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A COMPARISON OF CANADIAN AND IRISH VIEWS ON A SET OF TRADITIONAL AND ADVANCED MANAGEMENT ACCOUNTING TECHNIQUES

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ABSTRACT

This study presents an analysis of the responses of accounting/financial management professionals regarding the usage of seven traditional and five advanced management accounting techniques. The respondents are senior accounting/financial executives employed in large Canadian companies and management accountants with membership of CIMA employed in Irish companies. The Canadian findings are consistent with the dominant usage of traditional techniques reported earlier for Ireland and suggest similar usage of management accounting techniques overall. The findings also suggest that the advanced techniques widely recommended in accounting texts and professional publications have not had a significant uptake in either country. In both countries, there are some techniques that differ in usage between small and large companies. For four traditional techniques and two advanced techniques there are very significant differences in usage between Canadian and Irish companies. Consistent results are found for analysis of the techniques individually and of traditional and advanced techniques as groups. Canadian and Irish companies can be differentiated based on their usage of management accounting techniques, even though there is an overall similarity in usage. Discriminant analysis using traditional techniques allows classification of companies as Canadian or Irish with a high level of accuracy, but the classification using advanced techniques is less reliable. In summary, the study shows that while there is a consistent pattern of usage in the two countries, there are also significant differences in the usage of specific techniques.

INTRODUCTION

Until the early 1990s, the state of management accounting practice had not been researched extensively. Kaplan (1986) advocated a role for empirical research in management accounting, while Anthony (1989) complained that 'information about management accounting practices is abysmally poor' (p. 18). Spicer (1992) highlighted the important role field research has to play in improving our knowledge about the effects of innovations in manufacturing practice on management accounting. Although the past ten years have witnessed a significant number of surveys of management accounting practices and some comparisons have been drawn between the findings from different studies, only a limited number of studies have carried out an international comparison on a combined set of survey data.

The present study uses a combined set of data from surveys in Ireland and Canada to investigate differences between the two countries. Early Canadian institutional and educational arrangements reflected the fact that the majority of the original Anglophone settlers came from Ireland, Scotland and England. In particular, the training for professional accounting was very heavily influenced by requirements in these countries and the contributions of educators and practising professionals who emigrated to Canada, although US influence has been increasing in Canada over many years. Changes in these areas, which impact on education, professional training and business practice, are of interest. The sample from Canada reflects larger companies while the Irish sample presents a more heterogeneous mix. This difference allows investigation of the impact of company size on accounting practices, an issue of some importance in practice and education. Finally, the inclusion of a significant number of traditional and new management accounting techniques in the two surveys allows investigation of their relative importance, as there has been a questioning of assertions as to the declining importance of traditional techniques and the increasing importance of new techniques.

This study is not seen as a benchmarking exercise for Ireland, but rather a comparison of practices in two countries whose educational and professional requirements, traditionally closely linked, have perhaps diverged in the last fifty years due to the effects of different economic spheres.

BACKGROUND

Single country surveys of general practices

The literature contains large-scale surveys of management accounting practices in many countries. Examples of these include a US survey by Cohen and Paguette (1991), a UK survey by Drury, Braund, Osborne and Tayle (1993) and Irish surveys by Nulty (1992), Clarke (1992, 1997) and Pierce and O'Dea (1998). In addition, there have been studies of management accounting practice in Japan by Scarborough, Nanni and Sakurai (1991), in Australia by Joye and Blayney (1991) and Chenhall and Langfield-Smith (1998), in Finland by Lukka and Granlund (1996), in Greece by Ballas and Venieris (1996) and in Canada by Richardson and Barker (2001). Carried out during a period of intense criticism of management accounting and the emergence of many new techniques and approaches, these survey findings represented a very useful addition to the literature by providing a broad picture of management accounting practices in each country.

The pattern emerging from these surveys shows a high degree of consistency across a range of countries, and this becomes evident when comparative statistics are drawn together and presented as, for example, in Horngren, Foster and Datar (1997). These comparisons are, however, based on separate studies and suffer from an inability to conduct more sophisticated analysis (such as investigating for differences in company size) that a combined set of data would allow.

Single country surveys of specific practices

In addition to these individual country surveys of general management accounting practices, a wide range of surveys has been undertaken in relation to specific techniques and practices, also in individual countries. For example, activity based costing has been surveyed in Canada by Armitage and Nicholson (1993), in Australia by Clarke and Mia (1993) and Corrigan (1996), in France by Bescos and Mendoza (1995), in the UK by Innes and Mitchell (1995) and Innes, Mitchell and Sinclair (2000), in Norway by Bjornenak (1997), in Finland by Malmi (1996), and in Ireland by Clarke, Thorley Hill and Stevens (1999). Target cost management in Japanese companies has been surveyed by Monden and Hamada (1991) and Tani, Okano, Shimizu, Iwabuchi, Fukuda and Cooray (1994), while trends in the development of product costing practices and techniques in Swedish manufacturing companies have been studied by Ask and Ax (1992), and in UK manufacturing companies by Bright, Davies, Downes and Sweeting (1992) and by Drury and Tayles (1994). Hoque, Mia and Alam (2001) report on an empirical investigation into the use of multiple measures of performance in manufacturing organisations in New Zealand.

These studies have been particularly helpful in providing evidence of usage of specific new and emerging techniques and the findings have tended towards a consistent pattern of low usage of those techniques. Again, comparisons have been drawn in the literature between adoption rates in different countries, but there has been little previous analysis of a combined set of survey data.

Multi-country surveys

When it comes to multi-country surveys of management accounting practice, the focus has been very much on specific areas, such as differences between Japanese and US budget and performance evaluation systems by Bailes and Assada (1991), the influence of culture on budget control practices in the US and Japan (Ueno and Sekaran, 1992), activity based costing in the food industry in the Netherlands and the US (Groot and Van Gool, 1996) and a US/UK comparison of just-in-time (Billesbach, Harrison and Croom-Morgan, 1991).

Horngren et al. (1997) draw on the research of others to produce a composite, comparative picture of management accounting practices in various countries in relation to such issues as activity based costing, standard costing, pricing, cost management methods, customer profitability analysis, just-in-time performance measures, capital budgeting, transfer pricing and non-financial measures of performance. In Bhimani (1996), there is country-by-country coverage of management accounting practices in eleven European countries, but without comparative analysis.

In a limited number of instances, the surveys have compared the usage and applications of a particular category of management accounting practice across various countries. Such studies include a study of US, Korean and Japanese accounting practices (Kim and Song, 1990), management accounting practices in the US and Japan (Shields, Chow, Kato and Nakagawa, 1991), a comparative analysis of Japanese and Australian cost accounting and management practices (Blayney and Yokoyama, 1991), and accounting in large engineering companies in Germany and the UK (Strange, 1991).

Many of the comparative pieces mentioned above do not involve the same in-depth statistical analysis of a combined set of survey data as is undertaken in this study.

The rationale for many of these studies stems from the major criticisms of management accounting made since the mid-1980s (Johnson and Kaplan, 1987; Kaplan, 1988, 1990) and a desire to discover the extent to which enterprises have adopted the growing range of "new" management accounting techniques that has emerged in recent years. These techniques place increased emphasis on customer focus, key success factors, activity based analysis and quality, while more detailed treatment of benchmarking recognises the importance of the external environment.

BASIS FOR THE CURRENT STUDY

The current study is based on a combined set of data collected from separate surveys in Canada and Ireland, already completed and reported elsewhere (Pierce and O'Dea, 1998; Richardson and Barker, 2001). In this study, the responses for a total of 12 management accounting techniques (seven traditional and five new) given by accounting executives in Canadian companies are compared to those given by management accountants in Irish companies.

The Canadian study was based on information obtained from senior accounting and marketing executives in large Canadian companies. It analyses the frequency of usage and perceived importance of selected management accounting techniques and finds that there is a high correlation between the results from the accounting and marketing executives. The most commonly used techniques fit into the traditional category, with the newer, more contemporary, techniques - which have been highly advocated in the professional literature and emphasised in current management accounting texts - not being widely used or considered important. An initial analysis of the relationship of management accounting techniques to organisational performance indicates some tentative support for the conclusion that higher performing companies are making more use of the newer management accounting techniques.

The Irish study involved a survey of management accountants to ascertain their perceptions regarding the usage of specified management accounting techniques in their companies. The findings relate to ten well-established, traditional techniques (e.g., budgets, variance analysis, cost-plus pricing) and ten of the more prominent "new" techniques (e.g., activity based costing, target costing, balanced scorecard). The findings in Ireland indicate that traditional techniques tend to dominate management accounting systems, with heavy emphasis on financial measures of control and performance evaluation. Usage of "new" techniques was found to be generally low, but tending to be highest in those companies reporting high usage of traditional techniques. Significant differences were found based on company ownership and size, with higher usage of both traditional and "new" techniques by multinational and large companies.

There are three differences between the two surveys that need to be addressed in order to justify their use for comparative purposes. There is a difference in the titles of respondents used in the two studies - senior accounting executives in Canada and management accountants in Ireland. However, it is felt that the management accountants in Ireland served in senior roles within their businesses. Therefore, it is likely that the respondents in the two countries perform comparable functions in terms of the choice of management accounting techniques to be used and their analysis for use in business decision making.

The objective of the study was to compare the use of management accounting techniques in the two countries, with particular emphasis on comparison of those techniques generically described as traditional and new. Because the initial studies were carried out independently, it was necessary to work with the available results. Fortunately, quite a few techniques were common to the two studies in both the traditional and new category. In order to ensure that the management accounting techniques used in this study are indeed comparable, only a fraction of those in the two surveys were chosen for analysis. These techniques were selected because they are generally well known and are clearly the same because the descriptions in the two surveys are identical or very close. They are also representative of the traditional and new classifications of management accounting techniques. This limited the number of techniques for comparison to seven traditional and five new techniques, as shown in **Table 2**.

Finally, the scaling in the two surveys is slightly different, although the verbal descriptions of reference points on the scales are substantially the same. As shown in the **Appendix**, two transformations of the Canadian responses (0 - 5 scale) to that used by the Irish survey (1 - 5 scale) were investigated. There are very small differences in the two transformations of the Canadian responses. In addition, the differences between them are statistically insignificant and therefore are unlikely to have any impact upon the general conclusions drawn in this study.

RESEARCH QUESTIONS

The purpose of this comparative study between Canada and Ireland is to investigate the differences between the two countries by examining the usage of a number of management accounting techniques. The following specific research questions are addressed:

1: *Are there differences between Canadian and Irish companies in the usage of management accounting techniques?*

We first examine the usage of management accounting techniques in Canada and Ireland. We next separate the management accounting techniques into two groups, traditional and new, and compare usage of these two groups in each country. Then we compare the usage of the individual management accounting techniques between Canada and Ireland.

2: *Can Canadian and Irish companies be distinguished based upon usage of management accounting techniques?*

Here, we examine whether the usage of management accounting techniques will allow identification of companies as Canadian or Irish. We do this separately for the traditional and new techniques.

3: *Are there differences between Canadian and Irish companies in the usage of management accounting techniques when size is taken into account?*

Since company size may be one source of difference in usage of management accounting techniques, we next include size as a covariate in our analysis of whether the usage of management accounting techniques differs between Canadian and Irish companies.

4: *Are there differences between large and small Canadian and Irish companies in the usage of management accounting techniques when the two countries are considered separately?*

Here we examine the Canadian and Irish companies separately with the goal of determining whether the impact of size on usage of management accounting techniques differs within each country.

RESEARCH METHODOLOGY

Data were collected by mail surveys independently in Canada and Ireland. Normal follow-up procedures to increase the response rate were used (Pierce and O'Dea, 1998; Richardson and Barker, 2001). Details relating to the samples are given in **Table 1**.

TABLE 1: GENERAL INFORMATION ON SAMPLE

Item	Canadian	Irish
General Sample Source	Canadian companies with accounting/finance and marketing functions	Irish companies with production and/or sales function
Specific Sample Source	Public: 500 largest companies plus every other one of next 500, ranked by sales/turnover Private: 300 largest companies	CIMA Republic of Ireland list of members
Size of Company	All relatively large	Large and small
Nature of Company	Indigenous and multinational subsidiaries	Indigenous and multinational subsidiaries
Individuals Sampled	Senior accounting / finance executives	Management accountants
Sample Size	85	108
Response Rate	23%	32.5%

The management accounting techniques examined in this study are those common to the independent studies of Canadian companies by Richardson and Barker (2001), and of Irish companies by Pierce and O'Dea (1998). There is a total of 12 management accounting techniques, which are presented in **Table 2**. The management accounting techniques studied here comprise seven traditional and five new techniques, following the classification by Pierce and O'Dea (1998).

TABLE 2: TERMINOLOGY FOR MANAGEMENT ACCOUNTING TECHNIQUES IN IRISH (P&O) AND CANADIAN (R&B) STUDIES

TERMINOLOGY IN P&O[1]	TERMINOLOGY IN R&B[2]
Traditional techniques	
Budgets	Master budgeting
Variance analysis	Variance analysis
ROI	Return on investment
Marginal costing	Variable costing/pricing
Cost-plus pricing	Cost-plus pricing
Flexible budgets	Flexible budgeting
Breakeven analysis	Break-even analysis
New techniques	
Quality cost analysis	Cost of quality
Activity based costing	Activity based costing
Target costing	Target costing
Activity based cost management	Activity based management
Lifecycle costing	Life cycle costing

1. *Pierce & O'Dea (1998)*
2. *Richardson & Barker (2001)*

Scale conversion – original Canadian scale to Irish scale

The surveys of Canadian and Irish companies were done independently and used slightly different scales to measure respondents' views on the frequency of usage of management accounting techniques. The original Irish (I) data were recorded on a five-point (1 – 5) Likert scale, while the original Canadian (OC) data were recorded on a six-point (0 – 5) Likert scale. In order to compare the data for the two countries, the original Canadian data were transformed to a five-point scale to be comparable to the Irish data. This involved first converting the original responses from the 0 – 5 to a 1 – 6 scale, and then transforming the latter to a 1 – 5 scale. Full details of the transformations can be found in the **Appendix**.

RESULTS

Results are reported separately for each of the research questions.

Q.1:Are there differences between Canadian and Irish companies in the usage of management accounting techniques?

Table 3 lists the mean responses of the Canadian and Irish companies for the 12 management accounting techniques (columns two and four), and ranks the techniques by the Canadian and Irish mean responses (columns three and five). The standard deviations are shown in parentheses. The techniques in the table are ordered by decreasing mean response for the Irish sample.

Casual observation suggests that the Canadian and Irish rank orderings are quite similar. The largest differences in ranking are for budgets and quality cost analysis, two of three techniques for which the Irish mean response exceeds the Canadian mean response. The Spearman correlation coefficient for the rankings by the two countries is 0.888 and is significant at the 0.000 level, which shows that the rankings are highly correlated. This indicates that the relative usage of the techniques in the two countries is very similar.

Further examination of **Table 3** shows that the top seven techniques in the rankings are traditional and the bottom five techniques are new (as defined in **Table 2** following Pierce and O'Dea, 1998) for both the Canadian and Irish companies. This probably reflects the fact that traditional techniques are more familiar and so easier to use. Further, the rankings within the group of traditional techniques are very similar, as are those for the group of new techniques. The correspondence of the rankings with the *a priori* classification of techniques as traditional or new suggests that the traditional techniques are relatively important and the new techniques are relatively unimportant for companies in both countries. This is consistent with findings from research in other countries. Chenhall and Langfield-Smith (1998), however, found that the adoption rates of new management accounting techniques are significantly higher in Australia than in the US, the UK and mainland Europe.

TABLE 3: CANADIAN AND IRISH MEAN RESPONSES (STANDARD DEVIATIONS) FOR THE INDIVIDUAL MANAGEMENT ACCOUNTING TECHNIQUES

	Canadian (C)		Irish (I)		C – I
	Mean	Rank	Mean	Rank	
Budgets	3.46	4	**4.54**	1	–1.08***
	(1.27)		(0.90)		
Variance analysis	4.41	1	4.08	2	0.33**
	(0.87)		(1.28)		
ROI	3.63	3	3.34	3	0.29*
	(1.04)		(1.35)		
Marginal costing	3.65	2	2.98	4	0.67***
	(0.95)		(1.24)		
Cost-plus pricing	3.15	6	2.97	5	0.18
	(1.29)		(1.37)		
Flexible budgets	2.50	7	**2.93**	6	–0.43**
	(1.16)		(1.49)		
Break even analysis	3.32	5	2.63	7	0.69***
	(0.91)		(1.13)		
Quality cost analysis	1.99	10	**2.35**	8	–0.36**
	(1.05)		(1.28)		
Activity based costing	2.28	8	2.00	9	0.28*
	(1.10)		(1.20)		
Target costing	2.10	9	1.98	10	0.12
	(1.16)		(1.19)		
Activity based cost management	1.96	11	1.87	11	0.09
	(0.94)		(1.13)		
Life cycle costing	1.87	12	1.41	12	0.46***
	(1.09)		(0.81)		

*Significance levels: ***0.01 **0.05 *0.10*

The standard deviations of the responses for usage of all techniques in both the Canadian and Irish samples are roughly 1. This indicates some dispersion in the responses as to level of use in the two samples. However, given that the sample size is about 100 in each case, the standard deviation of the sampling distribution is in the order of 0.1, and so the mean values for the two samples are probably close to the population means.

Table 3 lists the differences of the mean responses for usage of the management accounting techniques by the companies in Canada and Ireland (column six). The Canadian mean responses are higher than the Irish mean responses for nine of the 12 techniques, but the differences are on the whole relatively small. We next investigate whether the differences between the Canadian and Irish responses are statistically significant. Because the rankings of the management accounting techniques by mean response correspond with the *a priori* classification into a group of traditional techniques and a group of new techniques as discussed above, separate analyses using multiple analysis of variance (MANOVA) comparing the Canadian and Irish responses were done for each of these groups. **Table 4** lists the statistical significance of the difference in responses by the Canadian and Irish companies.

The rows of **Table 4** labelled Traditional/New Techniques as a Group show that there is a significant difference (at the 0.000 level) between the Canadian and Irish companies for both the traditional group and the new group of management accounting techniques. This observation leads to the initial conclusion that there are significant differences between the management accounting practices of Canadian and Irish companies. This conclusion is examined more closely in subsequent sections of the paper.

TABLE 4: MANOVA COMPARISON OF CANADIAN AND IRISH RESPONSES – SIGNIFICANCE OF DIFFERENCES FOR THE GROUP AND INDIVIDUAL MANAGEMENT ACCOUNTING TECHNIQUES

	Significance
Traditional Techniques as a Group (MANOVA)	0.000***
Traditional Techniques Individually	
Budgets	0.000***
Variance analysis	0.044**
ROI	0.037**
Marginal costing	0.000***
Cost-plus pricing	0.195
Flexible budgets	0.019**
Break even analysis	0.000***
New Techniques as a Group (MANOVA)	0.000***
New Techniques Individually	
Quality cost analysis	0.066*
Activity based costing	0.010***
Target costing	0.134
Activity based cost management	0.151
Life cycle costing	0.000***

*Significance levels: *** 0.01 ** 0.05 *0.10*

The rows for the individual management accounting techniques in **Table 4** show that there is a significant difference (at the 0.05 level or less) between the Canadian and Irish companies using MANOVA for six of the seven traditional but only two of the five new techniques, although one new technique is close to the 0.05 level. These results suggest that the initial conclusion of significant differences between the groups of traditional and new management accounting techniques for Canadian and Irish companies can be extended to the majority of individual traditional management accounting techniques but not to new management accounting techniques. This conclusion is also examined more closely in subsequent sections of the paper. **Table 3** shows that the Canadian responses are higher for four of the six significantly different traditional techniques and for both significantly different new techniques. An explanation for this requires further research.

Q.2:Can Canadian and Irish companies be distinguished based upon usage of management accounting techniques?

Multiple discriminant analysis was used to determine whether the usage of management accounting techniques would allow identification of companies as Canadian or Irish. A separate analysis was done for the traditional and new groups of management accounting techniques because the rankings by mean responses corresponded with the *a priori* classification as traditional or new techniques as discussed above.

For the traditional group of techniques, the following three techniques (in order of importance) were sufficient to discriminate between the Canadian and Irish companies: budgets, marginal costing and return on investment. (The first two techniques were found to differ at 0.000 and the third technique at 0.037 in the univariate analyses of the individual techniques reported in **Table 4**.) The results in **Table 5** show that 73 per cent of the Canadian companies and 81 per cent of the Irish companies are classified correctly based on their usage of the traditional management accounting techniques. Overall, 77.2 per cent of the Canadian and Irish companies are classified correctly.

TABLE 5 : DISCRIMINANT ANALYSIS – TRADITIONAL TECHNIQUES

		Classification	
		Canadian	Irish
Actual	Canadian	73%	27%
	Irish	19%	81%

Usage of the traditional management accounting techniques allows classification of companies into country, with the classification of Irish companies being more accurate. This is consistent with the findings above that the Canadian and Irish companies differ significantly in usage of traditional accounting management accounting techniques both for the group as a whole and for the majority of individual techniques.

For the group of new techniques, the following two techniques (in order of importance) were sufficient to discriminate between the Canadian and Irish companies: life cycle costing and quality cost analysis. These two techniques were found to differ at 0.000 and 0.066 in the univariate analyses of the individual techniques reported in **Table 4**. The results in **Table 6** show that 83.5 per cent of the Canadian companies are classified correctly, compared to only 53.5 per cent of the Irish companies. Overall, 68.3 per cent of the Canadian and Irish companies are classified correctly. Usage of new management accounting techniques allows accurate classification of Canadian companies into country. But the classification of Irish companies is not much different from chance. This reflects, in part, the weaker differences of individual techniques for the new group even though the difference for the group as a whole is quite significant in Ireland. It also suggests that while usage of new techniques by Canadian companies is distinctive, by Irish companies it is not.

TABLE 6: DISCRIMINANT ANALYSIS – NEW TECHNIQUES

		Classification	
		Canadian	**Irish**
Actual	Canadian	83.5%	16.5%
	Irish	46.5%	53.5%

Q.3:Are there differences between Canadian and Irish companies in the usage of management accounting techniques when size is taken into account?

Examination of the Canadian and Irish samples showed that the latter had more small companies as measured by sales revenue/turnover. We anticipated that company size would have a noticeable impact upon the usage of the various management accounting techniques by companies in general. Therefore, we divided the Canadian and Irish samples into small and large groups by using the median split based on sales revenue/turnover. The data were re-analysed using MANOVA, with size (as defined above) introduced as a covariate in the analysis in order to remove the impact of size on the country differences.

The rows of **Table 7** labelled Traditional/New Techniques as a Group show the statistical significance of the differences in responses by the companies in the two countries for the traditional and new groups of techniques when size is introduced as a covariate in MANOVA. The significance of the difference between the Canadian and Irish responses in respect of the groups of traditional and new techniques is reduced when size is taken into account (**Table 7** versus **Table 4**).

TABLE 7: MANOVA COMPARISON OF CANADIAN AND IRISH RESPONSES USING SIZE AS A COVARIATE – SIGNIFICANCE OF DIFFERENCES FOR THE GROUPS AND THE INDIVIDUAL MANAGEMENT ACCOUNTING TECHNIQUES BASED ON MEDIAN SPLIT ON SALES REVENUE/TURNOVER FOR BOTH COUNTRIES

	Significance
Traditional Techniques as a Group (MANOVA)	0.005***
Traditional Techniques Individually	
Budgets	0.07*
Variance analysis	0.13
ROI	0.005***
Marginal costing	0.04**
Cost-plus pricing	0.31
Flexible budgets	0.014**
Break even analysis	0.842
New Techniques as a Group (MANOVA)	0.09*
New Techniques Individually	
Quality cost analysis	0.11
Activity based costing	0.01***
Target costing	0.74
Activity based cost management	0.01***
Life cycle costing	0.05**

*Significance levels: ***0.01 **0.05 *0.10*

For the group of traditional techniques, the difference is now at the 0.005 level – somewhat less than the value of 0.000 in **Table 4** where size was not taken into account. This suggests that there are fundamental differences between Canadian and Irish usage of traditional management accounting techniques, as the difference remains when size is taken into account. For the group of new techniques, the difference is now at the 0.09 level – considerably less than the value of 0.000 in **Table 4** where size was not taken into account. It seems that the original difference in usage of new techniques as a group results more from size differences of the companies than from country differences. This finding clearly differs from that for the traditional techniques.

The rows in **Table 7** for the individual management accounting techniques show the statistical significance of the differences between the responses by the companies in the two countries for the individual techniques when size is taken into account. There are some noticeable changes in the significance levels for individual techniques between **Table 7** (size taken into account as a covariate) and **Table 4** (size not taken into account) for both the traditional and the new groups of management accounting techniques. The change is more noticeable for the individual traditional techniques in that there is only one technique at the 0.01 level or less when size is taken into account as compared to three techniques when size is not taken into account, and the significance level is reduced quite noticeably for five of the seven traditional techniques. But the significance level for ROI is higher (0.005 versus 0.037) and that for flexible budgets is about the same. For three of the five new techniques the significance level is noticeably reduced, but the significance level for activity based cost management is higher (0.01 versus 0.151), while that for activity based costing is unchanged.

These results indicate that size has a stronger effect on the usage of individual traditional management accounting techniques by the Canadian and Irish companies than on their usage as a group. Size is more important for the individual and the group of new techniques. The fact that there is more size effect for the new techniques is consistent with the observation above that these techniques seem to be relatively less frequently used overall and reflects the greater heterogeneity of size in the Irish sample.

Comparison of the results for the discriminant analysis using the traditional group of techniques shows that the three techniques identified in the discriminant analysis are three of the four techniques for which the significance level changed very much when size was taken into account (**Table 7** versus **Table 4**). Interestingly, the significance level for budgets and marginal costing decreased while that for ROI increased when size was included as a covariate in the analysis. The two techniques identified in the discriminant analysis for the group of new techniques are two of the three techniques for which the significance level changed most when size was taken into account (**Table 7** versus **Table 4**). Here also, the significance level for one technique, quality cost analysis, decreased while that for the other, activity based cost management, increased when size was included as a covariate in the analysis. These observations provide further support for the previous observation that size is an important factor related to the difference in usage of management accounting techniques between the two countries.

Q.4:Are there differences between large and small Canadian and Irish companies in the usage of management accounting techniques when the two countries are considered separately?

Previous analyses suggest that there is a size effect on the results and that it differs between the Canadian and Irish companies. To follow up on this, we examined the Canadian and Irish samples separately. We divided the companies from each country into a small company and a large company sub-sample as described previously. We then used multiple analysis of variance (MANOVA) to determine whether there were differences between the large and small Canadian companies separately for the groups of traditional and new management accounting techniques. This analysis was repeated for the large and small Irish companies.

For the Canadian companies, there is no significant difference between the large and small companies for the groups of traditional or new techniques, as the significance levels were found to be 0.19 and 0.29, respectively. But for the Irish companies there is a marginally significant difference (in the order of 0.1) for both types of technique. These results are consistent with the size distribution in the sample, i.e. the Canadian companies are all relatively large and little effect of size may result, whereas the Irish companies vary considerably in size and a larger effect of size may result.

The results of the MANOVA analyses for the Irish companies are presented in **Table 8** This analysis also indicates that the Irish companies show significant differences between large and small companies for more individual techniques than their Canadian counterparts, which showed no difference. This is also consistent with the fact that the Canadian companies are all relatively large whereas the Irish companies vary much more in size.

TABLE 8: MANOVA COMPARISON OF SIZE EFFECT FOR GROUPS AND INDIVIDUAL MANAGEMENT ACCOUNTING TECHNIQUES FOR THE IRISH SAMPLE

	Irish
Traditional Techniques as a Group (MANOVA)	.098*
Traditional Techniques Individually	
Budgets	.57
Variance analysis	.09*
ROI	.04**
Marginal costing	.27
Cost-plus pricing	.20
Flexible budgets	.034**
Break even analysis	.88
New Techniques as a Group (MANOVA)	.11
New Techniques Individually	
Quality cost analysis	.04**
Activity based costing	.10 *
Target costing	.17
Activity based cost management	.04**
Life cycle costing	.91

*Significance – alpha value Significance Levels: *** 0.01 ** 0.05 *0.10*

The small and large Irish companies show significant differences for two traditional techniques (return on investment and flexible budgets) and two new techniques (quality cost analysis and activity based cost management) at the 0.05 level. They also show differences at the 0.10 level for an additional traditional technique (variance analysis) and an additional new technique (activity based costing). For each one of these six techniques, the frequency of usage is higher for larger Irish companies. Variance analysis is used more frequently than ROI followed by flexible budgets. While larger firms use the new techniques, quality cost analysis followed by activity based costing and activity based cost management, more frequently than the smaller firms, even the highest usage rate of these techniques is lower than the usage rate of traditional techniques by small firms. It seems clear that new techniques are in need of acceptance by both the small and large Irish companies notwithstanding the significant difference between the two groups. As stated before, there are no significant differences between the large versus small Canadian companies for these two groups of techniques.

DISCUSSION

Given that adoption of management accounting practices is not restricted by regulatory frameworks or reporting regulations, study of their adoption across international boundaries constitutes a valid and potentially revealing area of research. It is also rewarding, as it offers a much richer basis for study of such practices than a single country focus. The importance of international comparisons has been brought into sharper focus by recent literature that has put forward fundamental propositions regarding the general state of management accounting practice based on such comparisons (Clarke et al., 1999).

Usage of traditional and new techniques

A comparison of the mean responses for Canadian and Irish companies in relation to the usage of 12 management accounting techniques (seven traditional and five new) reveals a very similar pattern. This probably reflects the similarities in approaches and coverage in academic and professional education programmes in the two countries and the global nature of business in general. What is also evident is that, in both countries, there is generally low usage of new techniques relative to traditional ones, despite the criticisms of traditional practices by many authors (Johnson and Kaplan, 1987; Kaplan, 1990; Bromwich and Bhimani, 1994).

The poorer discrimination between small and large Irish companies based on usage of the new management accounting techniques is probably related to two factors. One is the generally low usage of them by Irish companies (the same is true for the Canadian companies). The other is the composition of the Irish sample, which has a much wider variation in company size. The number of quite small companies in the Irish sample affects the results, as smaller companies are less likely to adopt new techniques.

There is no clear evidence that old techniques are abandoned on the introduction of new ones. Therefore, the principal role for many of the newer techniques may be that of supplementing rather than replacing traditional ones. For example, companies may use traditional costing systems for periodic financial reporting purposes and implement an ABC study on an ad hoc basis when specific problems are identified.

Differences between the countries

There are significant fundamental differences in the usage of traditional and new management accounting techniques between the two countries. This difference is reduced slightly but remains significant for the traditional techniques when size is taken into account, but it is reduced to marginal significance for the new techniques. This suggests a fundamental difference between the usage of traditional techniques for the two countries whereas the difference for the new techniques is related largely to the difference in size of the companies in the two countries.

Differences based on company size

Differences resulting from company size may be due to the smaller companies placing less emphasis on management accounting techniques in running the companies because they have a more "hands on" approach and "manage by walking about" to a greater extent. For the Irish companies, significant differences between small and large companies are found for those traditional techniques (variance analysis, ROI and flexible budgets) that might be expected to be used more in large companies. For the new techniques, significant differences are found for activity based costing, activity based cost management and quality cost analysis. Large organisations are better placed to spread the cost and risk of introducing more elaborate costing systems – the introduction of these systems can be time consuming and costly exercises with uncertain benefits. This argument is supported by the Chenhall and Langfield-Smith 1998 study, which suggests that large companies, because of greater organisational complexity and greater resources, need to adopt more sophisticated accounting systems.

Flexible budgets and variance analysis

It is interesting to note that, in Ireland, there is no difference between small and large companies in the usage of budgets but that there is a significant difference in the usage of flexible budgets and variance analysis. The literature suggests that the original budget should be flexed to the actual level of activity to facilitate meaningful variance analysis for control and performance evaluation purposes. It would appear that this is being done for large companies, but not by small companies. It may be that flexible budgeting and variance analysis are not used by small companies because of lack of demand from senior management, or because it is too time consuming.

Implications of international comparisons

Previous international comparisons have been used to develop conclusions about the general state of management accounting and the roles fulfilled by management accountants. Clarke et al. (1999) reported results from a survey of ABC adoption in manufacturing organisations in Ireland and compared the results to adoption rates in other countries, as reported in earlier published studies. They used the outcome of this comparison to draw general conclusions about the role of management accountants, on the basis that 'we believe that the decision to choose ABC is a particularly good indicator of the role of managerial accountants in an organisation' (Clarke et al., 1999, p. 444), and that 'the rate of adoption of ABC...provides empirical support for whether Irish accountants are proactive agents of change or marginalised recorders of the past' (Clarke et al., 1999, p. 446).

Based on this comparison of adoption rates, the Clarke et al. study found that 'Irish manufacturing firms are far less likely to adopt ABC than their counterparts in the US, the UK and Canada' (Clarke et al., 1999, p. 457). On the basis of this finding, the study concludes that Irish management accountants are marginalised, i.e., 'fill only the traditional role of cost recorders' (Clarke et al., 1999, p. 458), and goes on to speculate on possible reasons for the backward state of management accounting in Ireland and barriers to change.

The primary purpose of this paper was to report a comparative analysis of usage of specific procedures, based on a pooled set of data from Ireland and Canada. Underlying reasons for the usage levels or for between-country differences are therefore outside the scope of the paper. The results of this study show that there are some basic differences between usage rates in Canada and Ireland. However, they also show that some of the differences between the countries, particularly in the case of new management accounting techniques, result from differences in company size. Therefore, reaching conclusions on observations from independent studies in different countries may well not be entirely valid.

CONCLUSION

The analysis was based entirely on data obtained from two surveys and is therefore subject to the usual limitations, particularly those arising from the possibility of respondent bias and non-response bias. In the absence of matched samples, the findings may also be contaminated by differences in the mix of companies in the two samples. The study was restricted to 12 management accounting techniques. In addition, transformation of rating scales was necessitated by slight differences in the rating scales used in the two studies, although the evidence is that this is not likely to have affected the results.

Notwithstanding these limitations, the high degree of consistency in terminology and approach between the studies provided a valuable opportunity to conduct relevant analyses on the combined set of data. Similar patterns were found to exist in both countries in relation to the relative usage frequency of traditional and new techniques. In overall terms, usage of the management accounting techniques studied was generally higher in Canada than in Ireland and the differences were significant. For the traditional techniques, the differences seem to relate to some national differences, although these could not be specifically identified. But for the new techniques, the differences between the two countries seem largely due to differences in company size. Underlying reasons for these observations are likely to be more complex than suggested in recent literature. Evidence from this study identifies company size as a major factor that needs to be considered in comparative international studies.

A comparison of the perceived usefulness of these techniques across countries is obviously an area of major interest for future research. Richardson and Barker's (2001) study included an analysis of the relationship between management accounting techniques and organisational performance, and this is an area where further research opportunities exist. Further cross-country studies of management accounting practices are also warranted and should preferably be based on data collected at the same point in time, using the same research instrument.

APPENDIX

TABLE A1.1: COMPARISON OF SCALES USED FOR MEASUREMENT AND ANALYSES

Original Canadian (OC)	0	1	2	3	4	5
Converted Canadian (CC)	1	2	3	4	5	6
Transformed Canadian (TCA)	1	2	2.75	3.5	4.25	5
Transformed Canadian (TCB)	1	1.8	2.6	3.4	4.2	5
Wording (R&B)	Not used	Rarely				Often
Wording (P&O)	Never	Rarely		Sometimes	Often	Very freq'ntly
Original Irish (I)	1	2		3	4	5

Table A1.1 shows the original Irish (I) five-point (1–5) scale and the Canadian (OC) six-point (0–5) scale. In order to make the data comparable, the original Canadian data were transformed to a five-point scale. This involved two steps: the conversion of the original responses from the 0–5 to a 1–6 scale (CC); and then the transformation of the latter to a 1–5 scale. Because the second step is not unambiguous, two separate transformations were considered. One transformation (labelled TCA) assumed the points 1, 2 and 6 on the converted Canadian scale (CC) were the same as 1, 2 and 5 on the Irish scale, and made a linear transformation from 2 – 6 on the Canadian scale to 2 – 5 on the Irish scale as follows:

$$TCA = CC \quad \text{for } CC = 1$$

$$TCA = 2 + (3/4)*(CC - 2) \quad \text{for } 2 \leq CC \leq 6$$

A second transformation (labelled TCB) assumed the points 1 and 6 on the converted Canadian scale (CC) were the same as 1 and 5 on the Irish scale, and made a linear transformation from 1 – 6 on the Canadian scale to 1 – 5 on the Irish scale as follows:

$$TCB = 1 + (4/5)*(CC - 1) \quad \text{for } 1 \leq CC \leq 6$$

The mean responses for the various management accounting techniques under two transformations of the Canadian data to the Irish scale are compared in **Table A1.2** below. Because standard deviations for the mean responses range from 0.81 – 1.49, the *maximum* T statistic for the difference between the mean responses of any management accounting technique for the Canadian companies under the two transformations is about 1.02, which leads to the conclusion that the differences are not statistically significant. For subsequent analyses, the second transformation (TCB) was used.

TABLE A1.2: CANADIAN MEAN RESPONSES FOR THE MANAGEMENT ACCOUNTING TECHNIQUES

TCA and TCB	TCA	TCB	*TCA – TCB*
		Traditional techniques	
Budgets	3.50	3.46	0.04
Variance analysis	4.42	4.41	0.01
ROI	3.69	3.63	0.06
Marginal costing	3.72	3.65	0.07
Cost-plus pricing	3.22	3.15	0.07
Flexible budgets	2.57	2.50	0.07
Break even analysis	3.40	3.32	0.08
		New techniques	
Quality cost analysis	2.00	1.99	0.01
Activity based costing	2.35	2.28	0.07
Target costing	2.16	2.10	0.06
Activity based cost management	2.05	1.96	0.09
Life cycle costing	1.92	1.87	0.05

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