics are reported and publicly published in each councils' Annual Report. Whilst financial reporting is consistent in accordance with regulations, the reporting of project performance in the Annual Reports varies from council to council. The information within the Annual Reports is used to compare councils across the state using the 'Your Council' website (Office of Local Government, NSW 2019), and poor performance strengthens the argument for local government reform and amalgamations. In light of the implications resulting from performance reporting, councils can either seek to improve their performance or present data in a positive way through manipulation of results. Data manipulation has previously been found in NSW councils in relation to accounting data reporting (Drew & Grant, 2017). Alternatively, legitimate improvement in operational performance can be achieved through project performance (Maceta & Berssaneti, 2017). One reason why projects should be included as a performance measure is that projects and operations, especially in government organizations, are not always but often

fundamentally linked (Dobie, 2007; Project Management Institute (PMI) 2013). Since a project turns into a product or service to be maintained by the council, the delivery of a poor product or service (project) could mean higher maintenance costs throughout the operational life of the asset. If the project is implemented successfully then this would improve the operating results of the organisation, which would be reflected in any reported performance measures. The area of direct project performance reporting has been neglected in NSW state government requirements.

2.2 PROJECT PERFORMANCE REPORTING

Before attempting to improve project performance, an initial measurement is required. The difficulties in recording project performance have been documented in the project management literature (Fahri et al., 2015; Morris, 2010). Exacerbating the accurate measurement of multiple project performance measurement is the recognition that one common success measure is customer/client satisfaction (Albert, Balve, & Spang, 2017; Davis, 2017; Hassani-alauoui, Cameron, & Giannelia, 2020). For any given project, a council may have multiple customers with interest in the project outcome, which can cause issues for successful project delivery. For example, the Hills Shire Council, NSW, reported 11 separate categories of stakeholders in their Annual Report (The Hills Shire Council, 2019). Attempting to measure multiple stakeholder views across all projects for the state of NSW would be unfeasible and unrealistic. In this regard, a more objective approach was proposed, namely the measurement of project management maturity.

2.3 PROJECT MANAGEMENT MATURITY

Kerzner (2009) defined project management maturity as 'the implementation of a standard methodology and accompanying processes such that there exists a high likelihood of repeated successes' (Kerzner, 2009, p.58). For example, an organization that employs a standard project management methodology or has a Project Management Office (PMO) would have a higher maturity level than one which allows individual project managers to implement their own methodology. In addition to methodologies or processes, non-process factors have also been shown to influence project management maturity (Pasian, 2011). Project Management Maturity Models (PMMMs) are used as the measurement method and are typically comprised of an assessment tool, which rates processes and competencies (maturity) related to projects (Mullaly, 2006). Project management maturity can be measured using existing models or a new model and re-assessed as maturity increases, which is where continuous improvement occurs to achieve a higher level of maturity. The use of a PMMM to measure and then improve maturity is relevant as higher maturity levels have been shown to be directly related to project success (Khan & Spang, 2013; Prado, Oliveira, & Romano, 2015). Organizations that improve their project management maturity have been found to experience cost savings, increased schedule predictability, and improved quality (Ibbs & Reginato, 2002).

The measurement of local government project management maturity removes the issues associated with defining and measuring project success across a large number of projects with an associated large number of stakeholders.

2.4 PROJECT MANAGEMENT MATURITY MODELS

A review of the most common PMMMs was undertaken for suitability to deliver NSW local government projects. Existing maturity models vary between process-focused and being organization-oriented (Spalek, 2015). Some of the criticisms of PMMMs include being too bureaucratic (Alami, Bouksour, & Beidouri 2015; Sanchez et al., 2020); too narrow in focus (Görög, 2016); and overlooking organizational context (Viana & de Miranda Mota, 2016). To address such limitations, industry-specific maturity models have been developed and the use of an industry/organization-specific model is supported in the project management literature (see for example: Alzahrani, 2015; Prado, Oliveira, & Romano, 2015; Spalek, 2015, Tahri & Drissi-Kaitouni, 2015).

The lack of empirical evidence to support the hypothesis that success increases with maturity have been an on-going criticism of maturity models (Grant & Pennypacker, 2006; Mullaly, 2006). This is due to the fact that studies on project management maturity models tend to measure maturity without demonstrating a link or otherwise to beneficial outcomes.

However, as Duffy (2001) argues, the benefit of using maturity models is for analyzing and measuring current organization levels in order to improve them. Improving maturity levels does not require the confirmation of a relationship between higher maturity and increased success to be beneficial.

Studies of project management maturity have covered various industries in numerous countries. Some examples of government organization maturity studies include Brazilian state government (Prado, Oliveira & Romano, 2015), Slovenian municipal governments (Vrečko, Žnidarsič & Kovač, 2015), American government offices (Yazici, 2020), and Australian federal agencies (Young, Young & Zapata, 2014). Assessment of local government project management maturity in Australia or New South Wales has not been completed despite the public interest in projects and existing mandatory reporting requirements.

2.5 NSW LOCAL GOVERNMENT AMALGAMATIONS

In May 2016, the NSW state government proclaimed a number of new councils through the amalgamation of existing councils via proclamation intended "to make consequential savings" (Office of Local Government NSW, 2016, p.1). A further group of councils was identified for amalgamation, pending the outcome of legal proceedings to reduce the number of councils from 152 to 122. In July 2017, the NSW state government announced that the amalgamation of further councils would not be going ahead (Glanville & Stuart, 2017). Those councils that were amalgamated underwent significant change during the data collection period, including: determining corporate systems; integrating old systems; and undergoing workplace changes and redundancies (Allers & Geertsema, 2016). The

amalgamated councils included in this study would have experienced similar change-related impacts. The data obtained from these councils was based on the participant's understanding of the systems in place at the time of data collection. In some instances, this was the system used by their previous council; in others, it was a new system. The performance of amalgamated and non-amalgamated councils has been presented separately in the results section of this paper.

3 RESEARCH METHOD

The research methodology comprised a mixed-methods approach. Qualitative semi-structured interviews were incorporated using a new PMMM, which were then converted to a quantitative maturity score. Maturity scores were determined for the nine KAs and for NSW local government overall.

3.1 LGPM3 MODEL

A new PMMM was proposed as an assessment tool for use in NSW local government, known as the Local Government Project Management Maturity Model (LGPM3). The LGPM3 uses nine of the ten Project Management Institute (PMI) knowledge areas (KAs). The use of some or all of the PMI KAs to assess maturity has been documented in the project management literature (see for example: Brookes et al., 2014, Khalema, Van Waveren, & Chan, 2015, Rasid et al., 2014, Stroe et al., 2016). Of the ten KAs, procurement management was not assessed, as the NSW state government requires councils to adhere to auditable prescribed procurement processes, which resulted in the tailoring of the model. The model also sought to provide a simple assessment method of organizational maturity, which, whilst possible with established models, required higher levels of complexity in the assessment. The LGPM3 was developed based on existing models: the Capability Maturity Model Integration (CMMI®); Portfolio, Programme and Project Management Maturity Model (P3M3®); Organizational Project Management Maturity Model (OPM3®); and Kerzner's Project Management Maturity Model (KPM3®). As with the established models, the LGPM3 identifies areas for organizational improvement in relation to project management processes and procedures. Organizations can advance through the levels as their project management maturity increases. The five levels of LGPM3 are shown in Table 1.

Level of Maturity	LGPM3 Descriptor	Based on
1	Initial	CMMI®/P3M3®
2	Standardized	OPM3®
3	Measurement	OPM3®
4	Benchmarking	KPM3®
5	Continuous Improvement	OPM3®/KPM3®

Table 1. Maturity levels of the LGPM3 (Source: Authors).

3.2 POPULATION AND SAMPLE

Various methods have been used to categorize local government in Australia, primarily focused around performance reporting. The use of government categorical systems varies from state to state and not all systems adequately capture differences, such as population, demographics and industry (Drew & Dollery, 2015). For example, NSW councils vary in geographic area, from 5.7 square kilometers to over 50,000 square kilometers, with densities from 0.5 people per square kilometers to 6,600 people per square kilometer. The Office of Local Government (OLG) NSW has a five-category system that is based on multiple factors: Metropolitan; Metropolitan Fringe; Regional Town/City; Rural; and Large Rural (OLG NSW 2015).

The OLG NSW grouping provides an adequate representation of the different characteristics and has been adopted for this research. From within those five categories, purposive and convenience sampling was conducted on the basis of availability and access to participants (Maxwell, 1998).

Purposive sampling meant that three councils from each of the five categories were included to ensure a suitable cross-section of local government was represented. Including councils from each category was important due to the variation in characteristics of NSW councils (Pilcher & Dean, 2009). Having multiple councils from five different categories also improved the generalizability and validity of the research (Maxwell, 1998).

Four councils responded to the request to participate from the Metropolitan category, which resulted in 16 councils contributing to the research study.

3.3 DATA COLLECTION

The data was collected in the financial year following the proclamation of new councils by amalgamation. The employees contacted were associated with managing projects for their respective councils. Initial contact was made through a snowballing technique, via an organizational gatekeeper – someone who could suggest an appropriate employee based on defined selection criteria (Eriksson & Kovalainen, 2016). Semi-structured interviews were used, which had a mix of closed- and open-ended questions. The semi-structured interviews allowed flexibility in the data collection, ensuring a greater depth of information (Singleton & Straits, 2005). As the data collection involved a single source of information, negativity bias from self-reporting could have an effect. Negativity bias in self-reporting of public organization performance has led to data manipulation to avoid blame for inefficiencies (Drew, Grant, & Campbell, 2016; Kalgin, 2016). Self-reporting by government organizations has also been used to manipulate the presentation of results to present a more favorable impression (Taylor, 2011). In order to reduce negativity bias, individual employees and organizations were not identified, and results were aggregated. At the completion of the data collection, the information was converted by the researcher to a numerical project management maturity level using the LGPM3 methodology.

3.4 DATA ANALYSIS

The data was analyzed using descriptive statistics to determine averages and standard deviations for each KA and NSW local government. This qualitative approach allowed the researcher to describe certain characteristics of the population and the subsequent impact of various factors (Singleton & Straits, 2005). In addition, bivariate analysis was used to determine the relationships between the variables of maturity level and average total revenue. Bivariate analysis is used where an independent variable (revenue) may affect a dependent variable (maturity) (May, 2011). This involved calculating the Pearson's correlation coefficient (r). Using Microsoft Excel, the strength of the correlation was determined.

4 ANALYSIS

4.1 RESPONDENT CHARACTERISTICS

The response rate from the councils was 89%, with 16 out of 18 organizations responding to the request to participate. This is an excellent response rate. The selected participants represented a broad sample of NSW local government, from different age categories, hierarchical positions, genders, and amalgamated and non-amalgamated councils. The age profile of the participants was spread over four categories, with five in each age band of 30-40, 40-50, 50+, and one participant within the 20-30 age band. A minority (19%) had formal project management qualifications, with the average experience in the project management field of 12.2 years. The overall average experience in local government was 17.3 years, demonstrating that the group was well experienced. The majority of respondents (81%) were male and 75% worked in a council not affected by the 2016 NSW State Government amalgamations.

Furthermore, the respondent's hierarchical positions were distributed into three groups: project manager (officer level responsible for the day-to-day management of projects); manager (responsible for a small team and a number of projects or programs); and director (senior executive responsible for programs, budgets and large teams). Each of the hierarchical groups was represented with four participants from the project manager level, seven participants from the manager level and five participants from the director level.

4.2 PROJECT MANAGEMENT MATURITY LEVELS

Each of the 16 organizations was assessed against project management maturity descriptors using the LGPM3. The results were used to develop an overall maturity level for NSW local government, as well as maturity levels for each of the five OLG NSW categories. The overall project management maturity level for NSW local government was calculated as 3.4, on the 1 – 5 scale. The overall standard deviation was 0.45.

Compared to the NSW mean, three categories (Metropolitan, Metropolitan Fringe, Regional Town/City) were higher, with two (Rural and Large Rural) below the average. The Rural category (2.6) was the only category below three, with the other four categories having maturity levels between three and four, as shown in Figure 1.

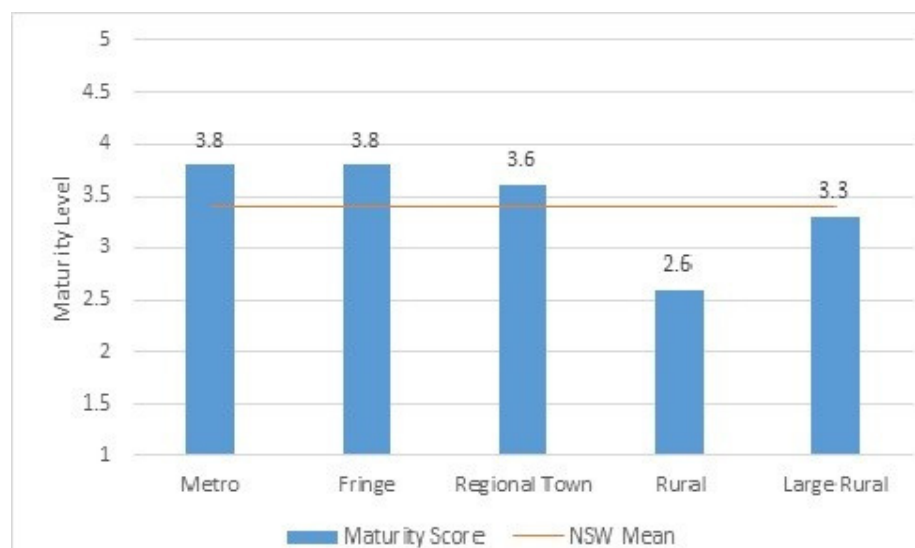


Figure 1. Overall project management maturity levels using LGPM3 (Source: Authors)

The spread of maturity levels can be demonstrated over the nine KAs when displayed as a radar graph (Figure 2) and as a line graph (Figure 3). The Rural category is the lowest or equal-lowest in eight out of the nine KAs, with the lowest score being for project integration. Conversely, the Metropolitan category was the highest-scoring in five of the nine KAs. Both Rural and Metropolitan had the highest standard deviations of one, with Regional Town having the lowest of 0.6. This shows that within the five categories, the scores were consistent across the KAs. The lowest scoring KA was Integration Management (< 3) and the highest scoring KAs were Quality Management and Stakeholder Management (> 4).

4.3 NSW COUNCIL AMALGAMATIONS

The data collected was sorted into the categories; amalgamated and non-amalgamated, to determine any difference in maturity levels that may have occurred due to the disruption of amalgamation. Between the two categories there was a

negligible difference with regards to average maturity level, 3.55 for non-amalgamated compared to 3.38 for amalgamated. The amalgamated councils were slightly lower which is to be expected for organizations undergoing significant change.

Figure 4 shows the project management maturity levels for the nine KAs, with amalgamated councils scoring higher for cost management, communications management and risk management. Non-amalgamated councils scored higher for integration management, scope management, time management, human resources management and stakeholder management. Both categories were almost identical for quality management (4.25 for amalgamated and 4.2 for non-amalgamated). The largest difference between the two categories was for human resource management (1.25).

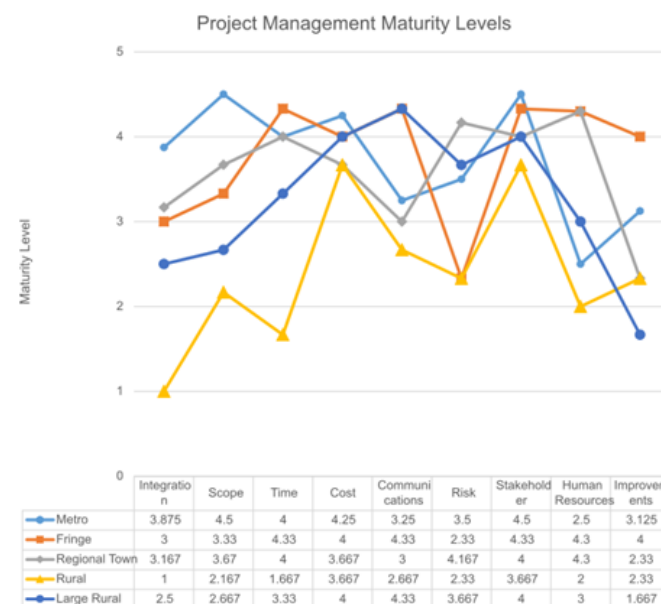


Figure 3. Project management maturity levels for all OLG categories over nine KAs (Source: Authors)

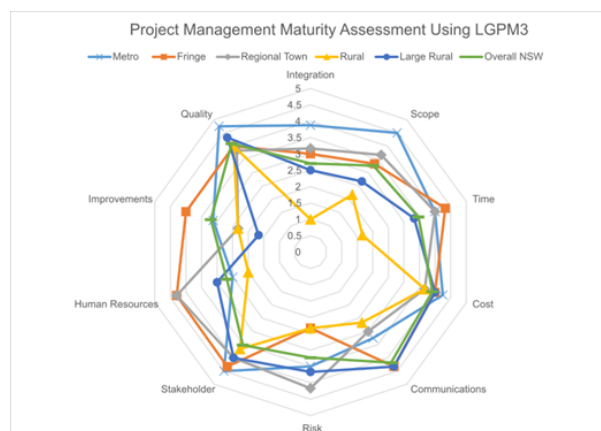


Figure 2. Radar graph of maturity levels over nine KAs (Source: Authors)

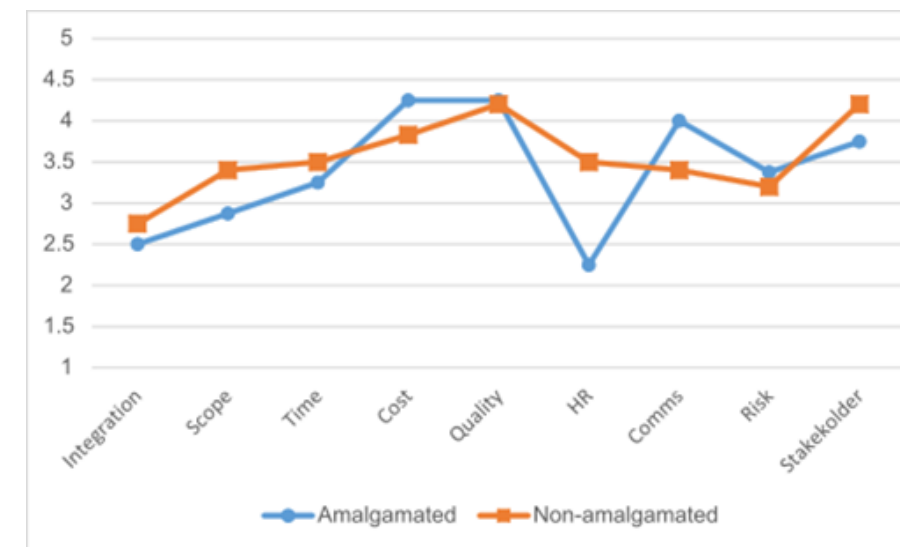


Figure 4. Project management maturity levels for amalgamated and non-amalgamated councils over the nine KAs (Source: Authors)

4.4 ORGANIZATIONAL CHARACTERISTICS

In addition to respondent characteristics, an average Full-Time Equivalent (FTE) number was calculated for each organizational category. The FTE is a measure used and reported in the local government where one FTE is the full-time workload for one employee. The Metropolitan and Metropolitan Fringe council groups both had over one thousand FTE (1058 and 1294 respectively) with the Rural council having less than one hundred (89). As well as FTE, the average total revenue for each category was determined from the Report on Local Government (Audit Office of NSW, 2018). The distribution of FTE and the average total revenue for each category are shown in Figure 5. The categories with higher FTE's also have higher total revenue. More revenue allows more resources, either staff or systems, to manage a larger number of projects with higher complexity. For example, according to Cobo-Benita et al., (2016) increased organizational size (number of employees) impacted the success of innovation projects in Spain.

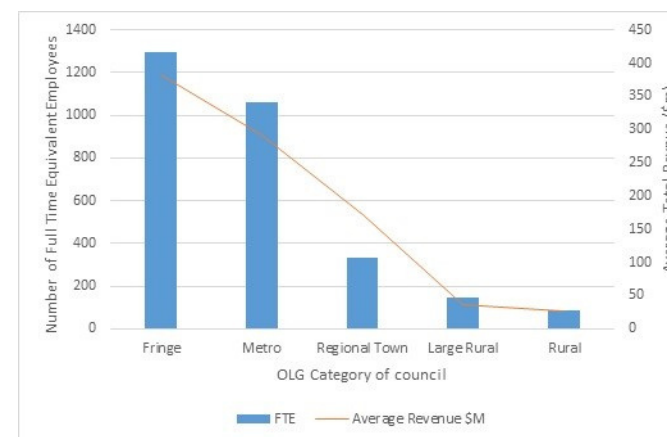


Figure 5. Average employee FTE and Average Total Revenue for each OLG category (Source: Authors, adapted from Audit Office of NSW, 2018)

4.5 RELATIONSHIP BETWEEN VARIABLES

The value of Pearson's correlation coefficient, in this case, is 0.83, indicating a positive, linear and large correlation between project management maturity and organizational revenue.

Project management maturity has been described as the application of a methodology and associated processes (Kerzner, 2009). In light of that definition, an organization with higher revenue is more likely to be able to afford and implement a structured project management methodology and develop or implement associated processes. This, in turn, would lead to a higher maturity score, as shown by these results. The result of higher maturity in larger organizations is also supported in the literature. For example, in a study of three international organizations from Japan, India, and the USA, those with larger projects had formalized project management processes (higher maturity) and were more likely to complete projects within cost and time parameters (Anantatmula & Rad, 2018). Another study of seven organizations from the manufacturing and engineering industries found that larger organizations tend to be more likely to have higher levels of project management maturity when compared to smaller organizations (Brookes et al., 2014). Similarly, in an Australian context, the size of a federal government agency was found to be related to project management maturity, with larger organizations being more mature (Young, Young, & Zapata, 2014).

5 CONCLUSION

This research aimed to establish the project management maturity levels of NSW local government and to explore factors that lead to increased project success. Improving public project success reduces inefficiency and wastage of funds, which are both focus areas of NPM reforms and the OLG NSW. To obtain the necessary data, a two-stage collection process was used.

A new industry-specific model (LGPM3) was used to assess 16 NSW councils. The councils were grouped into five OLG NSW categories based on multiple criteria and each was assessed over nine PMI KAs. Councils were divided into amalgamated and non-amalgamated. The semi-structured interviews from the LGPM3 were converted into quantitative maturity scores.

The overall maturity score for the industry was 3.3 on a 1 – 5 scale. The Rural category scored lowest or equal-lowest in eight out of nine KAs, and the Metropolitan category scored highest in five of the nine KAs. Amalgamated councils (3.38) had a slightly lower score than non-amalgamated, consistent with an organization undergoing major changes. The greatest difference between amalgamated and non-amalgamated councils was for human resource management, reflecting the focus of amalgamated organizations on embedding new systems and processes rather than project delivery. Using the LGPM3 maturity scores and Pearson's Correlation Coefficient, a positive, linear and large correlation (0.83) between project management maturity and organizational revenue was found.

The main contribution of this study is the determination of project management maturity levels for NSW local government, and the subsequent finding that organizational revenue is related to maturity levels. In addition, the results identified that the Rural and Large Rural categories had the lowest project management maturity levels suggesting greater resources or revenue may be required for maturity level improvement in order to improve project outcomes. One common argument for improving council performance is through amalgamation. This research found no significant difference for eight KAs between the project management maturity of amalgamated or non-amalgamated councils. In the remaining assessed KA amalgamated councils had a lower maturity score. With the results from this study, councils can demonstrate their effectiveness and efficiency in project management maturity, and the argument for amalgamation in local government in NSW for higher performance has not been supported by the data.

The study is limited to the state of NSW due to the differing local government laws for each state and territory in Australia.

Further application of the LGPM3 to local government in Australia and internationally will aid the refinement of the model. Refining and applying the model can lead to the identification of project management maturity levels, and the associated improvement areas. In addition, further research should be undertaken in regard to non-process factors such as trust, teamwork, and culture in NSW local government as these have been shown to influence project management maturity (Pasian, 2011). Finally, the role of self-reporting bias needs to be investigated, as self-reporting by government organizations has been shown to be used to manipulate results towards a favorable result (Kalgin, 2016; Taylor, 2011). Independent assessment of the organizations is required to remove any potential for bias due to the self-reporting nature of the current assessment method.

Further research is planned to examine areas in addition to revenue that may impact on successful project outcomes such as employee engagement.

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