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41. IS Development and Acquisition: The Use of Standard Methods

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Abstract

While standard methods have long been used in an effort to improve the IS development process and outcomes, recently their relevance in a changing development environment has been questioned. A Web-based survey of 106 New Zealand organisations was conducted to obtain an updated assessment of standard method use and to compare practices in New Zealand with those reported elsewhere. Levels of standard method use continue to be high, although methods are often used in a pragmatic or ad hoc way. Organisations that reported using standard methods perceived them to be beneficial, and generally disagreed with most of the published limitations of standard methods.

Keywords: IS development, Standard methods, Empirical survey, Comparative study

Introduction

A standard method of information systems (IS) development is a formal or documented set of procedures for directing or guiding IS development, with a focus not just on software development, but on the analysis, design and implementation of the whole system (Wynekoop and Russo 1995). Each standard method embodies a set of guiding principles and is based upon a particular philosophy, paradigm or approach to IS development. Usually, a method is supported by a set of preferred development techniques and tools (Fitzgerald et al. 2002; Iivari and Maansaari 1998; Wynekoop and Russo 1995; 1997).

According to much of the IS literature, use of an appropriate standard method can improve both the development process and its outcomes, especially in large or complex IS projects (e.g. Butler and Fitzgerald 1999; Chatzoglou 1997; Kim and Peterson 2003; Wixom and Watson 2001). A standard method is believed to facilitate the development process by supplying an element of control over aspects such as the sequence of development activities, project management, cost allocation, project team composition and user participation (Lyytinen and Hirschheim 1987). Relative to other factors influencing IS development, however, use of a standard method has not usually been regarded as a primary mechanism for improving IS project outcomes (Barry and Lang 2003; Mathiassen and Puro 2002).

Since the late 1990s, various researchers and practitioners have questioned the relevance of traditional standard methods (and their underlying concepts), particularly in the modern IS development environment of short-term business needs, rapid application development, Internet and multimedia applications, and different IS acquisition options (Avison and Fitzgerald 2003; Fitzgerald 2000; Fitzgerald et al. 2002; Fitzgerald et al. 1999; Kiely and Fitzgerald 2003). Many organisations are trying new methods, rejecting the use of methods altogether, or using alternatives to traditional in-house IS development, such as incremental development or continuous redevelopment of IS, contingent use of individual tools and techniques, packaged software acquisition or outsourced IS development (Avison and Fitzgerald 2003; Madsen and Kautz 2002; Truex et al. 1999).

Given the changing IS development environment, empirical knowledge of the current nature of IS development practice – such as standard method use – is needed (Barry and Lang 2003; Ljung and Allwood 1999). Surveys are a useful tool for gathering cross-sectional descriptive information from a large sample (Fitzgerald et al. 1999; Wynekoop and Russo 1995; 1997). This paper presents the results of a survey of recent IS projects in New Zealand organisations, in order to obtain an updated assessment of actual standard method use and to compare that practice with standard method use in other countries.

The remainder of the paper is structured as follows. First, prior empirical studies of standard method use are reviewed. The development of the survey instrument is then outlined, along with the data collection procedure used in this study. Subsequent sections present and discuss the results of the survey, before some conclusions are made about the findings.

Prior Studies of Standard Method Use

Prior empirical studies of standard method use suggest that generally more organisations use a standard method than not (Table 1). It should be noted, however, that organisations claiming to use a standard method often use more than one method (Barry and Lang 2003; Schambach and Walstrom 2002-2003). Further, they may not use a method in all their IS projects (Wynekoop and Russo 1995).

Table 1: Reported Use of Standard Methods

Study	% organisations using a method	% method users using commercial method	% method users using in-house method		% method users using method as specified
			Total	Based on a commercial method	
UK (Fitzgerald et al. 1999)	57	11	89	30	
UK (Eva and Guilford 1996)	76				17
UK (Hardy et al. 1995)	82	54	46		12
UK (Wastell and Sowards 1995)	65	58	42		
Ireland (Kiely and Fitzgerald 2002)	62	32	66		19
Ireland (Barry and Lang 2001; 2003)	75	24	76		
Ireland (Fitzgerald 1998)	40	35	64	29	42
US (Russo et al. 1996)	80	21	79	37	6
Finland (Iivari and Maansaari 1998)	73	47	47	44	
Brunei (Rahim et al. 1998)	67		58		
New Zealand (Taylor 2000)	85				

There are many reasons why a particular standard method might be used in a given IS project. It may be historical practice within an organisation or a policy requirement, or may depend on the specific project (Chatzoglou 1997; Fitzgerald et al. 2002; Wynekoop and Russo 1995). The decision may be made by one of the stakeholder groups such as top management, the IS function, or users (Chatzoglou and Macaulay 1996; Madsen and Kautz 2002).

Standard methods may be commercially available or developed within an organisation (possibly based on a commercial method) (Wynekoop and Russo 1995). A reasonable proportion of organisations develop their standard methods in-house rather than using commercial methods (Table 1). It has been argued that traditional commercial methods may be unsuitable for the development of modern applications (e.g. multi-media and web-based applications) (Avison and Fitzgerald 2003; Barry and Lang 2003; Kiely and Fitzgerald 2003).

Standard methods can provide broad guidelines that inform developers' actions and/or detailed specifications of what needs to be done. The former are often favoured by more experienced developers, while the latter can be perceived as being useful by inexperienced developers (Fitzgerald 1997; Fitzgerald et al. 2002). Table 1 suggests that, rather than being strictly adhered to, standard methods are generally being adapted to fit the specific characteristics of an organisation or project. Indeed, strict adherence to a method does not seem to match how developers work in practice and may even be counter-productive (Kautz and McMaster 1994; Wastell 1996).

Varying levels of adherence notwithstanding, a number of empirical surveys and case studies have highlighted that standard methods are largely perceived to be beneficial (e.g. Chatzoglou 1997; Fitzgerald 1997; Iivari and Maansaari 1998; Kiely and Fitzgerald 2003; Nandhakumar and Avison 1999; Schambach and Walstrom 2002-2003). For example, the use of a standard method is believed to aid successful IS development, by facilitating processes such as project management and control (e.g. enabling the interchange of developers, or containing costs and development time), requirements determination, user participation, and communication, thereby improving productivity of the project team and leading to a high quality IS that better meets user requirements (Fitzgerald 1998; Rahim et al. 1998).

Standard methods are, however, not without their problems, sometimes perceived as being difficult or time-consuming (expensive) to learn or use, providing poor coverage of the IS development lifecycle, and not matching how systems are developed in practice (Fitzgerald 1998; Hardy et al. 1995; Kiely and Fitzgerald 2002; Rahim et al. 1998). They are also perceived as being difficult to adapt or being too technically focused (ignoring people-related factors, inhibiting user participation, constraining developer creativity and flexibility, or ignoring developer's knowledge and experience) (Fitzgerald 1998; Wastell 1996).

Research Approach

In 2004, a Web-based survey of New Zealand organisations was conducted in order to gain an understanding of IS practitioner opinions and practices in relation to the use of standard methods. In order to ensure currency of the results and to ensure more accurate recall by respondents, the survey focused on IS projects undertaken and completed in the three calendar years 2001 to 2003. Respondents were asked to specify the total number of IS projects undertaken by their organisation during this period, and then to classify them in terms of their cost (as a proxy for size), their IS development or acquisition type, and the levels of standard method use in the development process. For those projects where a standard method was not used, respondents were asked to specify the reason for this.

Respondents who had used a standard method in any of their IS projects were then asked a series of questions about the nature of that use, including the reason for selecting the standard method(s) used, the origin of the standard method(s) used, the names of any commercial or published standard methods that were used, the level of detail in the standard method(s), and how frequently the standard method was used as specified. Respondents were also asked to indicate their level of agreement with various positive and negative statements about the use of standard methods that reflected the benefits and limitations of standard method use identified earlier. In answering these questions, respondents could choose from a five-point Likert-type scale comprising "Strongly disagree", "Disagree", "Neutral", "Agree" and "Strongly Agree" options, or alternatively a "Don't know or Not applicable" option. All respondents were asked to identify any changes that they expected to occur to standard method use in their organisation in the subsequent three years. Finally, all respondents were

asked to specify their official position and to characterise their organisation in terms of business sector, organisational size, and the location and size of its IS function.

The survey was administered to 460 public and private sector organisations with 200 or more FTEs listed in either the New Zealand Business Who's Who online, New Zealand Management Magazine's Top 200 New Zealand companies for 2003 or MIS Magazine's Top 100 organisations. The intention was to target New Zealand organisations large enough to require IS beyond standard desktop applications and to have a need for computerised integration of business functions. The manager responsible for IS project work within the organisation was targeted as the respondent in order to provide both an organisational view and one informed by knowledge of the organisation's IS development practice. Although single-respondent managerial surveys have their limitations with respect to distance from actual development work (Wynekoop and Russo 1997), managerial level respondents are more likely to be knowledgeable about organisation-wide issues (Doherty and King 2001).

In total, 113 responses were received (one per responding organisation) for a response rate of 25%. Seven responses were unusable, leaving 106 responses that formed the basis of subsequent data analysis (although not all respondents answered all questions). These respondent organisations are characterised in Table 2.

Table 2: Characteristics of Respondent Organisations

Business Category	% orgns (n=106)	Organisational size (FTEs)	% orgns (n=106)
Communications & Media	2	200 to 499	43
Construction & Engineering	8	500 to 999	25
Education, Health & Community Services	16	1000 to 1999	13
Electricity, Gas & Water Utilities	3	2000 or more	19
Finance, Insurance & Banking	8		
Government & Local Government	12	Size of IS function (FTEs)	% orgns (n=104)
IT, Business, Legal & Property Services	8	Fewer than 4	23
Manufacturing & Processing	24	4 to 9	30
Primary Industries	1	10 to 19	9
Tourism, Accommodation & Food Services	3	20 to 49	13
Transportation, Logistics & Storage	6	50 to 99	16
Wholesale & Retail Trade	11	100 or more	10
Respondent's role	% orgns (n=106)	Location of IS function	% orgns (n=106)
Chief Information Officer	22	Centralised	78
IS Manager	45	Distributed	12
Development Manager	9	Mainly outsourced	8
Project Manager	8	Don't know	1
System Administrator	5		
Non-IS Manager	10		

Dillman's (2000) principles for Web surveys were followed to minimise the effects of measurement, non-response, coverage and sampling errors. Since the survey was not exploring causal relationships, internal validity was addressed primarily through the questionnaire design and survey implementation. The survey was pre-tested and then pilot tested on several organisations, resulting in only a few minor modifications to question wording. Construct validity was not addressed formally through statistical analysis. While it is possible that a particular question did not measure the underlying concept of interest, the survey data was checked to ensure that each response was valid, that only one response was received from each organisation, and that the business category and organisational size data

were sensible. Each response was checked to ensure that the correct sections had been answered, and for consistency of the answers between sections of the questionnaire. With respect to external validity, considerable effort was taken to ensure that all eligible organisations were included in the target population, that a large proportion of the target population was sampled, and that respondent participation was maximised. As the intent was to consider only New Zealand organisations, the results of the survey cannot be generalised further afield.

Results and Analysis

IS Projects

Summary information relating to the IS projects reported on in the survey is presented in Table 3. The number of projects completed from 2001 to 2003 varied considerably, ranging from 0 to 230 projects per organisation, for an average of 7 projects per organisation per year. The reported projects also spanned a range of sizes as measured by overall project cost.

Table 3: IS Project Details

Number of projects/organisation	% orgns (n=105)	Overall project cost	% projects (n=2215)
0	5	\$1000 or less	7
1-5	39	\$1,001 - \$10,000	20
6-10	20	\$10,001 - \$50,000	27
11-20	13	\$50,001 - \$100,000	18
21-50	12	\$100,001 - \$500,000	16
51-100	7	\$500,001 - \$1,000,000	7
More than 100	4	\$1,000,001 or more	5
		Don't know the project cost	1

In terms of the type of IS development or acquisition, the average development profile of organisations in this study has a higher level of packaged solutions and a lower level of bespoke development than prior empirical studies (Table 4).

Table 4: Comparative Development Profile of Survey Respondents

	Type of IS development or acquisition					
	% in-house development	% outsourced development	% packaged software Total	Customisation		
				Little/no	In-house	Outsourced
New Zealand						
This study†	27	14	59	23	16	20
MacDonell (1994)	29	27	44			
McAulay (1987) §	56	8	27			
Ireland						
Fitzgerald (1998)	47	13	40			
UK						
Fitzgerald et al. (1999)	45	15	40	23	17	
Wastell & Swards (1995)	55		42			
Doherty & King (2001)*	50	50				
† Projects reported in each category were expressed as a proportion of an organisation's total projects, then averaged over the 100 organisations reporting projects.						
§ Cited in MacDonell (1994). McAulay, K. (1987). Information systems development and the changing role of MIS in the organisation. In <i>Proceedings of the 1st New Zealand MIS Management Conference (March, Wellington/Auckland)</i> (pp. S1.1-S1.16).						
* Estimated from reported ranges of in-house developed IS						

While the level of outsourced bespoke development is consistent with some prior overseas studies (Fitzgerald 1998; Fitzgerald et al. 1999), the level of in-house bespoke development is lower for this study. Consideration of the New Zealand data shows a continuing trend towards packaged solutions and away from bespoke development. According to MacDonell (1994), this may stem from the increasingly availability of quality software packages and the relatively high cost of in-house development.

Extent of Standard Method Use

The extent of reported standard method use in the IS development process for the projects surveyed is shown in Table 5. Standard methods were used in at least part of the development process in 91% of the reported projects, and by 92% of organisations. Compared to their smaller counterparts (200-499 FTEs), larger organisations (500 or more FTEs) reported significantly more projects in which a standard method was used for more or less all (Mann-Whitney $U=884.5$, $p=0.026$) or for only part ($U=959.5$, $p=0.051$) of the development process. This is consistent with prior studies that have shown method use to be correlated with organisation size (Fitzgerald 1998; Kiely and Fitzgerald 2002; Russo et al. 1996; Urban and Whiddett 1996; Wastell and Sowards 1995).

Table 5: Extent of Standard Method Use

	% projects (n=2026)
Standard method not used	9
Standard method used for only part of development	13
Standard method used for more or less all of development	77
	% orgns (n=99)
Standard method never used	8
Standard method used	92
Standard method not used in at least some projects	25
Standard method used for only part of development in at least some projects	36
Standard method used for more or less all of development in at least some projects	85

This study shows higher reported levels of standard method use than prior empirical studies. For example, the proportion of reported projects in which a standard method was not used (9%) is lower than the 31% reported for both the UK and the US (Chatzoglou 1997; Russo et al. 1996). The 92% of organisations that reported using a standard method in this study is higher than that previously reported (40% to 85%, with an average of 69%, see Table 1). Finally, the 25% of organisations that reported doing at least some of their IS development without using a standard method is lower than the 46% reported by Russo et al. (1996).

In those projects where no method was used, the main reasons given were related to the nature of the project (e.g. the project was small or non-critical, was a packaged solution involving little or no customisation, or control of the project was outside the IS function) or to organisational practice (e.g. the organisation had an informal or ad hoc approach towards development or no method was in place in the organisation). These reasons, which are consistent with those identified in prior studies (Fitzgerald 1998; Fitzgerald et al. 2002; Huisman and Iivari 2002; Kiely and Fitzgerald 2002; 2003), suggest that organisations may choose to not use a method in a given project for pragmatic reasons, rather than because of fundamental problems with the methods themselves.

Nature of Standard Method Use

Of the 92 respondent organisations that had used a standard method to some extent, 80 answered questions related to the nature of that use in their actual projects. Their responses form the basis of the following analysis (Table 6).

Table 6: Nature of Standard Method Use by Method Users

Reason for selecting method	% orgns (n=79)	Level of detail	% orgns (n=73)
Organisational policy	27	Only broad guidelines	38
Historical practice in the organisation	18	Only detailed specifications	21
Fit with project characteristics	16	Broad guidelines & detailed specifications	41
Developer familiarity with method	14		
Ease of use of method	11	Extent of method use	% orgns
Choice of external development company	6		(n=67)
Quality of support for method	4	Always used as specified	18
Other	4	Often used as specified	63
		Sometimes used as specified	19
Most common method origin	% orgns (n=71)	Never used as specified	0
In-house method	32		
In-house, based on commercial method	49		
Commercial or published method	18		

Just over half of the respondents (51%) chose their standard method(s) for organisational reasons (either because of an organisational policy, historical practice within the organisation, or the choice of an external development organisation). A further 15% chose their method(s) because of the characteristics of the method (ease of use or quality of support) and 14% because of developer familiarity with the method. This is consistent with Chatzoglou & Macaulay's (1996) observation that methods are often chosen for reasons of history and familiarity (rather than because of their characteristics or relative advantage). Only 16% of the respondents chose their method(s) because of its fit with the project characteristics, providing some level of support for Chatzoglou (1997), who suggested that developers are using methods for all but the correct reason – namely, their suitability for the project.

For 81% of the responding method users, the methods they used were developed in-house, (Table 6). These findings are consistent with earlier empirical studies, which show high proportions of organisations using in-house developed methods (42% to 89%, with an average of 63%; see Table 1). Commercial methods in some form are being used by the organisations in this study in proportions (67%) comparable to Fitzgerald (1998) (64%) and Russo et al. (1996) (58%), but not Iivari and Maansaari (1998) (91%). In contrast to other empirical studies (Fitzgerald 1998; Fitzgerald et al. 1999; Russo et al. 1996), this study found that in-house methods were more commonly based on a commercial method than not, although not to the same extent as in Iivari & Maansaari (1998). The preference for in-house methods may arise because they are often perceived to be cheaper, more flexible, and better suited to a given organisational context than commercial methods (Fitzgerald et al. 1999; Kiely and Fitzgerald 2002; Kiely and Fitzgerald 2003). Nonetheless, that commercial methods formed the basis of the in-house methods used by so many organisations suggests that these organisations perceive some value in using elements of commercial methods, rather than developing their methods from first principles.

The prevalence of methods that reportedly incorporate broad guidelines for development (79% of respondents) fits with the argument that methods should provide guidance to inform and support developers (Fitzgerald 2000; Fitzgerald et al. 2002; Vidgen et al. 2004).

Nonetheless, the proportion of organisations who reported using methods that incorporated detailed specifications (62%) suggests that some people believe that the detail may be of value, e.g. for less experienced developers (Fitzgerald 1997; Fitzgerald et al. 2002).

Only 18% of respondents claimed to always use their method(s) as specified. This figure is comparable with the majority of values reported in the literature (6% to 42%, with an average of 19%; see Table 1), suggesting that a large proportion of organisations at least sometimes adapt their methods to specific projects or do not use them to the letter. For example, one respondent commented that sometimes the standard method was “used more at the beginning, and then as we got closer to the deadline we tended to do things quicker and less rigidly”. Taylor (2000) suggests that New Zealand organisations tend to follow an ad hoc, pragmatic approach to development, an attitude perhaps reflected in the results obtained in this study.

Thirty-five respondents supplied the names of commercial or published standard methods that had been used in their IS projects (Table 7). These generally fell into three main groups. The largest group comprised methods derived from a vendor or other organisation (including government organisations). Another group were standard methods built around particular approaches to the IS development process. The third group comprised project management methods. Seven respondents reported using both project management methods and standard methods from the other two groups. The inclusion of project management methods by respondents may reflect changing IS development practices (e.g. higher levels of package acquisition or outsourced development, where the emphasis shifts from traditional standard development methods to project management). As one survey respondent commented, “Project Management and getting the right people ... to project manage any IS project is key”.

Table 7: Commercial or Published Standard Methods Used

Methods related to development approaches	n	Methods derived from organisations	n
Rational Unified Process	6	External consultants	6
Waterfall	5	Enterprise systems (e.g. SAP)	4
Agile Development	3	Oracle	4
RAD	3	IBM	3
SSADM	2	Government agencies	3
Total	19	ISO	2
		Other	1
		Total	23
Project management methods		Other standard methods	3
PMI/ PMBOK	7		
BearingPoints	2		
Prince	2		
Other	2		
Total	13		

Benefits and Limitations of Standard Method Use

Respondents were asked to indicate their level of agreement with various positive statements about the use of standard methods in their IS projects undertaken between 2001 and 2003. These statements are shown in Table 8, with the levels of agreement observed in this study comparing closely with findings in other studies (Hardy et al. 1995; Rahim et al. 1998). A high proportion of respondents agreed that standard method use *facilitated successful IS development, ensured the developed IS met user requirements and led to delivery of a high quality system*. The respondents also tended to agree that use of a standard method assisted in aspects of the IS development process, particularly in relation to *requirements definition, project control, and communication between developers and users*. Overall, respondents were

less convinced that using a standard method *allowed movement of developers between IS projects or increased productivity of the project team.*

Table 8: Benefits of Standard Methods: Results and Comparative Rankings

Role of standard method use	This study		Comparative ranking				
	n [†]	% Agree [§]	This study	Hardy et al. (1995)	Rahim et al. (1998)	Fitzgerald (1998)	Johnson & Hardgrave (1999)
Total number of factors ranked			12	8	9	10	9
Facilitated successful IS development	78	90	1				
Ensured the developed system met user requirements	79	87	2	3	4	*	
Ensured well-defined user requirements	78	79	3				6
Facilitated effective project control	79	76	4		9	1	
Led to the delivery of a high-quality system	79	76	5	4	7	*	
Facilitated effective communication between developers & users	79	76	6		2		7
Facilitated user participation in development process	78	71	7	5	3		
Facilitated effective communication among developers	74	70	8		5	*	
Ensured timely development of the system	79	67	9	8		*	8
Enabled us to manage costs effectively	79	67	10			*	
Allowed movement of developers between projects	67	49	11			*	
Led to a high level of productivity of the project team	77	47	12	6	1		3

[†] Excludes any 'Don't know or Not Applicable' responses
[§] % respondents who agreed with the statement (chose 'Agree' or 'Strongly Agree')
* Surveyed but not reported

A comparison of the empirical literature shows that the importance of standard methods to *ensuring that the developed IS meets user requirements* identified here is supported by other studies (Hardy et al. 1995; Rahim et al. 1998). As in this study, the *project management* role of standard methods was perceived to be of relatively high importance in Fitzgerald's (1998) study, but not in that of Rahim et al.'s (1998). The highest ranked benefits in the Rahim et al. (1998) study, the role of standard methods in improving *productivity* (see also Johnson and Hardgrave 1999), *facilitating communication with users*, and *enabling user participation*, were ranked as less important in the current study.

Table 9 shows the respondents' level of agreement with various negative statements about the use of standard methods in their IS projects. At most, 25% of respondents agreed with a limitation, which is consistent with the overall beneficial perception of the use of standard methods identified above.

The highest ranked limitation in this study, about standard methods *not covering the entire development process*, is consistent with Hardy et al. (1995) and Rahim et al. (1998), who reported relatively high rankings for similar statements. The relatively high ranking reported in this study for standard methods being *difficult or time-consuming to learn or use* is consistent with other empirical studies that highlight the perceived negative effect of standard method use on project development times (Fitzgerald 1998; Hardy et al. 1995; Kiely and Fitzgerald 2002; Rahim et al. 1998), or that standard methods can be cumbersome (Barry and Lang 2003; Fitzgerald 1998) or require extensive training to use (Rahim et al. 1998). The low ranking given in this study to the perceived limitation that the standard method *did not match*

how systems are actually developed is consistent with Barry & Lang (2003), but contrasts with the findings of Fitzgerald (1998).

Table 9: Limitations of Standard Methods: Results and Comparative Rankings

	This study		Comparative ranking					
	n [†]	% Agree [§]	This study	Hardy et al. (1995)	Rahim et al. (1998)	Fitzgerald (1998)	Kiely & Fitzgerald (2002)	Barry & Lang (2003)
Role of standard method use								
Total number of factors ranked			8	7	4	10	3+	6
Did not cover the entire development process	75	25	1	2	3			
Ignored people-related factors in development	74	19	2			*		
Was difficult or time-consuming to learn or use	73	14	3	1,6	1,2,4	1,2	2	1,3,4,6
Constrained developer creativity and flexibility	73	14	4			*		
Was difficult to adapt to a specific situation	74	12	5			*		
Ignored developers' knowledge and experience	73	7	6			*		
Did not match how systems are actually developed	75	7	7			3		5
Constrained effective user participation in IS development	75	4	8					
[†] Excludes any 'Don't know or Not Applicable' responses [§] % respondents who agreed with the statement (chose 'Agree' or 'Strongly Agree') * Surveyed but not reported								

Proposed Changes in Standard Method Use

All respondents were asked to comment on proposed changes to the use of standard methods within their organisations (Table 10). The majority of respondents to this question (70%) indicated that standard method use would increase in some way in their organisations over the following three years, either as more frequent use of standard methods, the continuous improvement or refinement of existing methods, the expected introduction of standard methods in organisations, more formalised use of standard methods, and use of a greater variety of types of standard methods.

Table 10: Changes in Standard Method Use

	% orgns (n=69)
Little or no change	29
Less use of standard methods	1
More use of standard methods	70
More frequent use of methods	15
More formal use of methods	15
Refinement of existing methods	17
More types of methods used	9
Introduction of standard methods	15

These results are consistent with other empirical studies, which found that standard method use was unlikely to decrease and that relatively large proportions of organisations intended to increase their use of them (Barry and Lang 2001; Fitzgerald 1998; Schambach and Walstrom 2002-2003). Certainly, it would seem that in the majority of organisations that participated in this survey the practice of standard method use is institutionalised (or as one respondent

noted, "embedded in the culture" of the organisation), and that many of them perceive some value in using standard methods.

Conclusions

This study has provided an updated assessment of standard method use in IS development in New Zealand organisations based on empirical data from actual IS projects. The data provide empirical evidence of an increasing trend in software package acquisition (away from bespoke development) in New Zealand organisations. This trend may partially account for the inclusion of project management methods in the survey by some organisations.

Standard methods were used by 92% of the respondent organisations and in 91% of the reported projects. These levels are higher than those for other countries reported in the IS literature, and confirm the findings of an earlier New Zealand study (Taylor 2000). Consistent with prior studies, the data presented here showed a positive correlation between standard method use and organisational size.

Despite a comparatively high level of standard method use, the findings of this study support Taylor's (2000) suggestion that New Zealand organisations often use standard methods in an ad hoc and pragmatic way. For example, where a standard method was not used in particular IS projects, this was often because of the characteristics of the project or an informal organisational approach to development. Further, the majority of organisations using standard methods developed their own in-house methods (81%). Finally, only 18% of organisations that provided information on their extent of standard method use always used their method as specified, suggesting partial use or adaptation of standard methods in some IS projects.

The standard method users in this study were generally supportive of the value of those methods. The levels of agreement given to various benefits were generally high and are consistent with those reported in prior studies (Hardy et al. 1995; Rahim et al. 1998). The results are consistent with the role in facilitating IS development success attributed to standard methods in the IS literature (particularly in relation to effective project control and the delivery of a high quality system that meets users requirements). Respondents tended to disagree with the various limitations of standard method use presented to them.

Despite various criticisms made of standard methods in the IS literature, a significant proportion of organisations anticipated extending their use of standard methods. The overall conclusion is that standard methods continue to play an important role in relatively large New Zealand organisations. However, there appears to be some variation in how these methods are used in practice, suggesting a need for further research to explore the various dimensions of standard method-in-use (Fitzgerald et al. 2002; Mathiassen and Puroo 2002). It is hoped that the findings of this study will be of interest to researchers and practitioners monitoring IS development and acquisition in other national contexts. More comparative research is needed to establish whether the trends identified here occur at a wider regional or international level.

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