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Associations of Work-Family Conflict, Job Satisfaction, Family Satisfaction and Life Satisfaction: A Study of Married Female Secretaries

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Keywords: role conflict, work-family conflict, job satisfaction, family satisfaction, life satisfaction, working women

ABSTRAK

Penyelidikan ini mengkaji akibat konflik antara peranan kerja dan keluarga bagi wanita yang telah berkahwin melalui analisis laluan bagi konflik tersebut, kepuasan kerja, kepuasan keluarga dan kepuasan hidup. Data telah diperolehi daripada 120 setiausaha wanita di negeri Selangor, Malaysia. Kajian ini mendapati bahawa konflik antara peranan kerja dan keluarga secara signifikan mengurangkan kepuasan kerja serta kepuasan keluarga. Kedua-dua kepuasan kerja dan keluarga mempunyai perkaitan yang signifikan dengan kepuasan hidup. Implikasi daripada kajian ini adalah konflik antara peranan kerja dan keluarga merupakan perkara yang sama pentingnya bagi individu dan organisasi kerana akibatnya yang negatif, iaitu kurangnya kepuasan kerja serta kepuasan keluarga dan ini seterusnya mengurangkan kepuasan hidup.

ABSTRACT

This study examined the consequences of work-family conflict through path analytic associations of work-family conflict, job satisfaction, family satisfaction and life satisfaction. Data were obtained from 120 married female secretaries in the state of Selangor, Malaysia. Work-family conflict was shown to significantly lead to lower job satisfaction as well as family satisfaction. In addition, both job satisfaction and family satisfaction were significantly related to life satisfaction. The results of the study imply that work-family conflict is an important concern for individuals and organizations alike because of its negative consequences leading to reduced job satisfaction as well as family satisfaction and hence to reduced life satisfaction.

INTRODUCTION

In Malaysia, the percentage of women in tertiary education and, consequently, in professional roles has been rising steadily. In 1990, 45.7% of women were in tertiary education (Department of Statistics, Malaysia 1992) compared with 38.6% in 1980 (Department of Statistics, Malaysia 1983). Of the economically active population, 10.7% of women were in professional, technical and related occupations in 1992 (Department of Statistics, Malaysia 1994) compared with 4.8% in 1970 (Department of Statistics, Malaysia 1972).

With these changing demographics, wom-

en have to deal with job-related demands which place limits on the performance of their family role. This trend results in work-family conflict as women try to cope with conflicting demands of work and the family (Aminah 1995). The work-family conflict experienced by married working women as they try to juggle the many roles they perform, along with their frustrations while searching for ways to deal with these conflicts, also reduce the level of work, family and life satisfaction women experience (Sekaran 1986).

Although the increased participation of women in paid employment while maintaining their traditional roles is a global phenom-

enon, most of the research in work-family interface has been done in Western cultures. As a result, relatively little is known about work-family interface in the non-Western cultures. Gaining a better understanding of the conflict arising from family life and work life and the satisfaction as outcomes of role conflict is an important area of concern with the increase in the participation of women in the work-force. This concern is justified because an individual's satisfaction, as a component of well-being, may impinge on their functioning as parents and thus have implications for the quality of children's lives (Dodge 1990; Hock and DeMeis 1990).

The objective of this study was to examine correlational and path analytic associations among work-family conflict, job satisfaction, family satisfaction and life satisfaction among married female secretaries. Married women were considered an appropriate target population because Hall (1972) noted that women's multiple roles tend to be salient simultaneously. The implication is that women may experience more role conflict as a result of the simultaneity of their multiple roles. This is because simultaneous role demands require setting priorities while sequential role demands set their own priorities.

In this present study the definition of work-family conflict proposed by Kahn *et al.* (1964) was used. This definition is consistent with that used by many other researchers (Holahan and Gilbert 1979; Kopelman *et al.* 1983; Greenhaus and Beutell 1985; Greenhaus *et al.* 1987; Bedeian and Mossholder 1989; Duxbury and Higgins 1991). Kahn *et al.* (1964) defined work-family conflict as a form of interrole conflict in which the role pressures from the work and family domains are mutually incompatible in some respect. Work-family conflict occurs when an individual has to perform multiple roles: worker, spouse and in many cases, parent. Each of these roles imposes demands requiring time, energy and commitment. The cumulative demands of multiple roles can result in role strain of two types: overload and interference (Kelly and Voydanoff 1985). Overload exists when the total demands on time and energy associated with the prescribed activities of

multiple roles are too great for the roles to be performed adequately or comfortably. Interference occurs when conflicting demands make it difficult to fulfil the requirements of multiple roles.

The increased interest in understanding the work-family interface stems from the demonstrated outcomes of work-family conflict on role and life satisfaction. Life satisfaction was conceptualized as deriving from satisfaction through having a good job and family life (Sekaran 1983). Some prior evidence supports the relationship between work-family conflict, job and family satisfaction, and life satisfaction. Several studies have found negative relationships between interrole conflict and job satisfaction (Jones and Butler 1980; Pleck *et al.* 1980; Staines and O'Connor 1980; Kopelman *et al.* 1983; Sekaran 1985; Greenhaus and Parasuraman 1986; Parasuraman *et al.* 1989; Mohamed Hashim 1993). Work-family conflict was also found negatively related to family satisfaction (Pleck *et al.* 1980; Staines and O'Connor 1980; Greenhaus and Kopelman 1981; Jones and Butler 1980; Parasuraman *et al.* 1989; Aryee 1992). Several earlier researchers have found a positive relationship between job satisfaction and life satisfaction (Bamundo and Kopelman 1980; Rice *et al.* 1980; Sekaran 1985; Burke and McKeen 1988; Rice *et al.* 1992), and between family satisfaction and life satisfaction (Campbell *et al.* 1976; Lee 1978; Kopelman *et al.* 1983; Rice *et al.* 1992).

The model of work-family conflict proposed by Kopelman *et al.* (1983) was chosen as the theoretical base for this research. This model presents a nomological network among work conflict, family conflict, work-family conflict (which Kopelman called interrole conflict), and job, family and life satisfaction. The model is illustrated in *Fig. 1*.

Although this model includes both the antecedents and consequences of work-family conflict, this present study is limited to testing a part of the model, that is the relationship between variables consequential to work-family conflict.

Based on the model, the following hypotheses were postulated.

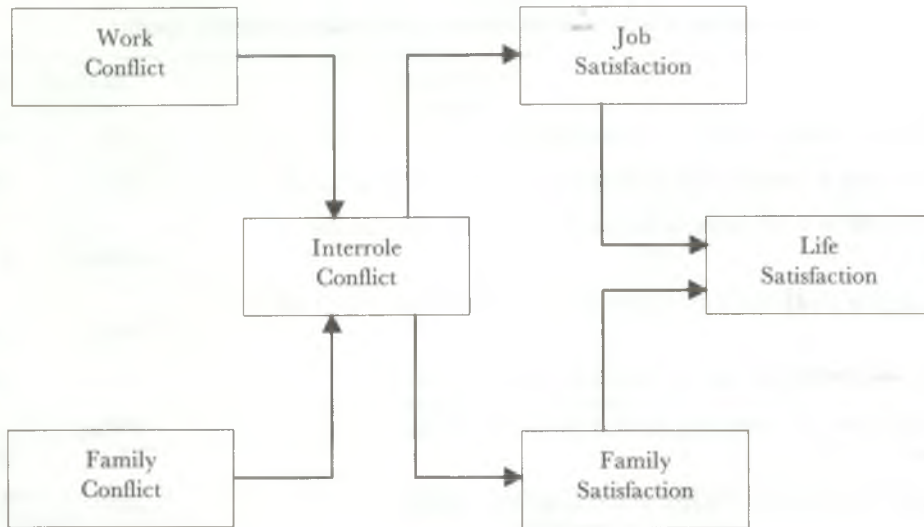


Fig 1: A model of work, family and interrole conflict
 Source: Kopelman et al. 1983, p. 201.

- H1 : High work-family conflict will lead to low job satisfaction.
- H2 : High work-family conflict will lead to low family satisfaction.
- H3 : High job satisfaction will lead to high life satisfaction.
- H4 : High family satisfaction will lead to high life satisfaction.

METHODOLOGY

Subjects and Procedure

Subjects in the present study were women who (a) were married and living with their husbands, (b) had at least one child, and (c) were full-time secretaries by occupation. The secretaries in this study included stenographers doing the work of secretaries. These criteria were established to ensure that the women in the sample had quite similar responsibilities in terms of family and work roles.

The names and addresses of secretaries were obtained from two selected public organizations, and the Secretaries Society of Malaysia. Questionnaires and return envelopes were mailed to 234 women meeting these criteria from the state of Selangor. Of this number, 120 (87 from the public sector and

33 from private organizations) returned the questionnaires within a period of ten weeks.

The women in the sample averaged 39.3 years of age (SD=5.09) and had an average of 3.0 (SD=1.31) children. The majority of the women had completed secondary (58.8%) and diploma (31.9%) education. Only 3.4% had an advanced diploma or a bachelor's degree, and the remaining respondents had completed pre-university education (14.2%) or secretarial short courses (1.7%). They earned an average gross income of RM1532 per month.

Instruments

Work-family conflict was measured using the interrole conflict scale of Pleck *et al.* 1980. This scale consists of eight items based on the most prevalent aspects of work-family conflict: excessive work time, schedule conflicts, and fatigue or irritability. The response options for the questions or items were five-point scales ranging from strongly disagree (1) to strongly agree (5). Table 1 presents the mean and standard deviation of the items. The reliability coefficient (alpha) for this work-family conflict scale was 0.84.

Job satisfaction was measured with a single question. "Overall how satisfied do

TABLE 1
Mean and standard deviation of items measuring work-family conflict

Item	M	SD
My work schedule often conflicts with my family life	2.1	0.81
After work, I come home too tired to do some of the things I'd like to do	3.1	1.07
On the job I have so much work to do that it takes away time for my family interests	2.3	0.99
My family dislikes how often I am preoccupied with my work while I am at home	2.8	1.99
Because my work is demanding, at times I am irritable at home	2.5	1.04
The demands of my job make it difficult to be relaxed all the time at home	2.4	0.95
My work takes up time that I'd like to spend with my family	2.5	0.97
My job makes it difficult to be the kind of spouse or parent I'd like to be	2.4	1.03

you feel with your career?" Response options were given on a seven-point scale ranging from very dissatisfied (1) to very satisfied (7). Family satisfaction was measured using the question "How satisfied do you feel with your family life?" Response options similar to that for job satisfaction were given. Although the use of a single question may not be sufficient to measure specific, sharply defined attitudes, this method has been used frequently in studies of global attitudes (Hall 1972).

Life satisfaction was measured using an eight-item semantic differential scale adapted from the general index of well-being defined by Quinn and Shepard (1974) in the Quality

of Employment Survey. The respondents were asked to express their feelings about each statement using seven-point response options. Table 2 presents the mean and standard deviation of the items. The reliability coefficient (α) for this scale was 0.90.

Data Analysis

Two types of analyses were performed in examining the relationships between work-family conflict and the other variables, namely, job satisfaction, family satisfaction and life satisfaction. First, zero-order correlations were computed to determine whether

TABLE 2
Mean and standard deviation of items measuring life satisfaction

Item	M	SD
Boring... Interesting	5.4	1.32
Enjoyable... Miserable	5.1	1.50
Useless... Worthwhile	6.8	1.19
Friendly... Lonely	5.5	1.47
Full... Empty	5.5	1.18
Discouraging... Hopeful	5.7	1.22
Disappointing... Rewarding	5.4	1.29
Brings out the best in me... Does not give me much of a chance	5.2	1.18

TABLE 3
Mean and standard deviation of variables

Variable	Max. Possible Score	M	SD
Work-family conflict	40	20.1	5.69
Job satisfaction	7	5.3	1.22
Family satisfaction	7	5.6	1.29
Life satisfaction	56	43.6	8.05

TABLE 4
Correlations among variables

Variables	1	2	3	4	M	SD
1. Work-family conflict	-	-.40**	-.29**	-.33**	20.2	5.69
2. Job satisfaction	-.40**	-	.60**	.52**	5.3	1.22
3. Family satisfaction	-.29**	.60**	-	.51**	5.6	1.29
4. Life satisfaction	-.33**	.52**	.51**	-	43.6	8.05

** $p < .01$

linkages of some kind existed among the variables. Second, a path analysis procedure (Cohen and Cohen 1983) was conducted using the stepwise multiple regression procedure in which each variable is regressed on all other variables postulated to precede it.

RESULTS

Table 3 presents the mean and standard deviation of respondents' scores for work-family conflict, job satisfaction, family satisfaction and life satisfaction. Correlational analysis revealed that work-family conflict was related to job satisfaction ($r = -.40$; $p < .01$), family satisfaction ($r = -.29$; $p < .01$) and life satisfaction ($r = -.33$; $p < .01$) (Table 4). Life satisfaction was related to both job satisfaction ($r = .52$; $p < .01$) and family satisfaction ($r = .51$; $p < .01$). The relationship between family satisfaction and job satisfaction was also significant ($r = .60$; $p < .01$).

The results of the test of hypotheses are shown in Fig. 2. All four hypothesized relationships were significant, congruent with the model by Kopelman *et al.* (1983) which deals with the consequences of interrole conflict.

Table 5 presents the results of regression-

path analysis predicting job satisfaction and life satisfaction. Work-family conflict explained 17% (R^2) of the variance in job satisfaction and 7% (R^2) of the variance in family satisfaction. Family and job satisfaction, as antecedents of life satisfaction, explained 27% (R^2) of the variance. Job satisfaction contributed an incremental contribution (ΔR^2) of 5%.

DISCUSSION

Upon examination of path coefficients the support from this study comes from the linkages between work-family conflict and job satisfaction as well as between both job and family satisfaction with life satisfaction. Although Kopelman *et al.* (1983) did not find significant relationships between interrole or work-family conflict and job as well as family satisfaction, as proposed in the model, this study supported the relationship between work-family conflict and job as well as family satisfaction.

The significant path between work-family conflict and family satisfaction and job satisfaction supports a study of 354 married professional women in Singapore by Aryee (1992) who found that work-family conflict

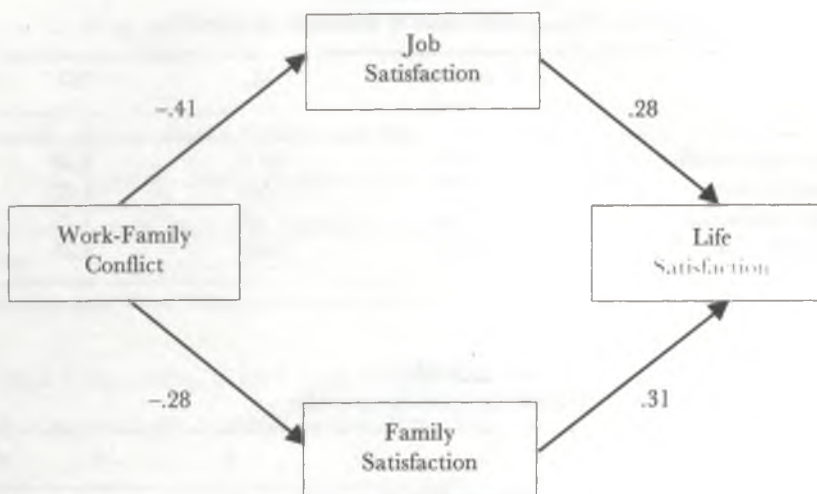


Fig 2: Significant path coefficients

TABLE 5
Results of stepwise multiple regression analyses

Criterion Variable	Predictor Variable	Beta	Adj.	ΔR^2	F
Job satisfaction	Work-family conflict	-.41	.17	-	23.84**
Life satisfaction	Family satisfaction	.31	.22	-	22.66**
	Job satisfaction	.28	.27	.05	
Family satisfaction	Work-family conflict	-.28	.07	-	10.25**

** $p < .01$

did explain the variance in family and job satisfaction although the contribution was only 11% and 15%, respectively. The study conducted by Parasuraman *et al.* (1989) also found that work-family conflict had a negative effect on job satisfaction as found in the present study. The significant relationship between job satisfaction and life satisfaction substantiates earlier studies by Pleck *et al.* (1980), Sekaran (1985), Jones and Butler (1980), Parasuraman *et al.* (1989), Rice *et al.* (1992), and that between family satisfaction and life satisfaction is line with the findings of Rice *et al.* (1992).

Although work-family conflict leads to lower job as well as family satisfaction, it is a stronger predictor of job satisfaction. However, for life satisfaction family satisfaction is a stronger predictor than job satisfaction.

Future research might focus on identifying other sources of variance in family satisfaction. As suggested by Kopelman *et al.* (1983) coping behaviour might mediate the relationship between work-family conflict and family satisfaction. Several studies have found that effective coping with interrole conflict is an important source of role and life satisfaction (Hall 1972; Beutell and Greenhaus 1982).

The findings imply that work-family conflict is an important concern for individuals and organizations alike because such conflict, as a source of stress, has been correlated with negative consequences, including reduced job as well as family satisfaction which can lead to reduced life satisfaction. The interrelationship between job and family satisfaction with life satisfaction indicates that the conditions at work can

affect the quality of family life and vice versa, as well as the overall well-being of families.

The findings of the present study, which demonstrate the relationships between role conflict, role and life satisfaction represent an extension of the previous studies that have emphasized the extent of role conflict and coping behaviour of married working women in Malaysia (Fatimah 1985; Aminah 1995). However, a significant limitation of the present investigation was the highly specific sample that was utilized – married female secretaries. The result reported here may generalize to married female secretaries, but any assumption of external validity beyond that is strongly cautioned.

Finally, it should be noted that the processes investigated and reported are part of a larger phenomenon – the work-family interface. This present research is only a building block in a broader and more complex research model concerned with understanding the interface between work and family. The results from a specific sample should be viewed as tentative and the model proposed by Kopelman *et al.* (1983) needs to be tested with other groups of working women. Groups with lower educational attainment, for example, may not support the relationship between job satisfaction and life satisfaction since Bamundo and Kopelman's (1980) study found that educational attainment positively moderates the relationship between job satisfaction and life satisfaction.

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The Ability of a Child's Self-rating Scale in Estimating Intellectual Ability

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Keywords: intellectual ability, intelligence, self-rating, inventory

ABSTRAK

Terdapat banyak dapatan yang mencadangkan supaya faktor bukan intelektual diambil kira semasa mengukur kebolehan intelektual. Berdasarkan cadangan ini banyak inventori tadbir sendiri telah dibena pada dekad yang lalu. Salah satu daripada inventori tersebut ialah 'School Feeling and Thought (SFT)'. Oleh kerana inventori ini dibena di Amerika, ianya perlu diterjemahkan ke dalam Bahasa Melayu dan diuji keupayaannya menilai kebolehan intelek kanak-kanak Melayu. Inventori SFT dalam Bahasa Melayu ditadbir ke atas 100 murid darjah enam (53 lelaki dan 47 perempuan) di sebuah sekolah rendah di Tampin. Kebolehan intelektual (IQ) kanak-kanak tersebut ditentukan dengan menggunakan WISC-R. Dapatan kajian ini mendapati kerelasi antara skor SFT dengan IQ daripada skor WISC-R adalah sederhana. Dua sub-ujian SFT iaitu 'Action' dan 'Affect' didapati menjadi peramal IQ yang signifikan. Satu persamaan untuk meramal IQ boleh dibentuk hasil daripada analisis regresi berganda. Satu kelemahan persamaan ini ialah IQ yang bakal diramalkan mengandungi ralat sebanyak 11 mata. Walau bagaimanapun, SFT boleh digunakan untuk meramal IQ dan boleh digunakan sebagai alat penapis untuk mengukur kebolehan intelek kanak-kanak Melayu.

ABSTRACT

There is substantial evidence for non-intellectual factors to be considered as an additional criterion in the appraisal of intellectual ability. Therefore, the development of a child's self-rating scale has been intensive in the last decades. One of the most widely used self-rating scales is the School Feeling and Thought (SFT) scale. Bearing in mind that the SFT was developed in America, it is essential to undertake a study to ascertain whether the Malay versions of these instruments have the ability to assess intellectual ability of Malay children. The Malay version of SFT was administered to 100 Primary Six pupils (53 boys and 47 girls) from a single school in Tampin. The intellectual ability (IQ) was measured using the revised version of Wechsler Intelligence Scale for Children (WISC-R). The correlations between the SFT scores and the WISC-R full-scale IQ are modest. Two subtests of SFT, namely 'Action' and 'Affect', are found to be significant predictors of IQ. The equation derived from multiple regression analysis to estimate IQ using SFT subtest scores is found to be able to predict intellectual ability (IQ). The only limitation is that the IQ predicted by this equation has an 11-point error. Therefore, SFT can be used to estimate IQ and thus can be used as a screening test for intellectual ability of Malay children.

INTRODUCTION

Terman (1959), in the 30-year follow-up report on his research on intellectually gifted children, suggested implicitly that external or non-intellectual factors had to be considered in the appraisal of intellectual ability. His suggestion is based on his finding that the difference between the most and the least successful men among his 1925 study of gifted

children is not in intelligence but in personality factors.

In an intensive study on the characteristics of 64 eminent scientists, Roe (1952) found that despite long working hours and fewer vacations, they would rather be doing their work than anything else. Other researchers suggested that eminent adults are self initiated and are guided by self-generated

standards of excellence (Chambers 1964; Helson 1971; Nicholls 1972; Burden 1979).

Recent research findings also consistently support the view that children's perception of their own ability mediates achievement behaviour (Blumenfeld *et al.* 1982). The way children perceive their ability and attributions of success and failure can have consequences on their motivation towards school work and intellectual potential (Dweck 1986; Clifford 1986). Therefore, there is a great potential for non-intellectual ability, which can be self administered, to be developed to appraise intellectual ability among children. Since there is substantial evidence for the non-intellectual factors to be considered as an additional criterion in the appraisal of intellectual ability, the development of a child's self-rating scale has been intensive in the last decades. One of the most widely used self-rating scales is the School Feeling and Thought (SFT) scale.

SCHOOL FEELING AND THOUGHT (SFT)

Description and Administration of SFT

The School Feeling and Thought (SFT) scale developed by Clifford (1988) is in some respects similar to Kuhl's (1985) Action Control subscale. Both are based on Rotter's (1966) Locus of Control scale and attempt to measure the extent to which an individual responds constructively to failures or misfortunes through self-reporting. Contrary to Kuhn's Action Control subscale developed for adults, SFT focuses on school failure primarily for 7- to 17-year-old school children.

The SFT consists of 36 items with a 6-point agree disagree Likert scale. It yields three subscale scores: Feeling About Failure (Affect or Aff), Action About Failure (Action or Act) and Preferred Task Difficulty (PD). It takes about 25 minutes to administer the SFT with the researcher reading every item aloud to the children.

Reliability and Validity

a. Reliability

The standardization of the SFT was conducted using 233 students aged 10 – 12 years old enrolled in two public schools in a

midwestern state of the USA. The alpha coefficient for the original 36 items was .90. For the SFT subscales, the alpha coefficients for Affect, Preferred Difficulty and Action were 0.85, 0.88 and 0.80 respectively.

b. Validity

Responses to the original 56 items in the SFT scale were analysed using factor analysis with varimax rotation. The analysis resulted in three factors (Affect, Preferred Difficulty and Action). Items with a minimal factor loading of 0.40 were retained. In the final form of SFT, each subscale contained nine items.

The SFT score was validated using selected items from well-known achievement tests, Iowa Tests of Basics Skills (ITBS) and Iowa Test of Educational Development (ITED), which formed an inventory called Academic Risk Taking (ART) Measure, consisting of mathematics, spelling and vocabulary. The SFT scale has a modest correlation with the ART Measure. For the fifth grade (11 years old) the correlation coefficient is 0.48 ($p < 0.001$) for vocabulary, 0.41 ($p < 0.001$) for spelling and 0.37 ($p < 0.001$) for mathematics.

The SFT was translated and administered to 194 fourth grade Taiwanese students (Clifford and Chou 1991). The translated version of the SFT scale had a reliability of 0.87. The reliability for the subtests was: 0.72 for the Affect, 0.82 for the Preferred Difficulty and 0.86 for the Action.

OBJECTIVE OF THE STUDY

The objective of the study was to explore the possibility of using the SFT score to predict intellectual ability (IQ) of Malay children. Bearing in mind that the SFT has been developed in the USA, it is essential to undertake a study to ascertain that the Malay version of this instrument has the ability to assess the intellectual ability of Malay children. Since the cost of administering intelligence tests is high, psychologists have developed screening measures to gauge intellectual ability. If the SFT can be effectively used for screening purposes, an enormous amount of resources can be saved.

TRANSLATION PROCEDURE

Translation Panel

The SFT was initially translated into Malay by the researcher and then given to a translation panel comprising five local experts: two associate professors of Malay Studies, two Educational Psychology lecturers and a teacher with 12 years' experience in teaching Malay children in a rural area.

Item Analysis and Back Translation

After receiving separate comments from each translation panel member, the researcher made the necessary changes as suggested by the panel. The SFT was then administered to a class of 25 Primary Six pupils in a school near Universiti Pertanian Malaysia. The respondents were instructed not only to respond to every item but also to mark items which they did not understand. Four items in the SFT (items 2, 10, 13, and 21) needed re-wording.

The final Malay version of the SFT was given to five final-year Bachelor of Education (Teaching of English as a Second Language) students at Universiti Pertanian Malaysia. They translated each item in the instrument back into English. This 'back translation procedure' was essential to ensure that the content of the final Malay version of the SFT did not deviate from the original English version. From the back translation, the researcher found that all items had been correctly translated.

RELIABILITY OF THE MALAY VERSION OF SFT

The internal consistency reliability of the translated version of SFT is modest. The

Cronbach Alpha coefficient for all 27 items is 0.6. A Cronbach Alpha coefficient of 0.75 can be obtained if 3 items are deleted (items 2, 13 and 21). Furthermore, the deletion of these items will improve the reliability of the subscales. The reliability for Affect increases to 0.60 from 0.55, for Preferred Difficulty to 0.67 from 0.59 and for the Action to 0.55 from 0.43. As these three items shared a common feature, that they are all negatively worded, the deletion of these items for further administration seems sensible. The final items for SFT are therefore reduced from 27 to 24.

Test retest (after a lapse of 30 days for 30 pupils) results indicated that there was no significant difference in the total score of the SFT. However, mean scores for the second administration for the total and two subtests (Aff and Act) are higher than the initial administration (Table 1).

METHODOLOGY

Respondents and Data Collection

One hundred Malay Primary Six pupils (53 boys and 47 girls) from a single school in Tampin were the respondents for this study. The average age of the respondents was 11 years 7 months (SD=2.7 months). This sample size was adequate in minimizing Type II error consistent with the F-test statistic set at a power level .8 and alpha at .05 (Cohen 1992).

The SFT was administered to the pupils during the first visit to the school. The researcher administered WISC-R (Wechsler Intelligence Scale for Children-Revised) (Wechsler 1974) individually to the res-

TABLE 1
Test-retest result of SFT (N=30)

SFT	First		Second		t	r
	Mean	SD	Mean	SD		
Aff	25.51	5.23	27.48	5.88	-1.37	0.79
PD	33.35	5.01	34.98	6.11	-1.12	0.84
Act	26.18	4.12	28.15	4.87	-1.57	0.77
Total	87.03	10.45	88.64	8.88	-1.44	0.89

Critical region for t (df=28) = 2.048 at p < 0.05

pondents. The full-scale IQ score derived from WISC-R is used as a criterion for the intellectual ability (IQ).

Data Analysis

The data was analysed using a computer software package known as SPSSPC+.

FINDINGS

In order for the SFT to be able to appraise intellectual ability, the SFT scores must strongly correlate with the IQ scores. The correlations of the SFT scores with intelligence tests (in this particular study, WISC-R) range from 0.59 to 0.70 (Table 2).

Results from the stepwise multiple regression analysis indicated that the two subtests of SFT (Affect (Aff) and Action (Act)) are the significant predictors of IQ (Table 3). Both Aff and Act contribute 50% ($R^2 = .50$) to the IQ variance. The contribution of Affect to the IQ variance is 41% ($R^2 = .41$). Action gives an additional 9% to the IQ variance.

Based on the above analysis, the equation to predict IQ based on the SFT scores is:

$$IQ = \text{Aff}(.94) + \text{Act}(.70) + 43.3$$

The predicted IQ scores derived from the equation contributed nearly 50%

($R^2 = .4998$) of the WISC-R IQ score variance. Subsequently, based on the information inferred from Table 4, the equation proposed to predict intellectual ability is well above the chance ($F = 31.98$ $p < .0001$). The only limitation is that the predicted IQ score generated by the equation has about an 11-point error at 95% confidence level (standard error of measurement = 10.7). Therefore, if the calculated IQ is 105, then the true IQ is estimated between 94 and 116.

DISCUSSION AND CONCLUSION

The initial findings of the study indicated that the Malay version of SFT is a modestly reliable instrument to assess intellectual ability of Malay primary school children. Since the correlation of the SFT with the WISC-R is also modest, the intellectual ability (IQ) estimated from the equation has an 11-point error. With these finding, the SFT has some potential for utilization as a screening measure for IQ.

The findings of this study tend to support findings of earlier researchers (Blumenfeld *et al.* 1982; Crocker and Cheeseman 1988; Blatchford 1992) that children's perceptions of their ability are accurate and realistic. That 11-year-old Malay children can almost accurately rate themselves will add a new

TABLE 2
Correlations of the SFT with the WISC-R (N = 100)

Variable	IQ	Aff	PD	Act
Aff	.64			
PD	.62	.74		
Act	.59	.54	.76	
Total	.70	.86	.93	.87

Note: All correlation coefficients are significant at $p < 0.001$

TABLE 3
Equation to predict IQ

Step	Variable	R^2	B	T	p
1	Aff	.41	.94	5.3	.0001
2	Act	.50	.70	4.1	.001

TABLE 4
Analysis of variance

Variable	df	SS	MS	F	p
Regression	3	11020.8	3673.6	31.98	.0001
Residual	96	11027.7	114.9		

perspective to research as it is contrary to the belief that Malays are reserved and introverted.

In view of the above findings, the SFT should be accepted as an additional instrument for use by educational authorities to assess the intellectual ability of Malay children. However, further research is needed to examine the consistency of the results and to determine whether the prediction equations can be used with other subjects.

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The Effectiveness of Teacher Ratings in Identifying Potential Intellectually Gifted Malay Children

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Keywords: teacher rating scale, intellectually gifted, intelligence, Malay children

ABSTRAK

Dalam kajian ini, keberkesanan skala 'Scale for Rating Behaviour Characteristics of Superior Children (SRBCSS) diuji sebagai alat yang berpotensi untuk mengenalpasti kanak-kanak melayu yang pintas cerdas. Murid yang mendapat skor 46 ujian 'Raven's Standard Progressive Matrices (Raven's SPM) diuji dengan ujian WISC-R. Daripada 303 responden, 101 mendapat skala IQ 120 atau lebih dan dikelaskan sebagai pintas cerdas. Guru dimintas menilai responden dengan menggunakan SRBCSS yang diterjemahkan ke Bahasa Melayu. Dapatan kajian ini menunjukkan bahawa guru perlu hanya beberapa sub-ujian yang berkaitan jika mereka hendak dilibatkan dalam proses mengenalpasti kanak-kanak pintar cerdas.

ABSTRACT

In this study, the effectiveness of the Malay version of scale for rating behaviour characteristics of superior students (SRBCSS) was tested as a potential tool for the identification of intellectually gifted Malay children. Pupils with a score of at least 46 on Raven's standard progressive matrices (Raven's SPM) were given the WISC-R test. Of the 303 respondents, 101 scored a full-scale IQ of 120 or more and were classified as intellectually gifted. Teachers were asked to rate the respondents using the translated version of SRBCSS. The findings of this study suggest that teachers should be given appropriate SRBCSS subtests if they are involved in identifying intellectually gifted children.

INTRODUCTION

A number of researchers have reported that intelligence tests and rating by teachers are the two most commonly used tools in the selection of intellectually gifted children (Jenkins 1979; Alvino *et al.* 1981; Yarbrough and Johnson 1983). In a landmark study by Pagnato and Birch (1959), teachers could only effectively identify 50% of the gifted children. Their finding has stimulated many researchers to validate the efficiency and effectiveness of teachers' ratings.

In an identification programme, teachers are asked to nominate children without any guidelines, or they are asked to rate each student using a given set of rating instruments. Teachers' ratings, following guidelines, should be more effective and efficient than teachers' nominations (Renzulli and Hart-

man 1971; Borland 1978).

A study by Solomon (1979) indicated that by using a checklist, teachers' identification efficiency increased from 25 to 50%. On the contrary, Ashman and Vukelich (1983) found that the effectiveness of teachers' ratings was 20-81% and efficiency was 54-71%. It is interesting to note that Gear (1975) found that teachers could be trained to improve their efficiency in identifying gifted children. Teachers who attended a special training programme identified 86%, while teachers in the control group identified only 50% of gifted children. Since the cost of training all teachers is high, an initial study should be conducted to find the type of teacher who is highly effective in identifying intellectually gifted children so they can be trained to identify such children in the classroom.

Various types of teacher rating are being developed and tested. The most widely used teacher rating is the scale for rating behaviour characteristics of superior students (SRBCSS) developed by Renzulli *et al.* (1971), who noted that SRBCSS is intended to provide an objective aid to guide teacher judgement in identifying gifted children. Rust and Lose (1980) found that the SRBCSS was not successful in aiding teachers if the criterion of giftedness is based on IQ scores. In light of this finding, Burke *et al.* (1982) suggested that SRBCSS must be extensively studied. Therefore, the effectiveness of SRBCSS, especially the translated version, must be determined before it can be utilized extensively in identifying intellectually gifted Malay children.

METHODOLOGY

Selection of Respondents and Data Collection

The study involved 1047 Primary Six Malay students studying at 16 primary schools in Tampin district. The respondents of this study were those with a score of at least 46 on the Raven's standard progressive matrices (Raven's SPM) (Raven 1965). Raven's SPM has been widely used to screen and identify intellectually gifted children for educational and research purposes (Pegnato and Birch 1959; Martinson and Lessinger 1960; Rust and Lose 1980). For this study, a score of 46 was proposed so that all potential intellectually gifted children would be included (Abd Majid 1994).

The number of students with a score of 46 on Raven's SPM was 303 (149 boys and 154 girls). They were the respondents for this study. The researcher administered WISC-R (Wechsler intelligence scale for children-revised) to all respondents. The criterion for intellectual giftedness in this study was based on IQ scores generated by WISC-R; those with an IQ score of 120 or above were categorized as intellectually gifted. There were 101 pupils (56 boys and 45 girls) with an IQ score of 120 or above.

While the researcher administered the WISC-R, teachers of the respondents were asked to rate the respondents using the SRBCSS. Each respondent was rated by

four teachers, Malay, English, mathematics and class teachers.

Instruments

There were three instruments used in this study, the WISC-R, Raven's SPM and SRBCSS. The WISC-R and Raven's SPM are intelligence tests. The SRBCSS, on the other hand, is a teacher rating scale.

The WISC-R is an individually administered intelligence test published in 1974. It consists of 10 subtests: information, comprehension, arithmetic, similarities, vocabulary, picture completion, block design, picture arrangement, object assembly and coding. The instructions and the items were translated into Malay using the procedures proposed by the manual. It was then pre-tested using 100 Malay children of similar age (Abd Majid and Othman 1995). The test-retest reliability of the Malay version of WISC-R ranged from .65 to .89. The full-scale IQ score, the criterion for giftedness in this study, has a reliability of .91. The criterion for intellectual giftedness is based on the IQ score generated by WISC-R; those with an IQ score of 120 or above were categorized as intellectually gifted.

Raven's SPM was first published in 1938 and designed to assess the mental ability of people of all ages and diverse educational and cultural backgrounds. The scale consists of 60 items. The tester is required to comprehend meaningless figures that demand a systematic method of observation and reasoning. The internal consistency and the stability of Raven's SPM is reported to be .6-.97. For Malay children, the Raven's SPM had an internal consistency of .76 and the test-retest reliability after 30 days was .77 (Abd Majid 1994). Since it is a non-verbal test, it does not require any translation. In this study, Raven's SPM was used to screen the respondents.

Currently, the most widely used teacher's rating is the scale for rating behaviour characteristics of superior students (SRBCSS) developed by Renzulli *et al.* in 1971 (Rust and Lose 1980). The SRBCSS has four subtests: learning (8 items), motivation (9 items), creativity (10 items) and leadership

(10 items). Renzulli *et al.* reported that SRBCSS significantly discriminated between gifted and average children. It has a promising stability coefficient ($r=0.77-0.91$). The construct validity of four subtests was established using factor analysis.

In this study, the English version of SRBCSS was initially translated into Malay by the researcher. It was then given to a translation panel of five academicians in the Faculty of Educational Studies, Universiti Pertanian Malaysia. After receiving separate comments from each member of the panel, the researcher made the necessary changes. The final Malay version of SRBCSS was given to five final-year Bachelor of Education (Teaching of English as a Second Language) students in UPM. They translated each item in the SRBCSS back into English. The 'back translation procedure' was essential to ensure that the content of the Malay version of SRBCSS had not deviated from the original English version.

RESULTS

In this study, data on teacher ratings were analysed according to the total score for SRBCSS for each teacher and the subtest score of SRBCSS of each teacher.

Total Score of SRBCSS

On the basis of the *total score* for each teacher, there were four scores that together provided the total SRBCSS score. The four scores were from the Malay, mathematics, English and class teachers.

The results from a stepwise procedure of multiple regression indicated that ratings from the three subject teachers were significant predictors of intellectual giftedness. The amount of variance shared by these three teachers is small (around 12%) (Table 1).

The best predictor of giftedness was the Malay teacher rating with 10% shared variance. The mathematics teacher and the English teacher only gave an additional shared variance of 1% each to the Malay teacher.

The result from Fisher's linear discriminant function analysis indicated that all four teachers' total ratings of SRBCSS can be used to discriminate between intellectually gifted and non-intellectually gifted. The summary of Wilks' statistics is presented in Table 2. The manner in which the variable is entered is similar to the multiple regression with Malay teachers the first variable to be entered.

Data shown in Table 3 indicate that the four teachers' total rating score using SRBCSS correctly classified 64.69% [(134 + 62)/303]. Nearly 40% of the intellectually gifted were classified as non-intellectually gifted (false negatives). Among those who were classified as intellectually gifted, more than half were non-intellectually gifted (false positives).

Teacher Subtest Score of SRBCSS

Based on the teacher subtest score of SRBCSS, there were 16 measures of teacher rating for every respondent (4 teachers x 4 subtests). Data shown in Table 4 indicate that only five measures were significant predictors of intellectual giftedness: Malay learning, maths motivation, English learning, class creativity and class leadership. The five significant predictors shared 20% of variance with intellectual giftedness, nearly twice the amount of variance of the total score of SRBCSS for the four teachers.

The stepwise procedure of multiple regression of the teacher subtests of SRBCSS indicated that five teacher subtests were significant predictors of intellectual giftedness. However, the Wilks' procedure of

TABLE 1
Predictors of intellectual giftedness among the total score of SRBCSS

Step Variable	R	R ²	Adj.R ²	B	Beta	T	Sig.T
1 Malay	.31	.10	.09	.005	.20	3.06	.0024
2 Maths	.33	.11	.11	.003	.13	3.27	.0240
3 English	.35	.12	.12	.002	.13	.207	.0398

TABLE 2
Discriminant analysis for total score of SRBCSS (N = 303)

Step	Teacher	Wilks' Lambda	Sig
1	Malay	.90	.0001
2	English	.89	.0001
3	Maths	.88	.0001
4	Class	.87	.0000

TABLE 3
Predictive classification results for intellectually and non-intellectually gifted (N = 303)

Variables	Fisher's Linear discrimination Function	
	Non-intellectually Gifted	Intellectually Gifted
Malay	.9328	.1216
English	.9301	.1085
Math	.1663	.1860
Class	.1301	.1195
(Constant)	-27.8636	-30.2125

Classification Results Predicted Group Membership		
Group	Non-gifted	Gifted
Non-gifted	134 (66.3%)	68 (33.7%)
Gifted	39 (38.6%)	62 (61.4%)

TABLE 4
Predictors of intellectual giftedness among the subtests of SRBCSS

Step	Variables Teacher-subtest	R	R ²	Adj.R ²	B	Beta	T	Sig.T
1	Malay-learning	.31	.09	.09	.014	.16	2.32	.0212
2	Maths-motivation	.37	.14	.13	.023	.23	4.29	.0000
3	English-learning	.40	.16	.15	.011	.13	2.11	.0360
4	Class-creativity	.42	.18	.17	-.013	-.19	-3.29	.0011
5	Class-leadership	.44	.20	.19	.015	.16	2.41	.0167

discriminant analysis identified eight (8) teacher subtests. The summary of the results is shown in Table 5.

The effectiveness of 5 teacher subtests as the result of multiple regression procedure and 8 teacher subtests from Wilks' discriminant function analysis in classifying intellectual giftedness is shown in Table 6. The difference between using eight teacher subtest

measures and five teacher subtests is that the five teacher subtests failed to identify only one (1) intellectually gifted child. Therefore, five teacher subtests are more feasible than eight teacher subtest measures.

CONCLUSION

Based on the above findings, both procedures resulted in 33% 'false negatives' and 50%

TABLE 5
Discriminant analysis for the subtests of SRBCSS (N = 303)

Step	Variable	Wilk's Lambda	Sig
1	Malay-learning	.91	.0001
2	Maths-motivating	.86	.0001
3	English-learning	.84	.0001
4	Class-creativity	.82	.0001
5	Class-leadership	.80	.0001
6	Malay-leadership	.80	.0001
7	English-leadership	.80	.0001
8	Class-motivation	.79	.0001

TABLE 6
Predicted group membership by discriminant function analysis teacher-subtest of SRBCSS

Actual	N	Teacher-Subtest SRBCSS			
		8 Measures Predicted		5 Measures Predicted	
		0	1	0	1
0	202	147 (72.8%)	55 (27.2%)	141 (69.8%)	61 (30.2%)
1	101	35 (34.7%)	66 (65.3%)	34 (33.7%)	67 (66.3%)
% correct		69.3		68.7	

Note: 0 = non-intellectually gifted
1 = intellectually gifted

'false positives'. However, the five teacher-subtests demanded less teacher's time in administering SRBCSS as each subtest had not more than 10 items. On the contrary, the former procedure (total score) required teachers to appraise each student using all 37 items of SRBCSS.

Since both procedures contained a large number of 'false negatives', there must be some reason why teacher rating did not effectively identify gifted children. Awanbor (1989) found that teachers are more likely to use scholastic achievement as an index to identify gifted children. Burt (1955) alleged that teachers' gradings are markedly biased in favour of memory or capacity to learn. Data from a large body of research on 'self-fulfilling prophecy' indicated that teachers' behaviour and attitude are based upon

physical attractiveness, compliance and active participation. Gifted children are, on the other hand, 'precocious' (Keating 1975), with a tendency to exhibit undesirable behaviour to the teachers.

In the Malaysian context, teachers are the most economical personnel to be utilized in identification of intellectual giftedness. Based on the findings of this study, it is essential for the authorities to train teachers to be objective in their evaluations. Even so, one must recognize that there is a great deal of error in the classification of gifted children.

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Conflict Resolution Through Consensus Building: Experiences from the Dayak Iban Community of Sarawak, East Malaysia

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ABSTRAK

Makalah ini bertujuan mengkaji pengurusan dan penyelesaian konflik dengan merujuk khasnya kepada masyarakat Dayak Iban di Sarawak. Ia cuba membina hujah bahawa konflik dapat dikurangkan sekiranya manusia dapat diasuh supaya menerima hakikat terhadap peranan masing-masing dalam susunan sosial masyarakatnya. Konflik di kalangan orang Dayak Iban adalah pada paras minima kerana nilai sosiobudaya masyarakat tersebut menggalakkan saling pergantungan di antara individual Iban. Seseorang yang melanggar sebarang peraturan atau norma masyarakat akan cepat diasing dan dimarahi sehingga wujud perasaan sangat malu akan tindakan salah itu. Mengikut pengarang, penerimaan masyarakat Dayak Iban terhadap kedudukan dan peranan masing-masing dalam konteks sosial, ekonomi dan politik telah membantu menjalinkan hubungan sosial yang harmoni, memastikan keadilan ekonomi dan kestabilan politik. Di peringkat yang lebih tinggi, iaitu di peringkat masyarakat Malaysia, penerimaan konsep keadilan dalam konteks yang difahami masyarakat Dayak Iban inilah yang telah menjamin bahawa Dasar Ekonomi Baru (DEB) diterima umum dan berjaya mengagihkan kekayaan negara "sama rata" di kalangan masyarakat pelbagai etnik di negara ini. Dalam lain perkataan, pembahagian faedah pertumbuhan ekonomi mengambilkira keperluan sesuatu etnik sebagaimana keperluan ini ditaksirkan oleh golongan pemerintah.

ABSTRACT

This paper examines conflict management and resolution, focusing specifically on the Dayak Iban society of Sarawak. It argues that conflicts can be substantially reduced if people are socialized to accept their respective roles in the socioeconomic and political structure of society. Conflicts among the communal Ibans are kept to a bare minimum because their sociocultural values promote harmonious interdependence among individuals. Those who transgress the community accepted norms of behaviour are quickly ostracized, reprimanded and made to feel greatly ashamed. Iban acceptance of their positions and roles within the social, economic and political structure of society has helped to maintain social harmony, economic justice and political stability. On a higher order, that is in Malaysian society, it is the realization of this sense of justice that made the NEP acceptable and successful in allocating the benefits of economic growth among the various ethnic groups in the country. In other words, each community according to its needs as seen by political leaders.

INTRODUCTION

Conflicts abound in society because people are made to believe that they are equal. Certain religious doctrines argue that people, who are created in the images of his or her creator, are born equal. Building on this notion, many political, social and economic doctrines are constructed with the view to either sustaining or glorifying this religious

concept of "total equality".

Conflict arises because people have unrealistic ambitions. They easily become envious of the successes of others. When they fail, they start searching for the faults in others. Naturally, they refuse to acknowledge any shortcomings that they themselves might have and which could have been the main reason for their failure.

The concept of equality is highly relative. This was, and to some extent still is, strongly acknowledged by members of the Dayak Iban community of Sarawak. This acknowledgement has in many ways helped to lessen conflicts and make their resolution much easier to achieve. This case study examines some fundamental values of the Sarawak Dayak Ibans that address conflicts and their resolution.

BACKGROUND

Who Are the Dayak Ibans?

Descendants of the famed headhunters of Borneo, Dayak Ibans were once a seafaring, adventurous, adaptable and highly mobile people. Historical accounts show that it was these spirits that led them to migrate from regions such as the Kapuas in Indonesian Kalimantan to various parts of present-day Sarawak. Reasons for this migratory practice included: (1) their thirst for opening up of new land to settle; (2) their need to search for new fertile land on which to practise their shifting cultivation; and (3) their need to satisfy their urge to travel (*bejalai*)¹ (Sandin 1967).

In contemporary Sarawak, Dayak Ibans presently number about 450,000, constituting therefore about 30% of the total state population (Annual Statistical Bulletin Sarawak (ASBS) 1988: 13). They are the largest indigenous group, followed by the Malays who constitute about 21%, the Dayak Bidayuhs 8%, the Melanau 6% and the Dayak Orang Ulu 5%. Collectively, the indigenous groups are also referred to as *bumiputera* (sons of the soil) (Federal Constitution of Malaysia, Article 161A). Chinese comprise the remaining 29%.

The majority of the Dayak Ibans live in longhouses in the far-flung rural areas of Sarawak, principally along the Rejang and the Saribas river banks. In 1980, about 95.2% of the Dayak Ibans were reported to be rural dwellers (Sarawak 1983). The

majority of them continue to be found in the traditional Dayak Iban enclaves of the Saribas and Rejang river basins. Saribas is presently home to about 25% of the Dayak Ibans, while another 33% live in the Rejang basin (Annual Statistical Bulletin Sarawak 1988: 13).

The majority of the Dayak Ibans continue to rely on shifting cultivation as their principal means of livelihood. In 1960, about 98% of the Dayak Iban labour force were engaged in agriculture and agricultural-related activities. By 1970, the percentage of Dayak Ibans engaged in this sector had dropped to 94.8% and in 1980 to 88.2% (Annual Statistical Bulletin Sarawak 1970: 41; 1980: 18-19; 1984: 37-38).

Bilik-Family

The basic socioeconomic and political unit in Iban society is the *bilik*-family (Freeman 1970). A *bilik*-family usually comprises two or more generations living in the same family unit called a *bilik*² (compartment). Generally, the Dayak Iban practise an extended family system. This customary practice is further sustained by marriage tradition; married couples are encouraged to stay within the bridegroom's *bilik*-family before they start to form their own *bilik*-family.

The *bilik*-family is an important social, economic and political institution of the Dayak Ibans (Jawan 1991). First, it provides a Dayak Iban with a sense of identity. A person is not only born into a *bilik*-family from which he/she is descended (*purih*), but acquires from it an orientation with which to deal with the outside world.

Second, the *bilik*-family is an economic unit which helps to sustain family self-sufficiency. A high degree of solidarity between members of the extended family is only to be expected. Division of labour within the *bilik*-family based on gender, age and physical ability is an accepted practice. There is nothing derogatory about defining or

¹ Literally "to walk". For a more detailed account of this Dayak Iban culture, see, for example, Kedit (1993); and for the review of Kedit's book and the custom see Jawan (1995).

² Literally, "a room"; but in this case, it refers to a family living compartment with sections for such activities as sleeping, dining and cooking.

delineating activities based on such dichotomies as gender or age. Its acceptance has contributed to the maintenance of a harmonious balance in the *bilik*-family, community and society. For example, the burning and felling of trees to clear land for farming is normally undertaken by men; certain jobs carried out during the farming cycle, such as clearing the shrubs, are usually left to the women and children; and the guarding of the rice fields and orchard farms is generally expected of elder members of the *bilik*-family.

Third, the *bilik*-family is a basic political institution in which there are well-ordered relations between its members. In the *bilik*-family, the elders are synonymous with authority; this is further reinforced by the *adat* (the proper way of doing things; customs and traditions) which legitimizes relations, grants duties and prescribes obligations between members of the *bilik*-family. It is not generally expected that younger members of the *bilik*-family would openly go against the wishes or advice of their elders. On the whole, younger members of a *bilik*-family are generally expected to seek and respect the advice and opinions of their elders.

Longhouse

A longhouse (*rumah panjai*) is a series of *bilik* (family compartment) joined together to form a long house. The longhouse shares a common roof (*perabong*), a covered verandah (*ruai*) and an open platform (*tanju*) which runs the length of the longhouse. The *ruai* is a focal point of many activities such as the holding of a harvest festival (*gawai Dayak*) and other festivities and the entertaining and receiving of visitors.

A longhouse can be as short as four or five doors and as long as forty doors.³ It is headed by a popularly elected⁴ headman called a *tuai rumah*, who is usually male.⁵ In traditional

Dayak Iban society, the headman's authority was non-formal because it was, unlike today, not backed by legitimate authority to enforce compliance. Nevertheless, a headman still exercised considerable power because of several factors. First, he was popularly elected. Second, his non-formal authority was, and still is, backed by *adat* which is revered by the Dayak Ibans.⁶ Thirdly, he always consulted other elders and relied upon precedents before passing judgements in any dispute hearing (*betugong/baum*). Fourth, he may also simultaneously hold other prestigious leadership positions which therefore enhance his standing as a headman.⁷ Lastly, he has had the necessary dreams, which is an essential element of leadership in Dayak Iban society (Sandin 1962).

DAYAK IBAN CULTURE

Dayak Iban society has been described as classless and highly egalitarian (Freeman 1970). The community was said to thrive on self-sufficiency through personifying high degrees of competition, co-operation and individualism. Underpinning all these values is the *adat* which justifies and legitimizes interactions based on them (Jawan 1991).

The *adat* is the single most important factor governing interactions within and between the temporal and spiritual worlds. The *adat* deals with the proper ways of maintaining balance in society. In this sense, it not only prescribes proper conduct between individual Dayak Ibans but also between them and their gods (*petaras*). Conflict is therefore seen as disturbing the balance, and hence its resolution must be swift and amicable to all parties concerned.

Although the longhouse is home to many individualistic and highly competitive Dayak Ibans, conflicts are not as common as might

³ One door corresponds to one *bilik* or one *bilik*-family. Taking a modest average of about 7 persons (e.g. grandparents, parents and three children of the latter) per *bilik*, a longhouse of a modest length of 30 doors can easily comprise about 210 individuals.

⁴ The equivalent term in Dayak Iban is *dituduh ka bala maioh*.

⁵ However, in recent years (as early as the 1970s), women have ascended to the position.

⁶ The position of the headman is now recognized by the government, from which he or she draws a specified yearly allowance. The authority of the headman is now backed by legislation, particularly as a result of the adoption of the Iban Adat 1993.

⁷ In the Dayak Iban society, a person ascended to a position of leadership after having proven his worth in certain fields such as head-hunting (warleader [*tuai kayau*]) and in the opening up of new land (regional chief [*tuai mubok menua*]).

be expected. This is attributed to a number of reasons. First, although Dayak Ibans are highly egalitarian, they accept the fact that their society is classless and that people, to some extent, may be born equal. They also acknowledge that in reality people are not equally endowed and that their *petaras* are not the just biblical God because, as their experiences teaches them, their *petaras* bestow favours on some and not on others. Thus, those who have received the blessing of the gods and who may have moved on to positions of authority are not to be envied. Instead, they should be listened to and respected.

Second, Dayak Ibans are taught to be respectful of their elders. It is persistently driven into the psyche of the Dayak Ibans that to go against their elders is to invite misfortune by being cursed (*tulah*). While going against elders may not eventually lead to misfortune, the fear that this belief generates among potential delinquent siblings may be enough to at least prevent a disagreement developing into an open and explosive confrontation.

Lastly, Dayak Ibans detest conflicts, especially between members of the same *bilik*-family. Those who engage in conflicts earn the label of "not conforming to the *adat* ways" (*nadai adat*). This brings great shame (*malu*) not only to the individuals involved, but also to their *bilik*-families, who are then seen as having failed in some way in the social upbringing of their offspring. The shame of not conforming to the *adat* ways is also a deterrent to conflicts between members of different *bilik*-families because those who engage in conflicts are seen as social outcasts unfit to be members of the longhouse community. Although Dayak Ibans are highly individualistic and mobile, there are relatively few recalcitrant members because leaving one longhouse community to join another would still mean having to subject themselves to similar social norms based on the *adat*.

Among the Dayak Ibans, conflict is seen as pervasive in nature. This is especially so as conflicts disturb the harmonious balance in society – between people and also between

people and nature. Thus, although a conflict may develop between two individuals or *bilik*-families, the consequences may affect the whole community.

CONFLICT MANAGEMENT

Conflict management falls within the scope of the authority of the headman (*tuai rumah*). In this respect, the role of a headman is similar to that of an arbitrator or a judge. As his authority in traditional Dayak Iban society was not backed by any formal authority to enforce compliance to his verdicts, a headman's personal qualities as a leader carried a strong bearing among his subjects. Among the recognized qualities or traits of a headman were an extensive knowledge of *adat*, impartiality and high morals and integrity.

Notwithstanding the above qualities or traits, *adat* alone was enough to ensure that the decisions of even the weakest of headmen would be complied with by his subjects. This is even more so now that a corpus of Iban *adat* (Iban Adat 1993) has been passed by the state legislative assembly, therefore making what was previously "*adat* law, customs and traditions" enforceable and backed by the authority of the state. However, compliance to a headman's informal authority has never been based on the force of the civil sanction. Its effectiveness was, and will continue to be, based on two important factors: (1) the element of shame felt by the individuals and their families; and (2) the fear of supernatural retribution that may befall the individuals, their families and their communities.

When disputes are lodged, a headman first attempts to give the disputing parties a cooling-off period. This is usually done by fixing a date for the arbitration conference (*bertugong* or *bicara*) some days after the complaint is first received. During this time, a headman would make an effort to find out from the disputing parties if their differences could be settled amicably between them, instead of being brought out in an open arbitration conference. The main concern of a headman is to prevent disputing parties from appearing in an open arbitration conference where all will be exposed and where tempers may flare. This would make future reconcilia-

tion between the disputing parties almost impossible to achieve. But if this effort fails, the pre-arranged arbitration conference is then held.

An open arbitration court is normally held in the evening immediately after dinner on the headman's section of the common or covered verandah (*ruai*). No prior notice is issued. Residents of the longhouse are only informed of, and invited to attend, the proposed conference minutes before it is about to start. There is no restriction as to who can attend the open court.⁸

When all parties involved in the litigation have arrived, the proceedings begin with the headman explaining the purpose of the conference. There are several ways in which a headman may mediate or arbitrate disputes. As he already knows the nature of the dispute, a headman may merely relate the facts of the dispute and then pronounce his/her judgement. Neither side is called to make or present its case and witnesses. The main argument behind this method is to prevent "dirty linen being washed in public" and thereby reducing any chance the disputing parties might have to mend their differences.⁹ However, the effectiveness of this method depends a great deal on the personality of the headman. This method can be effectively used by a leader who is accomplished and therefore a highly respected and feared figure in the longhouse community.

Alternatively, the headman may apply the "fight-it-all-out" method. In this approach, a headman calls upon the plaintiff to present his/her case and to call testimonies of relevant witnesses. The defendant is then given a chance to make a defence and to call witnesses. When all sides have been heard, the headman considers the case, asks opinions of elders and other headmen who may be present and then pronounces his judgement.

Wrongdoings usually fall into two cate-

gories: (1) wrongful acts that are injurious to others; and (2) wrongful acts against nature (prohibitions or *pemali*). Disputes can involve either one or both elements. In respect of the first offence, resolution usually takes the form of a fine intended to be a deterrent to potential *adat* breakers. Although the fine is minimal in monetary terms, the social stigma of having broken the *adat* law, customs and tradition is an act heavily frowned upon by members of the community. For the second offence, the fine (*meri pemali*) is meant to restore the balance between the temporal and spiritual worlds (*nyelap ka menua* [lit.: to cool the world]) that has been disturbed by the act of transgression (*ngangat ka menua* [lit.: to heat the world]). Resolutions of transgression against nature may also require that a special ceremony be held in order to appease angered spirits and to seek their continued blessing and good fortune.

IMPLICATION AND APPLICATION

The important lesson of this Dayak Iban tradition is that "people must learn to acknowledge and appreciate their position in society. They must therefore act accordingly and should only make claims that are within their respective social status or positions. There are usually no less than about a hundred individuals in an average longhouse. However, contrary to what this might suggest, conflict is not a common occurrence among these individualistic and highly competitive Dayak Ibans.

Among the egalitarian Dayak Ibans, equality is accepted and highly valued. But their perception of equality differs from the biblical interpretation. In Dayak Iban society, it is accepted that people are not born equal. Neither are Dayak Iban gods (*petaras*) just because they pick and choose mortals to be endowed with special abilities. According to the Dayak Iban religion, some are born destined for greatness; others are not. To the Dayak Ibans equality merely implies that there is no institutionalized restriction on opportunities within the socio-culturally accepted sanctions. All may compete equally, but those who may have

⁸ This has led a certain Dayak Iban scholar to erroneously conclude that there was absolute equality in the Dayak Iban society; for a critique of this view see Jawan(1992).

⁹ In Western tradition, this specific role played by the headman is known as third-party intervention. Its success is highly dependent on the latter's "... special skills and expertise.." (Hill 1982).

received divine intervention are more likely to succeed than those who have not.

Conflicts emerge when people stake claims that are beyond what is generally permitted to and expected of them. For example, it is unrealistic for all members of a hunting party to make equal claims to the division of the spoils as each member may have contributed differently to accomplishing the task. In this case, equality means dividing the spoils based on a person's contribution and position in the activity (*pedua badak, mit kelikit besai kelikai*). Hence, a leader (and an organizer) of the hunting party may have contributed little to the actual work of catching the fish, but it is not expected that he will be given a smaller share. Instead, his share may be bigger than that of others by virtue of his position.

On a larger scale, the success of maintaining harmonious inter-ethnic relations at both the state and federal levels of government in Malaysia can be attributed to the promotion of a similar notion to the Dayak Iban concept of equality and justice. For example, in Sarawak, the practice of involving all major ethnic communities in running the state government has led to political stability and legitimacy. But when this practice is cast aside with the exclusion of the majority Dayak Ibans, the acceptability and popularity of the ruling party is put into question, as events surrounding the removal of Abdul Rahman Yaakob in 1981 revealed and as shown by the diminishing popularity of the ruling coalition in 1987 when its majority was drastically reduced from the previous two-thirds to a three-seat majority.

In peninsular Malaysia, the exclusion of the Malays from the mainstream economic activities prompted an ethnic upheaval and rethinking that led to the emergence of the New Economic Policy (NEP) to address this inequality. With the NEP came the redefinition of "equality" and socio-economic "justice". Under this policy, "just" distribution of the socioeconomic benefits of economic growth was defined in terms of the proportion of each ethnic group in the national population. Competition and equal access were still maintained, but confined to each ethnic

quota of the national pie.

In general, this policy has contributed much to Malaysia's post-1970s success in maintaining a harmonious balance between its many competing ethnic groups. Undoubtedly this policy's success has been heavily dependent upon the ability of the Malaysian economy to expand, thereby ensuring that the allotted pie continued to grow large enough to satisfy all individuals within each ethnic community. In a way, the NEP also worked to reduce ambitious and unrealistic demands and counter-demands of one community on the others.

CONCLUSION

Conflicts and tensions can be contained if people are made to realize, accept and respect their respective positions in the social, economic and political structure of society. This is even more attainable in a society where the idea is strongly supported by its sociocultural values such as those of the Dayak Ibans because the acceptance of this hierarchy entails that one knows what is reasonably due to oneself and to others within the context of relative equality. To ensure the maintenance of stability and harmony, any change to this situation must be coupled with, and sanctioned by, the changing sociocultural values of the community.

In Dayak Iban society, the resolution of conflict is not a "win-lose" or zero-sum game consideration, but a "win-win" or a variable sum game circumstance.¹⁰ This is where the acumen of a headman is most needed to bring about fast and acceptable solutions.

In the Malaysian political context, the introduction of the NEP was the defining of the proportion of pie according to the social and political position and prominence of each respective community in the national population. It was the acceptance of this situation which also guaranteed a win-win situation for all ethnic communities that good inter-ethnic relations have flourished.

¹⁰ For discussion of zero sum or variable sum game, see Kriesberg (1956).

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General Problems Experienced by Elementary Classroom Teachers

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ABSTRAK

Kajian ini membentangkan masalah-masalah umum yang biasa dialami oleh guru sekolah rendah ($n = 439$) di salah sebuah negeri dalam daerah Midwest, USA. Masalah ini dilaporkan melalui versi ringkas instrumen 'Teacher Problem Checklist'. Lima masalah utama yang dilaporkan berlaku dalam kajian ini ialah: (1) masa tidak mencukupi untuk membuat persediaan mengajar; (2) masa tidak mencukupi untuk mengajar dan juga untuk menilai dan memperbaiki pengajaran; (3) masa lapang yang sangat terhad; (4) mendapatkan pelajar supaya menggunakan waktu santai dengan baik dan; (5) mendapatkan pelajar supaya mereka seronok belajar untuk mendapatkan ilmu. Lima masalah utama yang mengkusar jika ia berlaku adalah sama juga dengan senarai masalah yang dilaporkan itu.

ABSTRACT

This study presents the frequency and bothersomeness of some general problems of a sample of elementary school teachers ($n = 439$) in a Midwest state, USA. The problems are from self-reports of teachers measured using the abridged version of the teacher problem checklist. The top five problems of elementary school teachers reported in the study are: (1) insufficient preparation time; (2) insufficient time to teach and also to diagnose and evaluate teaching; (3) insufficient free time; (4) motivating students to use their leisure time well, and (5) motivating students to enjoy learning for its own sake. It was also found that the same top five problems bothered all the teachers.

INTRODUCTION

Teacher problems have been studied since the early 1960s (Dropkin and Taylor 1963; Cruickshank and Leonard 1967; Cruickshank *et al.* 1968; Cruickshank and Broadbent 1968) and research interest in this area was sustained into the 1970s (Lee 1974; Cruickshank *et al.* 1974; Cruickshank and Myers 1975; Myers *et al.* 1975; Kennedy *et al.* 1976; Jalali 1978; Hunter 1979) up to the 1980s (Cruickshank and Associates 1980; Bainer 1986; Zulkifli 1987) and 1990s (Bainer 1993). The phenomenon was studied not only in the United States, but was also well researched in other parts of the world (Veenman 1984).

Before looking at classroom-related teacher problems let us examine what constitutes

a problem in general, i.e. what is a problem? There are several possible definitions, including: (1) a question or situation that presents uncertainty, perplexity or difficulty (2) an expression of unmet need or unfulfilled goal (3) a problem arises when we want something and we cannot have it and (4) a problem exists when an organism, e.g. a teacher, is motivated towards a goal and there is no ready way to achieve it. Some problems are more difficult than others and when we consider a problem to be difficult, or serious it is very likely that more than one element is involved. Teachers, like other people, are confronted by problems at their workplace. Cruickshank *et al.* (1980) put forward strong arguments for wanting to identify teacher problems in the workplace. These included:

(1) trying to lessen the teacher burden and making them more productive and constructive in carrying out their duties; (2) the implications for the teacher training curriculum, i.e. teacher preparation should be geared to, or based on, teachers' needs; and (3) unless classroom teachers are satisfied and happy, the increasing rate of teacher shortage will have detrimental effects on the education of future generations.

A teacher problem is an example of goal response interference occurring during the course of a school-day. In order to understand teacher problems, it is essential to know teacher goals. Teacher goals come from two sources. First, teachers have the same common goals as all humans, sometimes referred to as general human needs. These are subdivided into two categories, physiological needs and socio-psychological needs. Physiological needs refer to the organism's requirement for water, food and rest and so forth. Socio-psychological needs, on the other hand, are not inborn, but learned. These needs are acquired through the process of specialization. These learned needs – achievements, social approval, status and so forth – exhibit themselves in different forms and in different amounts in different individuals (Cruickshank and Associates 1980).

The second source of goals (Cruickshank and Associates 1980) arises when the individual takes on the role of a teacher and assumes role-derived needs. Here the person-as-teacher is expected, and usually expects, to behave in institutionally sanctioned ways. That is, assuming the role of teacher makes one behave toward students in ways demanded by the community or the teaching profession.

Teacher problems result as teachers try to meet both (1) their own human needs which are physiological or socio-psychological in nature and (2) role-derived needs that the job of teaching demands. It seems that most classroom-related problems result when persons assume the teacher role and must achieve goals that are completely new or for which they are unprepared or ill-prepared, such as in controlling and managing the classroom and motivating the students.

Their inability to satisfy these needs makes them feel alienated, discontented and frustrated. If this is allowed to accumulate over the years there is a tendency for teachers to become dissatisfied with their job and leave the profession in favour of another job, or opt for early retirement.

Classroom-related teacher problems arise when teachers are unable to achieve their goals or fulfil what they want to do in their workplace. For example, a certain teacher is highly motivated to teach a class in a mid-city school where the students are not interested in learning and other teachers are not enthusiastic to teach this class because of the students' backgrounds. The students are apathetic towards their education and nothing will motivate them to learn because most teachers expect them to fail. Out of special love and concern for the welfare and future of these students, the teacher goes all the way to reach out to these students. He wants them to learn and feel successful not only in school but also in later life. Even though repeated attempts are made to change their attitude to encourage them to come to school regularly, and behave appropriately in class, the teacher's effort is futile. When he visits their parents he is told to mind his own business. The teacher gets very frustrated because he is unable to let go of this desire to help his students.

In another case, a teacher is very enthusiastic in her work. She holds many positions in the school and she is also very active in the Parent-Teacher Association besides other community services. Because of these commitments and burgeoning paperwork in the teaching profession she is not able to cope up with her daily routine. She gets very tense and is sometimes unable to relate very well with her colleagues and students. She feels she is not doing a good job and feels unappreciated. She is often seen in the cafeteria eating alone during recess. These are just two vignettes of a 'slice of life' from the classroom and some of the related problems experienced by teachers in their workplace.

According to Cruickshank and Associates (1980) teacher problems can be grouped into

five categories: (1) affiliation; (2) control; (3) good parent relationships and understanding home conditions; (4) student success; and (5) time.

These five categories or factors were derived through factor analysis. The factors identified and the various items that load on them were later interpreted and presented as a teacher problem model based on the relationship among the items and the factors that underlie the relationship. This model was drawn up using the conventional path diagram and was the basis of the teacher problem validation studies (Zulkifli 1987; Zulkifli and Loadman [in progress]).

According to Cruickshank and Myers (1975), there is a common assertion that if you can find out what teachers' problems are, you have gained enormously valuable insight into their world and are in a position to help them at some level to consider and thus accept, reduce, or eliminate those problems.

Teacher problems are real and will not go away with the accumulation of teaching experience. If these problems are extremely bothersome they will affect teachers' performance and job satisfaction (Engelking 1986; Leslie 1989). In addition to that, problems in the workplace or 'environmental stressors' and job dissatisfaction contribute to stress and teacher burnout (Gold *et al.* 1992). Environmental stressors are a collection of stressors inherent in schools over which teachers have very little control. As such, the stage is set for job-related stress when involvement in work is high (as in teaching) but feelings of control or power in the work setting are limited (French 1993).

According to Wangberg (1984), teacher stress is not a simple issue. A review of the literature on teacher stress and dissatisfaction included many areas of concern, including poor working conditions, excessive paperwork, poor relationships with others in the workplace setting and loss of control over what happens with one's classroom. Several items from the 'affiliation' category of the original instrument used in this study purport to measure this problem. Lack of affiliation or alienation also results from the sense of

isolation that many teachers seem to experience. In a study of British teachers (Newell 1980) it was concluded that teachers with problems see themselves as different from others and think they alone are having problems. As a result they internalize their difficulties or problems rather than seeking aid or a solution. This is an unhealthy situation and should be looked into by teacher educators and teacher education policy-makers.

In the push for excellence in education, administrators may forget that dissatisfied teachers can weaken the educational programme. Engelking (1986) identified significant dissatisfaction factors among teachers as 'relations with student and parents', 'lack of achievement by students or teachers' and 'communication with administrators'. This aspect is also measured by some items in the instrument of the current study. Examples of such items are: 'establishing good relations with parents and understanding home conditions', 'holding worthwhile conferences with parents', 'getting my students to enjoy learning for its own sake', 'overcoming anxieties related to being supervised', 'understanding and helping the atypical or special child' and 'helping my students to know and accept themselves as they are'. Being aware of the exodus of teachers from the teaching profession through early and/or optional retirement and realizing the importance of keeping teachers happy and satisfied in their workplace, this study seeks to identify some of the major classroom-related problems of elementary school teachers.

Sometimes a problem may occur frequently but it may not bother the teacher at all. On the other hand, some problems may occur less frequently but are bothersome.

A bothersome problem is one that produces a significant impact on the teacher's emotions and may linger in the teacher's life longer than other problems which are less bothersome. In this study, the researcher will identify not only the most frequent common problems of elementary classroom teachers but also identify the most bothersome ones.

RESEARCH QUESTIONS

The research questions in this investigation are:

1. What are some common problems of elementary school teachers?
2. Which problems are the most bothersome?
3. What factors underlie all these problems?

METHOD

A survey of a sample of elementary school teachers in a Midwest state was carried out. A cluster sampling of classroom teachers was done using schools as the cluster. A systematic random sampling of 60 schools in local, city and exempted village school districts were selected to participate in this study. Every tenth school from the list provided by the State Education Directory was selected until 60 schools were selected. A total of 439 teachers from 51 schools participated in this study. This represented a 39% return rate for the teachers and 85% response rate for the schools. The sample was representative of the population of elementary school teachers in the sampling framework in terms of school districts and sex ratio of teachers.

INSTRUMENTATION

In the current study, the teacher problems investigated are self reports of a sample of elementary school teachers surveyed using an abridged version of the teacher problem checklist (TPC) which was developed through exploratory and confirmatory factor analysis (Zulkifli 1987). This instrument was adapted from the original version used in the Bainer (1986) teacher problem study. The abridged version with two scales had 40 items. A list of these forty items is presented in Table 1.

Several items in the teacher problem checklist (TPC) specifically measure the problem related to stress. One such item is, 'Overcoming anxieties related to being supervised'. The concern with stress stems from mounting evidence that stress may significantly impair teachers' ability to dis-

play effective instructional behaviour and good working relationships with students. Another item in the TPC, 'Getting the understanding and sustenance of administrators and other teachers so that I can be efficient and feel professional' purports to measure problems related to stress. The two subscales employed in the teacher problem checklist were called 'Frequency' and 'Bothersomeness'. The problem statements or items were listed in a central column with the 'Frequency' of the problem placed on the left-hand side of the page and 'Bothersomeness' of the problem on the right-hand side. The problem statements were rated in terms of frequency of occurrence and degree of bothersomeness. Respondents had to rate each of the problem statements presented on a scale of 1 (lowest-never) to 5 (highest-always) on the frequency of the problems and 1 (lowest-not at all) to 5 (highest-extremely) on the bothersomeness of each of the problems presented. The dimensions of the problems are measured in two ways, i.e. in terms of their frequency and bothersomeness. The frequency of the problem subscale indicates how often the problem occurs to the teacher while the bothersomeness subscale indicates how bothersome the problem is to the teacher. Some problems may occur frequently but do not bother the teacher at all. However, some problems may occur less frequently but bother them tremendously, and different individuals have different degrees of tolerance of these bothersome problems. In addition, there were 19 demographic questions regarding the teachers' and schools' background and the teachers' level of satisfaction with their teacher preparation programme, teaching in general and the school in which they were currently teaching. This instrument was developed through exploratory and confirmatory factor analysis and had both construct and concurrent validity (Zulkifli 1987). The internal consistencies of the items of both scales ranged from 0.71 to 0.90. This indicates an acceptable level of reliability of the abridged version of the TPC used in this study.

TABLE 1
Items in the abridged teacher problem checklist

Factor 1 – Professionalism

Items

1. Employing retribution or punishment.
2. Working effectively with university student teacher supervisors.
3. Getting the understanding and sustenance of administrators and other teachers so that I can be efficient and feel professional.
4. Dealing with students' absenteeism and tardiness.
5. Establishing and maintaining rapport with other teachers.
6. Being awake and alert.
7. Overcoming or counteracting interruptions to my teaching or classroom routine.
8. Helping my students to feel secure and unafraid.
9. Developing confidence in my colleagues.
10. Eliminating parental interference with my teaching.
11. Improving conditions so that students can study better at home.
12. Getting students to enjoy learning for its own sake.
13. Holding worthwhile conferences with parents.
14. Overcoming anxieties related to being supervised.
15. Liking my students.
16. Dealing with students who have been abused or neglected.
17. Monitoring the behaviour of students outside the classroom but still in the school area.
18. Establishing good relations with parents and understanding home conditions.
19. Understanding and helping the atypical or special child.
20. Handling problems that may have racial implications.
21. Helping my students to know and accept themselves as they are.
22. Maintaining student attention.
23. Planning and monitoring more than one classroom activity at a time.
24. Extending learning beyond the classroom.
25. Promoting student self-evaluation.
26. Overcoming students' feelings of upset or frustration with themselves.

Factor 2 – Time Management

Items

1. Having enough free time.
2. Having enough preparation time.
3. Having enough time to teach and also to diagnose and evaluate learning.
4. Avoiding duties inappropriate to my professional role.
5. Controlling and using my professional time in the most functional, efficient way.

Factor 3 – Relationships

1. Maintaining order, quiet, or control.
2. Getting students to use their leisure time well.
3. Getting students to behave appropriately.
4. Creating interest in the topic being taught.
5. Enforcing considerate treatment of property.
6. Helping students academically and personally – helping them to be efficient and effective.
7. Getting my students to feel successful in school.
8. Helping students improve academically.
9. Getting all my students to participate in class.

RESULTS AND DISCUSSION

The results of the data analysis presented an ordered list of the classroom related problems and the problems that were bothersome. In general, the top five problems reported to occur frequently were: (1) having enough preparation time; (2) having enough time to teach and also to diagnose and evaluate teaching; (3) having enough free time; (4) getting students to use their leisure time well; and (5) getting my students to enjoy learning for its own sake. The top three items come from the "time management" factor of the instrument, and were from the 'time' factor of the original teacher problem checklist (Cruickshank and Associates 1980). Time is a finite commodity and in the classroom time is a major problem with most teachers. There is an increasing amount of paperwork, clerical and non-teaching duties expected of teachers so they have been deprived of much valuable time that could be used for more productive teaching and the evaluation of learning in the classroom. This problem of time constraint is also mentioned in a recent study in Malaysia regarding the problems of teachers in the implementation of the school-based evaluation programme in the new primary school curriculum (Mohd. Yasin 1994). It was reported that the frequency of testing (35 times per academic year) and incessant record-keeping and paperwork is taking too much of their professional time. As a result of this problem many teachers were dissatisfied with their job, especially those with large classes of more than 35 students.

The fourth-ranking problem 'getting students to use their leisure time well' is from the 'relationships' factor; this item is from the 'student success' factor of the original TPC. Dedicated teachers always strive for a good relationship with their students and they are concerned about the welfare of their students in and out of the classroom. They want their students to succeed in their academic and personal life. The inability to fulfil this function makes teachers feel inadequate and perceive it to be problematic. The fifth-ranking item, 'Getting my students to enjoy learning for its own sake'

comes from the 'professionalism' factor identified in the current study. One of the virtues of professionals is the desire to provide sincere services to their clients. Getting students to learn something for its own sake is a big problem for many teachers because students perceive learning as preparation only for examinations. Teachers who are successful (no problem) in this aspect tend to have students who learn not only for examination purposes but also to continually seek knowledge for the love of it.

On the whole, the top five problems bothersome to the teachers in the study were the same. The correlations of the scores on the 'Frequency' and 'Bothersomeness' scales were quite high, ranging from .48 to .77. It was also observed that the mean of the items in the bothersomeness scales was always higher than the means of the frequency scale. What it implied is that most problems bothered the teachers very much whenever they occurred. The results of this study were similar to the trend found in the Bainer (1986) study. The means, standard deviations and rank order of the problems that occur frequently and the problems that were bothersome are presented in Table 2. The minimum value recorded for each of the problems was 1 and the maximum was 5 in both scales of the instrument. However, the highest mean value for the frequency scale was recorded for the item, 'having enough preparation time' (3.92). As mentioned earlier, the mean for the items on the bothersomeness scale was higher (4.15) than that of the frequency scale.

Separate analyses of the subsamples from urban, suburban and rural areas indicated that the top five problems occurring most frequently as reported by the teachers were not significantly different. This finding concurs with that of Cruickshank *et al.* (1968). However, the top five problems that bothered the suburban and rural elementary school teachers were a little different from those of their urban counterparts. The suburban teachers reported problems of 'maintaining order, quiet, or control' and 'getting students to behave appropriately'. However, the fifth-ranking problem that bothered rural teachers was 'dealing with students who have been

TABLE 2

Means, standard deviations and rank order of top five items in the frequency and bothersomeness scale

Items	Frequency		Bothersomeness		Rank
	Means	S.D	Means	S.D	
1. Having enough preparation time.	3.92	1.19	4.15	1.27	1
2. Having enough time to teach and also to diagnose and evaluate teaching.	3.86	1.16	4.05	1.23	2
3. Having enough free time.	3.77	1.12	3.80	1.43	3
4. Getting students to use their leisure time well.	3.26	1.13	3.39	1.47	4
5. Getting students to enjoy learning for its own sake.	2.99	1.34	3.36	1.33	5

N = 439

abused or neglected'. This same bothersome problem was also reported by Bainer (1993).

Exploratory factor analysis of the frequency of the problem data from Bainer (1986) reported in Zulkifli (1987) revealed that three factors: (1) professionalism; (2) time management; and (3) relationships, underlie the various problems experienced by the elementary school teachers. This was further confirmed with new data in the second phase of the teacher problem study through confirmatory factor analysis using LISREL (Zulkifli 1987). The factor loadings of the items on the three factors are presented in Table 3. Readers are reminded that in confirmatory factor analysis the researcher has the ability to fix the loading of specific items on specified factors to be zero, because based on prior research findings, theory and expert opinion from the field, certain items are not supposed to load significantly on any but the major specified factor. This will enhance interpretability of the results.

These factors were labelled as such based on the items loaded on them. 'Professionalism' was chosen because the items loaded on this factor described the qualities that a teacher should have in order to function well in the profession. It included good interpersonal relationships with other people in the workplace (superiors, colleagues, subordinates or clients), feeling of responsibility and accountability towards the success of students in and beyond the classroom, and having good communication skills for effec-

tive interaction with parents of students. These items came from the categories called 'affiliation', 'student success' and 'good parent relationship and understanding home conditions' as presented by Cruickshank and Associates (1980).

'Time management' was chosen as a label for the second factor because of the items that reflect wise or effective use of time loaded on this factor. These items came from the category called 'time' in Cruickshank and Associates (1980).

'Relationships' was chosen as the label for the third factor because the items loaded on it reflected relationships teachers should have with their clients or students as the person in control in the classroom. The items reflected that teachers assumed this role out of their concern for the students' academic and social success. These items came from the categories known as 'control' and 'student success' (Cruickshank and Associates 1980).

The three factors that underlie teacher problems in this study were highly correlated with each other, varying from .445 to .937. What it means is that teachers who reported problems in the category of 'professionalism' tend to have problems in 'time management' and 'relationships' as well. The reverse is also true.

The top three reported problems on the frequency and bothersomeness scales came from the 'time management' category while the fourth-ranking problem came from 'relationships' and the fifth-ranking problem

TABLE 3
Factor loading of items in the instrument

Items	Professionalism	Time Management	Relationship
1.	.266	0	0
2.	.449	0	0
3.	.161	0	0
4.	.294	0	0
5.	.540	0	0
6.	.541	0	0
7.	.245	0	0
8.	.279	0	0
9.	.496	0	0
10.	.514	0	0
11.	.399	0	0
12.	.634	0	0
13.	.396	0	0
14.	.515	0	0
15.	.333	0	0
16.	.615	0	0
17.	.493	0	0
18.	.353	0	0
19.	.459	0	0
20.	.577	0	0
21.	.579	0	0
22.	.503	0	0
23.	.625	0	0
24.	.324	0	0
25.	.606	0	0
26.	.505	0	0
27.	0	.679	0
28.	0	.721	0
29.	0	.682	0
30.	0	.413	0
31.	0	.399	0
32.	0	0	.449
33.	0	0	.552
34.	0	0	.635
35.	0	0	.548
36.	0	0	.616
37.	0	0	.606
38.	0	0	.689
39.	0	0	.733
40.	0	0	.715

was from the 'professionalism' category. These problems and their ranking were similar to those found in Bainer (1986, 1993) teacher problem studies.

Even though the findings of this study explained the relationship among the problems with only three factors, its meaning and significance were not different from those

problems and factors identified in previous teacher problem studies. The essence of the five-factor teacher problem model suggested in Cruickshank and Associates (1980) was not lost at all. They were just summarized succinctly into three new interpretable factors. If a phenomenon can be explained in a few factors as possible without losing signifi-

cant information then it should be the model of choice. Every researcher has his or her idiosyncratic way of labelling factors based on their interpretations and this should be acceptable as long as it does not deviate too much from the ideas and knowledge already established and known in the field.

SUMMARY AND RECOMMENDATIONS

Teacher problems are real and numerous. However the problems that occur most frequently as reported by teachers in the current study were: (1) having enough preparation time; (2) having enough time to teach and also to diagnose and evaluate teaching; (3) having enough free time; (4) getting students to use their leisure time well; and (5) getting students to enjoy learning for its own sake. These problems were also the most bothersome. In this study the results showed that there is a strong relationship between the responses on the frequency scale and the responses on the bothersomeness scale. Generally speaking, if the problem occurs frequently, then the problem is more likely to bother the teacher.

Even though there are numerous classroom-related problems experienced by teachers, these problems are interrelated and can be classified into three major underlying factors categories: (1) professionalism; (2) time management; and (3) relationships. These problem categories or factors have been identified and confirmed through exploratory and confirmatory factor analysis.

Teacher problems exist, and steps must be taken to look into this phenomenon in order to help teachers stay satisfied in the workplace. Knowing their problems should help curriculum planners to incorporate courses in future teacher education programmes to help teachers deal with these problems. Courses or workshops for future teachers on topics such as 'time management', 'professionalism' and 'relationships' are examples of ways to help them cope in the workplace. Teacher education programmes have been criticized for not preparing teachers based on their needs in the workplace (Smith *et al.* 1969; Smith 1980)

and that most teacher education programmes were designed to cater to teachers in suburban areas (Bainer 1993). Classroom related teacher problems exist and cannot be ignored. They affect teacher performance and job satisfaction and contribute to teacher stress and burnout (Gold *et al.* 1992). Teacher educators need to be sensitive to this issue and make a conscious effort to try to eliminate or reduce these problems. Restructuring or refining the courses in teacher preparation programmes to prepare them realistically for their workplace is one way to help alleviate the problem. As Bainer (1993) noted, teachers in different school localities have different kinds of problems and unless teachers are trained to prepare themselves for various kinds of work environment, new teachers will find themselves struggling to cope with the challenge of the workplace. This is because most teacher preparation programmes prepare teachers for the general and ideal school situation that usually fits the description of a suburban upper-middle class neighbourhoods. New teachers will experience problems if they are placed in a workplace environment very different from what they expect.

Teacher trainees should be exposed to at least a simulation of the various work environments they could be faced with to prevent culture shock on the first day of the teaching assignment.

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The Use of English by Malaysian Business Executives in the Commercial Sector

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ABSTRAK

Kajian ini adalah sebahagian daripada kajian yang luas tentang isu penting dan penataran penggunaan bahasa Inggeris dalam ekonomi Malaysia. Walaupun bahasa Inggeris sering diperkatakan sebagai bahasa yang penting, tetapi kajian yang mendalam tidak diusahakan untuk menyokong dan memberi huraian tentang situasi ini. Kajian yang dijalankan ini merampikan maklumat berdasarkan tanggapan eksekutif perniagaan yang menggunakan bahasa Inggeris dalam dunia pekerjaan mereka. Data yang diperolehi mempermanti hakikat pentingnya penggunaan bahasa Inggeris di tempat kerja komersial. Secara am, eksekutif perniagaan menunjukkan keyakinan dalam penggunaan bahasa Inggeris. Ini bermakna bahawa bakal pekerja-pekerja mestilah juga mempunyai penguasaan bahasa Inggeris untuk diterima masuk ke dalam pasaran dalam sektor komersial. Kekekapan sub kemahiran bahasa yang tertinggi yang digunakan ialah: kemahiran mendengar perbualan sosial dalam perniagaan, kemahiran bertutur yang melibatkan penggunaan telefon, membaca dan menulis surat dan memo perniagaan yang lazim. Dari segi urutan kepentingan, kemahiran bertutur menduduki tangga teratas. Kepentingan kemahiran bertutur yang ditunjukkan dalam kajian ini membuktikan bahawa kejayaan dalam profesional mempunyai kaitan yang rapat dengan keupayaan bertutur dengan baik. Matlumat ini mempunyai implikasi yang mendalam kepada program pendidikan dan latihan.

ABSTRACT

This study is part of a larger survey on the issue of the importance and extent of the use of the English language in the Malaysian economy. While the use of English has often been said to be important, large-scale studies to support and to provide details about the situation are lacking. This present study presents information from the perspective of business executives who use the English language in their jobs. The data obtained confirm the importance of the use of the English language in the commercial work-place. The business executives claim to have confidence in the use of the language. Thus potential employees must also achieve a level of proficiency that would enable them to use the language confidently and efficiently. The most frequent language sub-skills used are: listening to social conversations in business, speaking on the telephone, reading and writing routine letters and memos. In terms of order of importance, speaking was ranked the highest. This attachment of importance to speaking suggests that job success is very much related to the ability to speak well. This information would have deep implications for education and training programmes.

INTRODUCTION

This study complements an earlier study carried out by the researchers on the importance and extent of the use of English in the commercial sector of the Malaysian economy (Goh and Chan 1993). In the earlier study, the focus was on 197 companies and

158 undergraduates from the Faculty of Economics and Management, UPM who did their practical training in these companies. These companies, therefore, represented potential employers in the commercial sector and the undergraduates, potential employees. It was felt that another survey was needed on

the use of English by business executives currently employed by those companies. It was deemed important to investigate the target situation so as to obtain the necessary information to validate the data on language use of the potential employees. This information would indicate firmly the target requirements and facilitate efforts to prepare the learning of the appropriate dimensions in language use in business situations (Adams-Smith 1986).

Thus, this study provides the link and bridges the gap of prediction and actualization in the tripartite connection of potential employers, potential employees and actual employees in the various commercial enterprises. This survey was funded by Universiti Pertanian Malaysia (UPM) and assisted by the British Council Language Centre, Kuala Lumpur.

METHODOLOGY

The questionnaire survey method was used to obtain the data for the study. Questionnaires were mailed to 197 companies throughout Malaysia (see Appendices A and B). These companies, which were the practical training centres for UPM undergraduates from the Faculty of Economics and Management, were requested to return one or more copies of the questionnaire received. The questionnaires were filled in by business executives in the companies and a total of 187 copies were collected. The data yielded information on the use and need for on-job skills of the business executives in the English language. The data contribute to the field of research in English for Specific Purposes (ESP) where needs analysis forms a crucial approach for the collection of information (Robinson 1991) and provides guidelines for ESP syllabus design (Riddell 1993).

An attempt was made to classify the nature of the business carried out by the companies in order to have a clearer picture of the extent of the industries covered. Five pre-determined categories were used: manufacturing; trading, shipping and distribution; services and construction; finance; and others.

FINDINGS AND DISCUSSION

Background Information

It was found that the nature of business of the companies was very varied with the largest number falling under the 'others' category. In this category, the nature of the companies' business was found to include public accounting, auditing, plantations, market research, co-operatives and telecommunication. Thus the population was not very clearly involved in the pre-defined categories of finance, manufacturing, shipping and distribution. Table 1 shows the classification.

TABLE 1
Nature of the companies' business

Business	Percentage
Manufacturing	7.0
Trading, shipping and distribution	7.0
Services and construction	29.4
Finance	7.0
Others	49.1

Responses to the Use of English

The business executives confirmed their employers' expectation of the importance of English in their work. The figure of 98.9% who said that they believed it was important to know English was similar to the 97.1% of employers who said likewise in the 1991 study (Goh and Chan 1993).

A large percentage of the respondents (73.8%) reported that English is essential to their job, confirming the findings of the 1991 study, where a large percentage of the employers (69.3%) felt that it was essential for their employees to know English.

A question on whether the business executives had attended English language courses was used as a gauge to indicate the desire to improve or to show continued interest in the use of the language. Only 12.3% replied in the affirmative, and of this figure, 65% said they had to pay for their courses themselves. Twenty-six per cent reported that they were sponsored by their company. This reaffirms the low figure in the 1991 study which found that 18.2% of the

companies had sponsored English courses. Thus employees wishing to pursue any further learning of English must still do so at their own initiative.

Time Spent on the Use of English

The respondents were asked to indicate the number of working hours per week they spent on the use of each of the four English skills – listening, speaking, reading and writing. From the data collected, three categories were used to group the data. The first was 0 hour, the second was 1-5 hours and the third was 6-9 hours. In interpreting the data, the highest percentage of responses in the 0-hour category would indicate the least used sub-skill. Most of the responses were accounted for in the second category (1-5 hours). The frequency of use diminished noticeably after five hours. The responses were as follows:

Listening

The least used sub-skill was listening to an oral presentation in business from the electronic media (3.7%), as in the previous study. The most used sub-skill in the 1-5 hour category in the present study was listening to a social conversation in business (78.7%). This suggests that social English plays an important role in the work-place. This conclusion is further strengthened by the high figure (77.1%) recorded for telephone conversations about social matters (Table 2).

TABLE 2
Listening in English

Sub-skill	Hours (%)		
	0	1-5	6-9
Listening to a social conversation in business	12.8	78.7	28.5
Listening to a business discussion	20.9	66.8	12.2
Listening to a telephone conversation about social matters	17.6	77.1	4.8
Listening to an oral presentation on business from the electronic media	37.4	58.8	3.7

Speaking

The least used sub-skill in speaking (Table 3) was giving an oral presentation in business (40.1%) while the most used sub-skill in the 1-5 hour category was speaking on the telephone about technical or specialized topics related to the job (75.9%). A similar trend was observed in the previous study. From the data, it appears that the telephone is frequently used in specific job situations. It therefore suggests that in the learning of oral English, telephone skills should be emphasized. Speaking in social situations was observed to be also an important sub-skill as more than 70% reported that it was used in the 1-5 hour category. This was further reinforced by the highest percentage of responses (12.3%) in the 6-9 hour category.

TABLE 3
Speaking in English

Sub-skill	Hours (%)		
	0	1-5	6-9
Speaking in social situations in business	16.0	71.7	12.3
Giving an oral presentation in business	40.1	58.3	1.6
Speaking on the telephone about technical or specialized topics related to the job	15.5	75.9	8.5
Speaking to business associates/clients in business meetings	18.2	75.5	6.3

Reading

Reading job-related materials in order to inform/instruct co-workers was found to be the least used sub-skill (Table 4). The previous study, which involved undergraduates, also reported this as the least needed skill. Unlike the previous study which found reading business reports was the most practised skill, this study revealed that reading routine business letters was the most used skill for the business executives (1-5 hour category). Thus on-job requirements appear to stress this sub-skill of reading.

TABLE 4
Reading in English

Sub-skill	Hours (%)		
	0	1-5	6-9
Reading routine business letters and memos	12.3	78.1	9.6
Reading business reports	18.7	76.7	3.7
Reading technical or specialized materials related to the job	19.8	73.7	6.4
Reading job-related materials in order to inform/instruct co-workers	26.2	71.7	2.1

Writing

In view of our bilingual situation, a question was asked about the need to translate written business documents from English into Malay. This was found to be not very necessary. Writing routine business letters and memos was found to be a regular task for the business executives. This can be seen not only in the highest percentage found in the 1-5 hour category but also in the 6-9 hour category. Writing business reports was the second most frequently used sub-skill in the 1-5 hour category. Writing was generally a lesser practised skill than reading.

TABLE 5
Writing in English

Sub-skill	Hours (%)		
	0	1-5	6-9
Writing routine letters and memos	21.9	66.8	11.2
Writing business reports	33.7	60.9	5.3
Translation of other languages (e.g. Malay) into English	51.9	48.0	0
Writing about technical or specialized topics related to the job	41.7	52.4	5.9

Order of Importance of English Language Skills

Speaking was found to be the most important skill (Table 6). This skill was also deemed to be the most important in the study which investigated the perceptions of undergraduates and employers. Therefore, the present study confirms the importance placed on speaking skills. In all three sample groups of respondents (employers, undergraduates, and business executives) writing was rated as the second most important skill. Reading and listening were ranked as third and fourth by the business executives in the present study as well as by the employers in the previous study. However, the undergraduates (potential employees) rated listening as more important than reading. This could be a result of the undergraduates seeing themselves as 'apprentices' in their practical training stint in which they probably took on a more passive role and practised listening skills to derive the maximum benefit from their situation.

TABLE 6
Order of importance of English language skills

Order	Skill	Rank	Percentage
1	Speaking	1	26.3
2	Writing	1	17.5
3	Reading	1	6.6
4	Listening	1	5.1

Rating of English Proficiency

To assess the level of English proficiency achieved by the business executives, they were asked to carry out a self-rating exercise. About a third of them stated that they were good or average in the language. Only 12.3% rated themselves as excellent. Very few considered themselves as being poor in the language. One can infer that business executives need to possess a reasonably good command of the language in order to be hired. The 'fair - good' band in fact encompasses 87.7% of the responses. Potential employees in the first study admitted their lack of confidence in the use of the language and noted that if they were to aspire to be business executives, they must achieve an adequate level of English proficiency in order

to meet on-job demands.

It was also noted in the first study that English proficiency was an important consideration in job interviews and promotion exercises for business executives. The importance of English as an entry requirement as well as for further career advancement for business executives is clearly supported.

CONCLUSION

Both studies involving the same 197 companies confirmed the importance of English as a job requirement for business executives. As for how much time is spent on the use of English in their work life per week, it was revealed that the range of one to five hours encompasses the highest concentration of the percentage of responses.

Research related to ESP invariably leads to pedagogical implications (Swales 1990). From the evidence given by this study, it is suggested that course design in business English should give attention to listening and speaking on the telephone about technical and social matters. Reading and writing routine business letters and memos are definitely other important aspects that need to be taught in business English courses. Students must be prepared adequately in the use of the English language to meet the challenges of their intended career in the

business world. The need is all the more cogent with the English language widely acclaimed as the international language used in science, technology and trade dealings (Johns and Dudley-Evans 1991).

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APPENDIX A

Table A
Distribution of accounting companies according to state/town

No.	State	Town
1.	Federal Territory	Kuala Lumpur
2.	Johor	Muar, Johor Baru
3.	Kedah	Alor Setar
4.	Kelantan	Kota Bharu
5.	Melaka	Melaka
6.	Negri Sembilan	Seremban
7.	Pahang	Kuantan
8.	Pulau Pinang	Butterworth, Pulau Pinang
9.	Perak	Ipoh
10.	Perlis	-
11.	Sabah	Kota Kinabalu
12.	Sarawak	Kuching, Sibul
13.	Selangor	Kelang, Petaling Jaya, Tanjung Karang
14.	Terengganu	Kuala Terengganu, Marang

APPENDIX B

Table B
Distribution of "other" companies according to state/town

No.	State	Town
1.	Federal Territory	Kuala Lumpur
2.	Johor	Batu Pahat, Bruas, Johor Baru, Kluang, Muar, Pontian, Segamat, Senai
3.	Kedah	Alor Setar, Baling, Jitra, Kota Setar, Kulim, Langkawi, Pendang, Sungai Petani
4.	Kelantan	Bachok, Kota Bharu, Machang, Pasir Mas, Pasir Puteh, Tanah Merah
5.	Melaka	Melaka
6.	Negeri Sembilan	Johol, Port Dickson, Seremban, Tampin
7.	Pahang	Benta, Bentong, Genting Highlands, Jerantut, Kuantan, Pekan, Temerloh
8.	Pulau Pinang	Bukit Mertajam, Butterworth, Pulau Pinang
9.	Perak	Hutan Melintang, Ipoh, Kuala Kangsar, Langkap, Lenggeng, Selama, Slim Village, Sungai Teluk Intan, Taiping, Tapah
10.	Perlis	Kangar
11.	Sabah	
12.	Sarawak	Bintulu, Kuching
13.	Selangor	Banting, Kajang, Kelang, Petaling Jaya, Semenyih, Sepang, Shah Alam
14.	Terengganu	Dungun, Jerteh, Kuala Terengganu, Kemaman, Kuala Berang, Marang

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Impact of Tropical Hardwoods Campaign

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ABSTRAK

Satu survei telah dibuat untuk menilai kesedaran serta kesan terhadap eksport hasil kayu Semenanjung Malaysia akibat dari kempen kayu keras tropika. Maklumat diperolehi dari jawapan kepada soalselidik yang dihantar oleh tiga puluh dua pengeksport hasil kayu, daripada seratus yang dihubungi. Kesedaran terhadap kempen kayu keras tropika dikalangan pengeksport adalah tinggi. Kesedaran yang sama tinggi tidak didapati untuk kempen pemuluan dan pensijilan hasil kayu tropika. Tidak ujud perbezaan kesedaran tentang pensijilan hasil kayu tropika dikalangan pengeksport. Walau bagaimanapun, pengeksport ke negara Eropah, khususnya ke Belanda, lebih menyedari kempen pemuluan kayu keras tropika. Berbanding dengan pengeksport ke negara lain, pengeksport ke negara Belanda lebih cenderung untuk mengatakan yang kempen kayu keras tropika menjejaskan eksport mereka ke negara tersebut. Majoriti pengeksport merasakan yang kempen kayu keras tropika tidak seburuk masalah kekurangan bekalan kayu balak yang sedang dihadapi pada masa ini.

ABSTRACT

A survey was conducted to assess the awareness of the tropical hardwoods campaign and its impact on exports of timber products from Peninsular Malaysia. Information was obtained from the questionnaire answers of thirty-two exporters, from one hundred contacted. There is a high degree of awareness of the tropical hardwoods campaign among the exporters. The same level of awareness is not shown for boycott and certification of tropical timber products. There is no difference in awareness of certification of tropical timber products among the exporters. However, exporters to Europe and in particular to the Netherlands are more aware of the campaign to boycott tropical timber products than exporters to other destinations. Exporters to the Netherlands are more likely to report that their exports are adversely affected by the tropical hardwoods campaign. A majority of exporters feel that the tropical hardwoods campaign is less serious than the problem of diminishing log supply that they are currently facing.

INTRODUCTION

Timber trade policy initiatives, such as the tropical hardwoods boycott and tropical timber certification, embodied in the tropical hardwood products campaign orchestrated by many Western environmental non-governmental organizations (NGOs) could have short-term as well as long-term impacts. These initiatives are essentially non-tariff trade barriers and could theoretically restrict the trade in tropical hardwood products.

It is expected that, in the short term, the volume of imports of tropical hardwood products will be reduced as a result of the

campaign to ban the import of tropical hardwood products or boycott their use. This effect will be greater in countries where the boycott policy is more regulated. A survey conducted in Ghana found that timber industry managers were reluctant to invest further in the wood processing industry because they perceived that the boycott campaign in Europe has reduced demand for their timber products (Eastin *et al.* 1992).

In principle, timber certification can discriminate against the use of tropical hardwood products as those which do not come from sustainably managed tropical forests will

no longer be purchased by consumers who traditionally use these products (Baer 1992). This is particularly true for countries which strongly urge the certification of tropical hardwood products based on some type of sustainability criteria. As a result of discrimination against their use, tropical hardwood product imports into the relevant countries will be adversely affected.

According to proponents, boycott and certification initiatives should promote sustainable management of tropical forests in the long run. Those who support boycott initiatives believe that commercial logging is one of the major causes of tropical deforestation, and that restricting the trade in tropical timber will improve the situation (Vincent 1990). They also feel strongly that individual consumers have a moral imperative not to participate in a market that contributes to the destruction of tropical forests (Willie 1991). Supporters of timber certification, on the other hand, see certification as an economic incentive to encourage tropical producer countries to practise sustainable forest management. Environmental organizations assure producing countries that certified timber will have a competitive edge in the marketplace (Williams 1992).

While the call for a boycott on tropical hardwood products has moderated recently, heated debate continues regarding the issue of tropical timber certification. There appears to be consensus that after the year 2000 all tropical hardwood exports should come from sustainably managed forests. In order to assess the short-term impact of the tropical hardwood campaign, the perceptions of timber exporters in Malaysia were obtained. To date very few reports of such studies have been published.

This paper describes an exploratory survey of the impact of the tropical hardwood products campaign on Peninsular Malaysia's wood-based industry. The main objectives of the survey were to assess the awareness of mill managers about the tropical hardwood campaign as well its impact on their wood products exports.

TROPICAL TIMBER CERTIFICATION INITIATIVE

Certification is carried out to inform consumers that a product meets a set of quality standards or criteria established by a specific certifying organization (Salzhauser 1991). In the case of tropical wood products, the main intention of certification is to enable consumers to distinguish wood products sourced from sustainably managed forests from those that are not. Certified wood products are guaranteed by the certifiers to have been manufactured from wood grown in a sustainable manner. Producers perceive that there is a demand for certified tropical wood products in consuming countries, particularly in Europe. Certified tropical timber products are presumably assured of a ready market and, therefore, have a competitive advantage over non-certified products. In this context, certification also serves as an incentive for producers to practise sustainable forest management.

There are several tropical timber certification initiatives. One of these, which is called "country certification" proposes that tropical wood products be labelled with the country of origin. The main argument underlying this initiative is that consumers, particularly those in the importing countries, should be given the power of choice about which tropical woods to buy.

Another type of certification, which has been more aggressively promoted, proposes that tropical wood products be labelled to indicate the ecological sustainability of the forests from which the wood was harvested. Usually referred to as "concession" labelling, this strategy would certify that the timber produced within a specific concession is sustainably harvested. Concession certification requires the formulation of ecological standards against which sustainability is measured. In this manner, certification is intended to indicate to consumers that these forests are sustainably managed.

Several international and national level NGOs have designed their own certification schemes. In addition to the certification

programme currently being developed by the Forest Stewardship Council (FSC), which is an international NGO, at least four other certification programmes are operational while three are in the planning phase (Ghazali and Mikula 1994: 30-32). Almost all of these programmes are being developed by NGOs either in the United Kingdom or the United States.

The FSC has developed its Principles and Criteria of Forest Management to act as a common standard for sustainable forest management practices in all forested regions of the world. The main objective of the principles and criteria is to provide a consistent framework and mechanism for measuring, monitoring, and evaluating continual improvement in forest practices. The FSC will evaluate requests from certifiers before giving its accreditation and certifiers must demonstrate that they satisfactorily adhere to the Principles and Criteria as well as to the FSC Guidelines for Certifiers (Ghazali and Mikula 1994: 121-123).

In USA, an environmental NGO, the Rainforest Alliance, has implemented a certification scheme called the Smart Wood Certification Program (SWCP), focused on the sellers of tropical wood products. Its main objective is to "identify and promote the use of tropical woods whose harvesting does not contribute to the destruction of tropical forests" (Rainforest Alliance 1991). By implementing certification, the Rainforest Alliance "hopes to increase harvesters' incentives to adopt sustainable forestry practices that meet long term environmental and social needs".

Under the programme, a Smart Wood certification is given to companies using woods from tropical forests that are sustainably managed, based on criteria set by the Alliance, which conducts the necessary evaluation, including an audit of all pertinent records and facilities it deems necessary to verify the source of the company's tropical wood products. The costs of this evaluation are paid by the companies seeking certification.

Ghazali and Mikula (1994: 32) estimated that about 1.5 million m³ of timber and

timber products were certified in 1993 and about 35 suppliers were certified. Most of the certified timber originated from tropical countries and was sold in the US market.

TROPICAL HARDWOODS BOYCOTT

The campaign to ban the import or boycott the use of tropical wood products was aggressively launched in the early 1990s, particularly in Europe and USA. The campaign has since lost its momentum, but not without leaving a lasting impact by convincing some importing countries to regulate or even prohibit the use of tropical wood products.

A strong advocate of boycotting tropical timber products in USA is the Rainforest Action Network (RAN), an environmental NGO based in San Francisco. RAN chose to implement a tropical timber ban resolution passed by the World Rainforest Movement in 1989 (Roselle and Katelman 1989: 7-8). Partly as a result of RAN's efforts, certain state and local governments (including New York, Arizona, Baltimore, San Francisco, Santa Monica, and Bellingham) have passed regulations prohibiting the use of tropical hardwood products in state or local projects (Adams 1991: 14).

A network of NGOs in Europe has also been actively involved in campaigning for the boycott of tropical wood products (Ghazali 1990). About 400 communities in Germany and 20 communities in Belgium have instituted regulations and administrative action banning or restricting the use of tropical timber in public works and buildings. In the Netherlands, some provincial authorities are banning the use of tropical timber and replacing it with temperate wood and other materials (Lim 1994: 5).

Several arguments are levelled at boycotts as being counter-productive. Boycotting tropical timber products restricts tropical timber markets, depresses their prices, and reduces the value of standing forests (Vincent 1990; Hamilton 1991). The end result could be further destruction of tropical forests as these forests experience pressure to be converted to non-forest use. Moreover,

because the strategy imposes trade restrictions it runs contrary to the philosophy that industrialized countries should aid developing countries by providing a market for their products (Laarman and Sedjo 1992: 186). In addition, some experts believe that restricting trade through boycotts runs foul of the principles of free trade espoused by the General Agreement on Tariffs and Trade (Shrybman 1990: 30-34).

SURVEY METHOD AND ANALYSIS

In order to assess the impact of the tropical hardwood campaign, a survey was directed at wood products exporters based in Peninsular Malaysia. One hundred exporters were randomly selected from the list of wood product exporters in the "Directory of Timber Trade, 1993" of the Malaysian Timber Industry Board. This number of exporters represents about 10% of the registered wood products exporters in Peninsular Malaysia. A survey questionnaire was developed and mailed to the respondents in November 1994. The questionnaire was developed based on pre-survey discussions with several mill managers in the state of Negri Sembilan. At the end of January 1995, thirty-two mills responded to the survey, representing a response rate of 32%.

For purposes of analysis, the exporters were differentiated on the basis of whether or not they export to Europe. Those who do export to Europe were asked to indicate whether or not the Netherlands is one of their export destinations. This categorization was done in order to determine the impact of the relatively more strict policy on the use of tropical hardwood products being developed in the Netherlands than in other European

countries. Wherever applicable, chi-square analysis was employed to compare the impact of the campaign on the various categories of exporters.

RESULTS

Awareness of Tropical Hardwoods Campaign

The respondents indicated that they were fully aware of the tropical hardwoods campaign. Almost every respondent in the survey (97%) had heard about the tropical hardwoods campaign (Table 1). There is no significant difference in the awareness of the various groups of exporters of the tropical hardwoods campaign ($p = 0.75$). In other words, awareness is independent of the type of exporter. Exporters as well as non-exporters to Europe indicated a high degree of awareness of the tropical hardwoods campaign. Less than 10% of the respondents have not heard about the campaign; all of them do not export their products to Europe.

Awareness of Policy Initiatives

In order to enquire further about the respondents' awareness, they were asked to indicate whether or not they have heard about two of the policy initiatives embodied in the tropical hardwoods campaign. These policy initiatives are tropical timber certification and tropical hardwood products boycott.

Nearly four out of every five respondents are aware of the certification initiative. Awareness is particularly high among respondents who export their products to Europe and, in particular, among those who export to the Netherlands. Seventy-five per cent of the former and about 90% of the latter indicated that they have heard about the initiative

TABLE 1
Percentage of exporters who have heard about the tropical hardwood campaign

	Non-exporters to Europe	Exporters to Europe*	Exporters to the Netherlands	Total
Yes	92.8	100.00	100.00	96.9
No	7.2	0.00	0.00	3.1

*other than the Netherlands

chi-square = 1.4, $p = 0.75$

TABLE 2
Percentage of respondents indicating awareness of certification initiative

	Non-exporters to Europe	Exporters to Europe*	Exporter to the Netherlands	Total
Yes	69.2	75.0	90.9	78.1
No	23.0	12.5	9.1	15.6
No answer	7.6	12.5	0.0	5.3

* other than the Netherlands
chi-square = 1.083, p = 0.58

TABLE 3
Percentage of respondents indicating awareness of the boycott initiative

	Non-exporters to Europe	Exporters to Europe*	Exporters to the Netherlands	Total
Yes	46.1	100.0	100.0	78.1
No	46.1	0.0	0.0	19.3
No Answer	7.8	0.0	0.0	6.0

*other than the Netherlands
chi-square = 11.78, p = 0.002

(Table 2). Similarly, almost 70% of those respondents who do not export to Europe have heard about the certification initiative. Thus there does not appear to be a difference in awareness of certification between those who export and those who do not export their products to Europe. This is supported by the statistical analysis that indicates these differences are not significant ($p = 0.58$). Awareness of certification initiative is statistically independent of the type of exporter.

The percentage of respondents who indicated awareness of the tropical timber products boycott initiative is equally high. Nearly 80% of the respondents have heard about the initiative (Table 3). There is greater awareness of tropical timber boycotts among those respondents who export their products to Europe, including the Netherlands, than those who export their products elsewhere. All who export to Europe and the Netherlands have heard about tropical timber boycotts. In comparison, less than half of those who export to non-European countries are aware of the boycott initiative. Awareness of tropical timber boycotts is dependent of the type of exporter ($p = 0.002$).

Sources of Campaign Information

How do the respondents get to know about the tropical hardwood products campaign? As shown in Table 4, there are many sources from which the respondents receive campaign information. Newspapers, timber trade magazines and fellow exporters are among the more important ones. Importing agents in various countries do play a small role in channelling information about the campaign.

Impact on Volume of Exports

The tropical hardwoods campaign started in the mid-1980s. If really effective, it should

TABLE 4
Sources of campaign information

Source of information	Percentage of Exporters
Newspapers	84.8
Magazines	75.7
Fellow exporters	60.6
Television	54.5
Radio	36.3
Importing agents	21.2

already have had a measurable impact on Malaysia's timber exports. Data on exports to the relevant countries may not be reliable indicators of the impact of the campaign because it is also influenced by many other factors. Consequently, the respondents were asked to indicate, based on their experience, whether or not the campaign has affected their exports to Europe, in particular to the Netherlands.

Seventy-five per cent of the respondents who export to other European countries said that their exports have not been affected by the campaign (Table 5). There is a significant difference in the impact felt by the two groups of exporters ($p = 0.01$). The effect on exports, however, is more likely to be felt by those who export to the Netherlands than those who export to other European countries. More than 70% of those who export to the Netherlands indicate that the campaign has reduced their exports to that country.

Perceived Seriousness of Tropical Hardwood Products Campaign

Table 6 shows the respondents' assessment of the campaign in relation to the problem of diminishing supply of logs from natural forest.

Three out of every four respondents who export to other European countries feel that the campaign is less serious than the problem of diminishing supply of logs. However, 45% of those who export to the Netherlands feel otherwise. There is no significant difference in the perception of seriousness of the campaign among the exporters ($p = 0.88$). Exporters to Europe and the Netherlands are equally likely to indicate that the campaign is less serious than the problem of shortage of logs.

DISCUSSION AND CONCLUSIONS

Whether intentional or otherwise, the tropical hardwoods campaign has had a substantial impact on the wood-based industries of Peninsular Malaysia. At the very least, there is now a high degree of awareness of the existence of the campaign among wood products exporters. News about the tropical hardwoods campaign has successfully permeated the wood-based industries to the extent that almost all exporters surveyed had heard about the campaign. Awareness about the campaign is equally high among those who do not export their wood products to Europe.

In spite of the above, awareness of certification and boycotts is not as high as

TABLE 5
Percentage of exporters indicating negative impact of campaign on exports

	Exporters to Europe*	Exporters to the Netherlands
Yes	12.5	72.7
No	75.0	27.2
No answer	5.4	0.0

*other than the Netherlands
chi-square = 5.844, $p = 0.01$

TABLE 6
Percentage of exporters indicating seriousness of campaign relative to the problem of log supply

	Exporters to Europe*	Exporters to the Netherlands
Less serious	75.0	54.5
More serious	12.5	45.4
No answer	12.5	0.0

* other than the Netherlands
chi-square = 1.87, $p = 0.88$

awareness of the tropical hardwood campaign itself. Almost one in every five respondents has not heard about these two policy initiatives, an indication that information about specific strategies employed in the tropical hardwoods campaign has not been as thoroughly disseminated as news about the campaign itself.

The media, particularly newspapers and magazines, play an important role in disseminating general as well as specific information about the campaign. Wood products exporters in the survey primarily rely on these two sources for information about the campaign. Information reported in the newspapers and magazines will likely shape the managers' perception about the campaign. Therefore, it is important that newspapers and magazines report unbiased and up-to-date information about the campaign.

Wood products exporters surveyed depend less on fellow exporters than either newspapers or trade magazines for information on the tropical hardwoods campaign. Despite this, it appears that there is substantial consultation among exporters on issues related to the campaign. In contrast, there has been little exchange of campaign information between exporters and importing agents. Only one in every five exporters reported that their import agents have been providing them with information about tropical hardwoods campaign activities.

The findings reveal that exporters to Europe, including the Netherlands, are more likely than those who export to other destinations to have heard about tropical hardwood boycott activities. This is not surprising since the tropical hardwood boycott campaign has been more vigorous in Europe, particularly in the Netherlands, than in other importing countries. News on tropical certification, on the other hand, appears to have spread evenly among the exporters as well as non-exporters to Europe, perhaps because the issue of timber certification is still current and being aggressively discussed and reported comprehensively in the media.

Exporters to the Netherlands, rather than to other European countries, are more likely

to feel the adverse impact of the tropical hardwoods campaign because strict regulations are enforced in the Netherlands and in other European countries (Germany, for example) on the import of tropical hardwoods. As mentioned earlier, some local authorities in the Netherlands and Germany have banned the use of tropical timber in construction projects. This policy seems to be effective in reducing the demand for tropical timber. This finding partially supports the perception of timber industry managers in Ghana that the boycott campaign has reduced the demand for their timber products.

Despite these factors, the exporters surveyed feel that the problem of diminishing log supply from the natural forests is a more serious problem than the tropical hardwoods campaign. The fear of diminished log supply is more profound than the fear from the threat of boycotts and the requirement of certification. This fear is founded on the grounds that the hardwoods campaign has a certain maximum issue attention cycle. Sooner or later the campaign will fade away, especially when the public loses interest in the issue of tropical deforestation. This will probably start to happen after the year 2000 when the timber certification policy is fully implemented. By then, consumers in the industrialized countries would have less to demand when their desire to use sustainable tropical wood products is fulfilled. Unless other tropical forest matters are brought to the attention of the public, the issue attention cycle of the hardwoods campaign would be minimized.

The problem of diminishing log supply from the natural forests will not be resolved in the near future. This is especially true as the resource base continues to shrink while the industries dependent on this resource keeps on growing or are maintained at the current level. The wood-based industries will then have to rely on foreign countries, such as Indonesia and Vietnam, for logs to feed their mills. Since imported logs cost more than locally produced logs the production cost for Malaysia's wood-based industries will increase. When this happens Malaysia will no

longer have the comparative advantage that it currently enjoys in the wood products market. The implications of diminishing log supply seem to be more serious than those of tropical hardwoods campaign. The exporters in the survey have valid reasons to be more worried about the log supply problem than the tropical hardwoods campaign.

Only a small segment of the wood products exporters of Peninsular Malaysia apparently feel the adverse impact of the tropical hardwoods campaign. This segment comprises those who export their wood products to the Netherlands. These exporters have seen their volume of exports reduced as a result of the campaign. Otherwise the hardwoods campaign has managed to create awareness of its presence as well as its policy initiatives in the form of a tropical hardwood products boycott and tropical timber certification.

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Currency Substitution via Expected Exchange Rate and Domestic Money Demand: An Empirical Analysis for Japan

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ABSTRAK

Kajian ini menguji hipotesis kebolehganti matawang secara empirikal di atas permintaan matawang Jepun dengan menggunakan data bulanan dari Januari 1977 ke Disember 1989. Di bawah sistem kadar pertukaran boleh ubah, ejen ekonomi yang rasional akan membentuk portfolio matawang untuk tujuan permintaan urusniaga dan permintaan spekulasi. Penganggaran tak linear berbilang pembolehubah kebolehgantian maksimum Jepun dan persamaan kadar pertukaran dijangka: ada kemungkinan terdapat kebolehgantian matawang. Penemuan kajian ini mencadangkan bahawa (a) kadar pertukaran dijangka bagi matawang Jepun (Yen) dengan matawang Dollar Kanada menunjukkan kebolehgantian matawang berdasarkan permintaan spekulasi dan (b) kadar pertukaran dijangka matawang Jepun (Yen) dan Dollar Amerika menunjukkan kebolehgantian berdasarkan permintaan urusniaga.

ABSTRACT

In this paper the currency substitution hypothesis is tested empirically on the Japanese money demand, using monthly data from January 1977 to December 1989. Under a flexible exchange rate a rational economic agent forms currency portfolios for both transaction and speculative reasons for demanding money. The nonlinear multivariate maximum likelihood estimation was used to estimate jointly the Japanese money demand and the expected exchange rate equation; possible existence of current substitution is found. The empirical results indicate that (a) the expected exchange rate for the Japanese yen/Canadian dollar shows currency substitution due to speculative demand, and (b) the expected exchange rate of the yen/US dollar shows currency substitution due to transaction demand.

INTRODUCTION

For more than a decade, the growing integration of world capital markets has brought changes in the environment for monetary policy. The efficacy of monetary policy under a flexible exchange rate has been challenged by proponents of the currency substitution hypothesis [CSH] (see literature review by Bana and Handa 1987). The controversy evolves around the belief that if currencies are substitutable on the demand side, the expectation of future behaviour of exchange rates under uncertainty may make domestic money demand unstable and reduce

the autonomy of monetary policy under a flexible exchange rate system (Miles 1978a, 1978b; McKinnon 1982; Chen and Tsaur 1983).

One of the main explanations for the CSH is that money demand is influenced through a combination of distinctive channels of currency substitution—transaction demand and speculative demand (King *et al.* 1980). Specifically, they suggest that with increasing integration of the goods and services market around the world, global traders have more opportunity to choose from a broader variety of substitutable goods and services with many denominations of currencies, i.e., currency

substitution in transaction demand [CSTD]. Foreign money demand is thus directly related to foreign goods and services demands which, in turn, depend on their relative price expectations.

Furthermore, as capital markets around the world have become increasingly integrated, risk-averse investors have had more opportunity to diversify their wealth among all available currencies, i.e. through currency substitution in speculative demand [CSSD]. Basically, traders attempting to optimize their currency portfolio balances will demand more of a foreign currency when its value is expected to appreciate. In particular, a currency that has a low correlation with their holdings is preferable, given the uncertainty associated with the set of exchange rate expectations.¹

However, a usual analysis can show that the optimizing shifts in demand for currency stocks through these two different channels tend to offset each other with a given change in expected exchange rates. Therefore, an attempt to prove empirically the existence of these two demand channels, including each demand channel's direction and magnitude, is needed. The result would indirectly answer the question of the efficacy of domestic monetary policy in the new environment of world trade and capital liberalization.

In this paper, the Japanese money demand function is empirically estimated and analysed for the possible existence of substitution effects between the yen and US and Canadian dollars. Japan is selected for this study because it is an open economy with relatively large trading volume in world markets and a currency widely held among traders. The Canadian dollar is included in the analysis because it has a low correlation with the yen in their exchange rate movements; thus it could provide a channel of CSSD when traders prefer Canadian dollars to diversify their currency portfolios.

THEORY AND EVIDENCE

Previous Studies

Standard monetary theory which assumes that residents of a single country hold only

the national money has been criticized by Miles (1978a), noting that when economic agents hold both domestic and foreign currencies, the composition of these cash balance portfolios will vary with the relevant opportunity cost of holding real balances of the various types of currencies. Therefore, a change of monetary policy in a foreign country will change the relative costs of holding currencies and thus induce offsetting inflows or outflows of money. An excess supply of foreign currency flows to a domestic country by the distribution effect and changes in price levels that are not consistent with the traditional flexible exchange rate model. McKinnon (1982) argues that high substitutability among industrial countries' currencies destabilizes the demand for individual national currencies so that one cannot make much sense out of year-to-year changes in purely national monetary aggregates in explaining cycles in purely national rates of inflation. Therefore, the growth in the world supply is a better predictor of American inflation than the US money growth rate. Lapan and Enders (1983) conclude that in the absence of government control, if the private sector views the currencies as perfect substitutes for each other, then the exchange rate must be invariant over time and indeterminate. Calvo and Rodriguez (1977) incorporate currency substitution in their exchange rate determination model and explain exchange rate overshooting. In Daniel (1981), currency substitution is a channel for international transmission of monetary disturbances under flexible exchange rates in both the long and short term. In the short term, currency substitution can be responsible for overshooting the exchange rate and affects the national level of real wealth and consumption because of the unexpected change in money supply.

On the other hand, Thomas (1985) explains that the monetary service model is more likely than the portfolio balance model to explain the interactions of domestic and foreign money demand. This implies that the demand for alternative monies is from the real rather than the financial channel, and the transaction services that money produces

are the main reason for the money demand rather than its expected real return or risk when complete bond markets exist.

Both Hamberger (1977) and Britain (1981) support the currency substitution hypothesis by employing an alternative empirical procedure which examines the cross-correlations of the residuals from regressing a velocity variable on the time variable. Studies on this issue for developing countries include Ramirez-Rojas (1985) for Argentina, Mexico, and Uruguay, Fasano-Filho (1986) for Argentina, Marquez (1987) for Venezuela, and Arize (1991) for South Korea. All their findings support the evidence of CSH. To a varying degree, it is an important feature of these developing countries.

Bordo and Choudhri (1982) note that the differential cost of holding foreign instead of domestic money is the expected change in the exchange rate, but it does empirically exist in the Canadian money demand function. Darby *et al.* (1983) maintain the view that foreign bonds are generally more important substitutes for domestic money than foreign money. They include a foreign interest rate plus expected depreciation term in estimating the domestic money demand function and conclude that foreign-asset substitution for domestic money is not an important channel of economic transmission among countries. Batten and Hafer (1986) raise some empirical issues about choosing economic variables to explain the CSH and propose a testing framework that avoids the problems associated with previous works. By employing the distributed lag model and the GNP deflator as the dependent variable, they found that adding the rest of the world money growth to the explanatory power of domestic money growth alone did not offer more explanation to US inflation.

The evidence indicates that the role of currency substitution in domestic money demand is mixed at best in both empirical and theoretical studies. Most empirical studies, however, do not explicitly differentiate the two different channel-of-substitution effects and have contributed much to the debate about the existence and the significance of the effects.

Empirical Model

Under the rational expectation assumption, an economic agent could optimally expect a future exchange rate one period ahead of the realized exchange rate, using all available relevant information (Mishkin 1983). The forecasting equation that can be used to generate the anticipation of the growth rate of a basket of current spot exchange rates expressed in domestic currency per unit of foreign currency, S_t , is.

$$S_t = Z_{t-1} \cdot \alpha' + u_t \quad (1)$$

where

Z_{t-1} = a vector of regressors available at time $t-1$ to forecast S_t (variables like interest rate, money supply, and trade balance, etc. known at $t-1, t-2, t-3, \dots, t-n$),

α' = a vector of coefficients to be estimated,

u_t = an error term which is assumed to be uncorrelated with any information available at $t-1$ (which includes any variable in Z_{t-1} or u_{t-1} for all $i > 1$).

An optimal forecast for S_t then simply involves taking expectations of equation (1) conditional on information available at $t-1$ as

$$E[S_t] = Z_{t-1} \cdot \alpha' \quad (2)$$

where $E[.]$ is an expectation operator.

The hypothesis for CSTD and CSSD suggests that the domestic money demand is a function not only of domestic factors like income and the interest rate, but also of international influences through future expectations of exchange rates. Therefore, the money demand equation can be specified as

$$m_t = m_t + E[S_t] \gamma' + e_t \quad (3)$$

where

m_t = the growth rate of real money demand,

m_t = an equilibrium money demand based only on the domestic fac-

- tors, i.e. the interest rate and income variables (however, in this study the interest rate variable was not selected as an independent variable to estimate Japanese money demand function),
- γ' = vector of coefficients for forecasted (expected) exchange rates as independent variables, i.e. the expected exchange rates for yen/C\$ and yen/US\$ from previous two equations,
- e_t = a serially uncorrelated disturbance-term.

The CSTD hypothesis proposes that the parameter γ' is positive and that the expected depreciation of the exchange rate will induce the substitution of foreign goods and services for domestic ones in the world market and force both domestic and foreign traders to demand more of domestic than foreign currency. On the other hand, the CSSD hypothesis suggests a negative parameter; the expected depreciation of exchange rates reduces domestic money demand for the utility-maximizing currency traders. These substitution effects will create a problem of monetary dependency if the coefficients are significantly different from zero, although the substitution effects tend to offset each other.

Since equations (1) and (3) share information by using common variables in the system, it is likely that the disturbances from the two are correlated. The technique of joint nonlinear estimation of (1) and (3) will be used for the efficient estimation of parameters.²

To test the hypotheses of CSTD and CSSD, a constrained system of equations restricting the parameters for the expected exchange rates to zero is estimated. Then, a likelihood ratio test is performed to compare the constrained and unconstrained systems. The likelihood ratio is computed as

$LR = 2(Lu - Lc)$ which is distributed as chi-square with q degrees of freedom,

where

Lu = log likelihood value of unconstrained system,

- Lc = log likelihood value of constrained system,
- q = number of coefficients being restricted.

Furthermore, the Akaike Information Criterion (AIC) (Amemiya 1980) is used to select the lag length of relevant variable in the exchange rate and money demand equations.³

Data

From Citibase, the monthly data for the money supply, the short-term interest rate, and the industrial production and consumer price indices are collected for Japan, USA and Canada from January 1977 to December 1989 (total 156 months). In addition, the monthly data for the exchange rates and import and export volume *vis-à-vis* USA are collected for Japan and Canada. The Canadian exchange rates are then converted into a series expressed as the number of Japanese yen per Canadian dollar. The real industrial production is used for the real income measure as a proxy. For the stationarity of each of these data, the first difference of interest rate and the first difference of growth rate for exchange rate, real income, money supply, import, and export are used. The tests of stationarity for these series using regressions of each of these series against time trend and the square of time trend show no evidence of the rejections against stationarity. Note that, in this study, no attempt is made to test whether systems of equations are cointegrated since *expected* values of exchange rates are used rather than *actual* exchange rates in the Japanese money demand function (equation 3).

EMPIRICAL RESULTS

Table 1 shows the contemporaneous correlation coefficients of five major currencies on their growth rates of the spot exchange rate per US dollar. It also shows the average merchandise trading volume of these countries with USA. The lowest correlation between the Canadian dollar and Japanese yen suggests that the yen per Canadian dollar exchange rate would be a good candidate to

TABLE 1
Correlation matrix of five major currencies*
(January 1977 - December 1989)

	£	C\$	FR	GM	¥
£	1.00				
C\$	0.25	1.00			
FR	0.66	0.23	1.00		
GM	0.69	0.19	0.94	1.00	
¥	0.56	0.09	0.68	0.66	1.00

* Growth rates of spot exchange rate (each currency per US dollar)

£ : British pound
C\$: Canadian dollar
FR : French franc
GM : German mark
¥ : Japanese yen

Average Monthly Volume and Growth Rate of Merchandise Trade with USA**
(Million US dollars, January 1977 - December 1989)

	UK	Canada	France	Germany	Japan
Exports to USA:	1,067 (0.9%)	4,691 (0.8%)	633 (1.0%)	1,393 (0.9%)	4,442 (1.1%)
Imports from USA:	1,011 (0.9%)	3,740 (0.7%)	576 (0.8%)	848 (0.7%)	1,987 (0.9%)

** Average growth rates in parenthesis

test the CSSD hypothesis on the Japan money demand function. Although it is not shown in the table, these two countries have lowest correlation coefficient of monthly growth rate of trade volume with USA. On the other hand, the highest growth rate and the relatively large volume of trade between USA and Japan suggest a high degree of CSTD between yen and the US dollar.

For these reasons, the unconstrained system of two different exchange rates (¥/C\$ and ¥/US\$) and Japanese money demand equations were estimated with the nonlinear maximum likelihood estimation technique. However, the final specifications of each equation were first determined by the AIC technique for their appropriate variables and lag lengths and reported in Table 2; the equation is repeatedly estimated with various lag lengths, and then the appropriate order of lag length is determined by selecting the order with the lowest AIC value. Some usual

tests are run for robustness of these specifications. Since each equation contains lagged dependent variables, Breusch and Pagan's (1980) Lagrange multiplier test was applied to analyse the possibility of serial correlations of a higher order.⁴ No evidence of significant serial correlations was found in error terms up to the 6th lag at the 5% significance level. For the test of heteroscedasticity, Breusch and Pagan's (1979) chi-square test method was used, and no significant evidence of violations of homoscedasticity at the 5% significance level was found.⁵ Based on the homoscedastic error terms, it was possible to perform Chow tests for the exchange rate equations by dividing the samples into two equally sized sub-groups because each equation is estimated first with the OLS procedure before substituting in the system of equations. The resulting F-statistics show that the stability of the parameters was not rejected at 5% significance level for all equations.

TABLE 2
 Joint estimation for exchange rates and Japanese money demand equations
 (maximum likelihood estimation from January 1980 to December 1989)

A. The Unconstrained System

$$\text{¥/C\$}: S_{C,t} \stackrel{6}{=} \alpha_0 + \sum_{i=1}^2 \alpha_1 \cdot S_{C,t-1} \stackrel{6}{=} + \sum_{i=1}^2 \alpha_2 \cdot I_{j,t-1} + \sum \alpha_3 \cdot M_{j,t-1} + \sum \alpha_4 \cdot X_{j,t-1} + u_t$$

Initial AIC = -4.336 Final AIC = -4.419

$$\text{¥/U\$}: S_{U,t} \stackrel{7}{=} \beta_0 + \sum_{i=1}^3 \beta_1 \cdot S_{C,t-1} \stackrel{2}{=} + \sum \beta_2 \cdot I_{j,t-1} + \sum \beta_3 \cdot X_{j,t-1} + v_t$$

Initial AIC = -4.175 Final AIC = -4.222

$$\text{Md}: m_{j,t} \stackrel{10}{=} \gamma^0 + \sum_{i=1}^2 \gamma_1 \cdot m_{j,t-1} + \sum \gamma_2 \cdot y_{t-1} + \gamma^3 \cdot E[S_{C,t}] + \gamma^4 \cdot E[S_{U,t}] + e_t$$

Initial AIC = -3.964 Final AIC = -3.967

(excluding expected exchange rates)

$S_{K,t}$: Exchange rate as K currency per one unit of Japanese yen at time t,
 $I_{K,t}$: Short-term interest rate for the country K at time t,
 $M_{K,t}$: Nominal money supply for the country K at time t,
 $m_{K,t}$: Real money demand for country K at time t,
 $X_{K,t}$: Volume of exports to USA for country K at time t,
 $Y_{K,t}$: Real income measure of country K at time t.
 (All variables except interest rate are the first differences of growth rate of these variables).

B. Parameter Estimation

¥/C\$: Coefficient	Sum	t-statistics	F-statistic*
α_0	-0.0005	-0.2257	
α_1	-2.4398	-7.7301	19.2105
α_2	-0.0248	-3.6345	6.6962
α_3	-0.0428	-0.3535	0.6241
α_4	-0.0229	-0.8943	5.4687
$R^2 = 0.38$			
¥/U\$: β_0	-0.0007	-0.2754	
β_1	-2.7150	-7.9466	16.9492
β_2	-0.0284	-3.8437	5.1582
β_3	-0.0035	-0.1297	3.7949
$R^2 = 0.37$			
Md: γ_0	0.0009	0.3423	
γ_1	-3.7994	-5.2829	7.6319
γ_2	0.2975	1.1735	2.5867
γ_3	-0.9061	-2.4617	
γ_4	0.7468	2.0808	
$R^2 = 0.41$			

* Joint hypotheses test when all individual coefficients for lags are restricted to zero.

C. The log likelihood test for constrained and unconstrained models

Log likelihood Ratio = 2 (906.24 - 903.159) = 6.162 (restricting γ_3 and γ_4 to zeros for the constrained model), which is larger than chi-square with q degrees of freedom (number of restricted coefficients); we cannot reject the null hypothesis that the restrictions do not apply.

The estimated parameters of the unconstrained system are presented in part B of Table 2; both exchange rate equations have significant negative effects of Japanese interest rate on the exchange rate in the long term.⁶ When the Japanese interest rate increases, both the ¥/C\$ and ¥/US\$ exchange rates decrease, implying the appreciation of the yen *vis-à-vis* the Canadian and US dollars. This result follows the balance of payments approach to exchange rate determination where a rising domestic interest rate should lower the exchange rate either by attracting capital from abroad or by reducing domestic expenditure for imports (and thereby improve the trade balance). Although the sum coefficients are not significant, the Japanese export variables have significant F-statistics for all lags of zero. Investigating individual coefficients of the export variable shows partial support of the fact that an increase in Japanese exports causes the appreciation of the yen in the short term. Based on these observations, both CSTD and CSSD can be expected in the Japanese money demand function. Note that interest rate variable was omitted in the Japanese money demand equation because of a technical reason (the AIC value of the equation is higher if it is included); no attempt is made here to explain why it does not have any effect on the Japanese money demand.

In fact, the coefficients of the expected exchange rates in the Japanese money demand equation show negative and positive signs in their parameters for ¥/C\$ and ¥/US\$ exchange rates, respectively (see Table 2, part B). The significant and negative coefficient for the ¥/C\$ rate ($\gamma^3 = -0.9061$) can be interpreted as the expected depreciation of the yen inducing currency traders to reduce their holdings of Japanese money in an attempt to avoid the associated capital loss, while the expected appreciation of the yen encourages them to demand more Japanese money. This result, combined with the negative effect of the Japanese interest rate or exchange rate, is consistent with the CSSD hypothesis that a change in either interest rate or exchange rate expectation exerts an influence on the composition of

optimal money holdings for a currency trader and provides corresponding capital flows which affect the domestic money holdings.

On the other hand, the coefficient for the ¥/US\$ rate ($\gamma^4 = 0.7468$) has a significantly positive sign in the money demand equation. This result combined with the negative effect of the Japanese interest rate on the exchange rate shows that CSTD dominates CSSD in the Japanese money demand with respect to the ¥/US\$ exchange rate, given the fact that USA is Japan's largest trading partner, and the growth rate of trading volume is the highest among the major US trading partners. Therefore, when the yen is expected to depreciate, US importers demand more Japanese goods, and thus demand more yen balance to finance the increased trade.

A constrained system of equations (with the restrictions of the parameters for the expected exchange rates at zero in the money demand equation) is also estimated (see Table 2, part C). The log likelihood ratio test on these constrained and unconstrained systems shows the rejection of the null hypothesis that the constrained system is present at the 5% significance level. This result and the offsetting influences of different foreign exchange rates on money demand may provide a possible explanation for the conflicting results of previous studies on the significance of currency substitution effects in other countries. However, by differentiating the two different channels of substitution effects using the ¥/C\$ and ¥/US\$ exchange rates, the results identify the direction and magnitude of the currency substitution effect of the two different channels. Without including these two channels of substitution, the domestic money demand function may not be stable over time as shown in the log likelihood test.

CONCLUSION

This paper analyses the Japanese money demand function and tests the currency substitution hypothesis (CSH) in which the expected exchange rates for yen per Canadian dollar (¥/C\$) and yen per US dollar (¥/US\$) affect the Japanese money demand in

two different ways, depending on the magnitude of two different channels of substitutions: the currency substitution in transaction demand and the currency substitution in speculative demand for money. The rationale for including these two exchange rates in the Japanese money demand arises from the following: (1) this approach may reconcile the previous controversies over the significance of the CSH between the portfolio and money-service approaches of money demand; (2) the transaction demand could be the dominant channel with ¥/US\$ because of the high trade volume between USA and Japan; and finally (3) speculative demand could be the dominant channel with ¥/C\$ because of their low correlation in the exchange rate changes.

The results of maximum likelihood estimations on the system of equations show that the current expectation of ¥/C\$ has a significant negative effect on the Japanese money demand, implying currency substitution in the speculative demand for money. On the contrary, the currency expectation of ¥/US\$ shows a significant positive effect on the Japanese money demand function, implying currency substitution in the transaction demand for money. The offsetting effects of these two different substitutions could be the reason for the previous controversies over the existence and significance of currency substitution effects. By identifying these two different channels explicitly, the Japanese money demand function is found to be dependent on foreign exchange rate expectations, thus providing support for the CSH, at least in the period analysed here. However, although these expected exchange rates are significant in determining equilibrium money demand for Japan, the effects tend to offset each other and the net effect of foreign exchange rates may be negligible.

In comparison with previous studies, tests based on combined rather than separate channels of currency of substitution show some doubt about the existence of the CSH, but in this paper findings confirm the existence of the CSH with the opposite signs for the coefficients of expected exchange rate variables in the money demand equations

and give more information that may explain the previous controversy over the existence and significance of currency substitution effect. An individual country's monetary authority must now recognize that its policy can affect foreign exchange rates differently depending on what money demand channel is dominant in that currency. In essence, the rapidly integrating capital market seems to diminish an individual country's ability to conduct the monetary policy, e.g. the disaster in Mexico's emerging capital market in 1994; hence a coordinating monetary policies or a newly designed exchange rate system may be needed.

Footnotes

1. The portfolio optimization decision here assumes the constant covariances of returns on all other assets and considers only the behaviour of the exchange rate returns of one currency *vis-à-vis* other currencies.
2. The estimation procedures can be described step by step as follows: (1) Estimate exchange rate equations with OLS. (2) Get fitted values (expected values) of Yen/C\$ and Yen/US\$ exchange rates. (3) Use these values as independent variables in the money demand equation and estimate the three equations (two exchange rate and one money demand equations) jointly with maximum likelihood method. (4) Use coefficients estimated from the procedure (3). (5) Again re-estimate the three equations jointly, and get estimated coefficients to get fitted values of exchange rates. (6) Re-estimate the three equations jointly with newly estimated values of exchange rates to replace the old independent variables in the money demand equation. (7) Continue these procedures until the highest possible R^2 value for the joint estimation is obtained.
3. In the forecasting of exchange rates, the Granger (1969) causality concept was used for a specification of the model. A variable Z is said to Granger-cause another variable S if S can be predicted better from the past values of S alone. The forecasting equation of S should include lagged values of S to eliminate any serial correlation in the residuals. If Z Granger-causes S, then it should also be used in an optimal forecast of S. To get the relevant variables Z and their optimum lag length, AICs are calculated up to the 10th lag of both domestic and foreign variables including the first differences of interest rate, the first difference of the real growth rate of income, the first difference of the growth rate of nominal money supply, and the first differences of the growth rate of trade volume figures. The variable and its lag with minimum AIC are selected.

4. Breusch and Pagan's Lagrange multiplier test for assumption of no serial correlations of higher order in error terms was performed as follows. First, the residual were obtained from OLS estimation, then a series of regressions with current residual as dependent variable was run with lags of different order, p , of residual and independent variables of original equation as regressors. The resulting R^2 of each regression multiplied by its number of observations, NR^2 , is distributed as chi-square with p degrees of freedom when the null hypothesis of no p^{th} order serial correlation is true.
5. Breusch and Pagan's (1979) test for heteroscedasticity can be performed as follows. Assume error terms are normally distributed. First, get the residuals (ϵ) and variance (σ^2) from original equation. Then make a new series, $g^t = (\epsilon^2/\sigma^2)$, and run another regression with g as a dependent variable. It can be shown that half the difference between the total sum of squares and the residual sum of square from the second regression is distributed asymptotically as chi-square distribution with k degrees of freedom when the null hypothesis of homoscedasticity is true.
6. The sum coefficients of Japanese interest rate changes have significant long-term negative effects on the exchange rates, and the negative coefficients are consistent for all lags considered in the equations.

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Expenditure Patterns of Singaporean Tourists in Malaysia

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Keywords: expenditure, tourism products, demographic variables, expenditure coefficients, elasticities of expenditure

ABSTRAK

Corak perbelanjaan pelancong Singapura ke atas produk pelancongan dikaji. Jumlah perbelajaan isi keluarga didapati mempunyai pengaruh yang besar ke atas perbelanjaan pengangkutan, makanan, tempat tinggal, khidmat rekreasi dan cenderamata. Keanjalaan perbelanjaan bernilai 0.84 untuk barang makanan, 0.63 untuk pengangkutan, 0.79 untuk kemudahan tempat tinggal, 1.32 untuk perkhidmatan rekreasi dan 1.49 untuk barang cenderamata. Berdasarkan koefisien perbelanjaan pula makanan, pengangkutan dan kemudahan tempat tinggal dikategorikan sebagai barang perlu, manakala perkhidmatan rekreasi dan cenderamata sebagai barang atasan.

ABSTRACT

The patterns of expenditure on major tourist products by Singaporean tourists are analysed. The total household expenditure of the tourists is highly significant in influencing expenditure on transport, food, accommodation, recreational services and souvenirs. The elasticities of expenditure for the tourist products are 0.84 for food items, 0.63 for transport, 0.79 for accommodation, 1.32 for recreational services and 1.49 for souvenirs. Based on the expenditure coefficient, food, transport and accommodation are classified as necessities, while services and souvenirs tend to be considered as luxuries by tourists.

INTRODUCTION

In recent years tourism has been identified as an economic activity that contributes to the economic growth of tourist-receiving countries. In Malaysia, the position of the tourism industry as the third major foreign exchange earner in 1990 has made it one of the most important economic activities in the overall development of the Malaysian economy.

The estimation of tourism-related expenditure provides a basis for determining the economic consequences of tourism (Fritz *et al.* 1984). Therefore, the economic impact of tourism on a country's economy is often estimated through the expenditure behaviour of tourists (Henderson 1975).

A study by Abdul Aziz *et al.* (1990) examined the economic impact of tourism in terms of direct, indirect and induced income

and employment multipliers and technological linkages. It was established that the tourism sector has the potential to generate income in the national economy, especially through household expenditure, in addition to the induced-generating capacity of the manufacturing sector.

The study also pointed out that the implementation of tourism policies would generate a comparatively high level of employment in the following sectors: fishing, beverages, petroleum products and coal, air transport, business services and cultural services. Total employment multipliers in these sectors were greater than the national average. Consequently, any tourist expenditure in these sectors would eventually have a significant impact on employment generation in the national economy (Abdul Aziz *et al.* 1990).

Dardis *et al.* (1981) used a log linear multiple regression to estimate the relationships between recreational expenditure and several independent variables of US recreationists. The total household expenditure was proxied by the gross disposable income of the recreating household. They found that recreational expenditure was positively and significantly related to total household expenditure (gross income) with an elasticity of about 1.81. Several socio-demographic variables were also found to influence expenditure on recreation.

Based on the performance over the last several decades, there is evidence that the tourism industry will continue to grow worldwide. Coltman (1989) noted that the increase in leisure time had contributed greatly to the increase in tourism and that there was a high correlation between income and tourism and travel expenditure. Age is an important factor to be considered because it indicates the structure of a population; thus knowledge of the age structure of inbound tourists can help in determining the kind of tourism products and services a host country should provide. Travelling costs, occupation, and other demographic characteristics such as gender and marital status are determinants of tourist expenditure patterns (Bitta *et al.* 1977; Mak *et al.* 1977).

Singaporean Tourist Market

Singaporeans constitute the largest market among the ASEAN countries, making up 86.7% of the total ASEAN market to Malaysia (TDC 1991). Their arrivals in 1990 increased by 50.6% over 1989 (Table 1). Of the total arrivals to Peninsular Malaysia, 90% arrived by land. This was probably due to easy access via the causeway, thus inducing the large numbers of repeat visits as well as independent travel arrangements. Demographically, the Singaporean tourists could be narrowed down to specific target markets; more than half the visitors (59%) were male, most were young (25-39 years old), and their main purpose of visit was leisure.

A major factor contributing to the large influx of Singaporean tourists into Malaysia is

the ethnic and cultural links between many Malaysians and Singaporeans. From Table 1, it can be seen that family ties and friends play an important role in providing them with free accommodation. This is contrary to the expenditure pattern of most foreign tourists; accommodation is their highest cost. As shown in Table 1, even though 70% of Singaporean tourists stay with friends and relatives, only 39% came specifically for the purpose of visiting relatives and friends. This may mean that with leisure as the main purpose of their visit, most take advantage of staying with friends and relatives to minimize costs, enjoying free accommodation and even to a certain extent, food. On average, Singaporean tourists were found to stay 4.4 days in Malaysia, which was a considerable length compared to the average of 5.1 days for other foreign tourists.

Objectives of the Study

The tourism industry, like any other industry, needs comprehensive planning and management in order to succeed. The planning process could be made more effective if the exact characteristics and spending patterns of tourists in Malaysia were identified. Information from studies of expenditure patterns of tourists in the country can provide policy-makers with useful guidelines for planning the development of tourist products and programmes to meet the requirements of tourists.

The main objective of the present paper is to examine the expenditure patterns of Singaporean tourists who come to Malaysia.

Expenditure patterns are analysed in terms of the relationship between expenditure on various major tourist products and total household expenditure (gross income of the tourist household). In addition, various demographic factors significant to the expenditure patterns of tourists are included in the functional relationship to identify their impact.

METHODOLOGY

Data Collection

Collection of expenditure data from tourists is often very difficult due to widespread and pervasive distribution of tourists throughout

TABLE 1
 Characteristics of Singaporean visitors to Peninsular Malaysia

Item	1988	1989	1990
No. of visitors	2,305,898	2,432,720	3,663,679
Mode of travel			
Air	156,801	165,425	249,130
Land	2,068,391	2,182,152	3,286,320
Sea	20,706	85,143	128,229
Gender			
Male	1,360,480	1,435,306	2,161,571
Female	945,418	997,414	1,502,108
Major age groups			
Below 24	597,228	630,075	948,893
24 - 319	1,023,819	1,080,129	1,626,673
40 - 59	555,721	586,286	882,947
60 & above	129,130	138,230	205,166
Purpose of visit			
Leisure	1,219,820	1,286,910	1,938,086
Business	184,472	194,616	292,619
Family visit	901,606	951,194	1,432,974
Accommodation			
Hotels	769,499	783,334	1,179,705
Family/friends	1,536,399	1,649,386	2,483,974
Frequency of visit			
First visit	69,177	72,980	109,910
Repeat visit	2,236,721	2,359,740	3,553,769
Travel arrangements			
Tour package	219,060	231,107	348,050
Independent	2,086,838	2,201,613	3,315,629
Average length of stay	4.0	4.4	4.4

Note: 1 estimates based on 1985 pattern

Source: TDC (1991)

the country. Most studies on expenditure patterns use sample surveys. It is important, however, to ensure that proper sampling techniques are used to select the samples as well as to use different weighing procedures because of the varied characteristics of tourists.

In this study, primary data was used to obtain the latest information on the expenditure patterns of Singaporean tourists. The primary data needed included information about spending and general characteristics of Singaporean tourists.

Tourist Survey

A modified mail survey was used to obtain information from a sample of the Singaporean tourists in selected hotels (including chalets,

rest-houses, and private boarding houses). For convenience, Malaysia was divided into five geographical regions. The northern region included Perlis, Kedah, Penang and Perak. The central region was made up of Selangor and Kuala Lumpur. Negeri Sembilan, Melaka and Johor made up the southern region. The east coast region covered Kelantan, Terengganu and Pahang, while East Malaysia comprised Sabah and Sarawak. The hotels were selected based on class and number of rooms in the individual geographical region. The list of hotels were obtained from TDC's publication "Supply of Hotel Rooms in Malaysia" (TDC 1991b). The hotels were classified thus: large hotels, those with more than 100 rooms; medium hotels, those with 50 - 99 rooms; small hotels, those

with fewer than 50 rooms. The total number of hotels sampled was 102, comprising 24 large, 17 medium and 61 small hotels.

Sample Size

Stratified random sampling based on "Statistics on Hotel Occupancy in Malaysia" (TDC 1991c) was used to work out the regional sample size of tourists. A total of 251 respondents were identified through the sampling, which covered only four of the regions sampled. The number of samples obtained is shown in Table 2. The sampling unit was a Singaporean tourist who was in Malaysia on a visit of at least 24 hours.

Structured questionnaires were used to obtain data on tourist profiles and expenditure patterns. The expenditure section aimed at capturing the total expenditure on goods and services over the expenditure period; this was defined as time from the date of arrival to the date of the interview or when the questionnaire was completed. The expenditure on services was categorized into accommodation, food outside hotels, travel costs within Malaysia, shopping and souvenirs, and services (private, business and personal). The data on purpose of tour, length of stay and accompaniment were obtained through the section concerning trip characteristics, while data such as occupation, gender, age, gross family income and marital status were covered in the tourist profile section.

Economic Model of Expenditure

Logarithmic models are often used in analysing the expenditure relationships because logarithmic forms often result in better statistical outcomes (Dardis *et al.* 1981). The model used here is a natural logarithmic model or the Engel curve function specified as follows:

$$\text{Log } E_i = \beta_0 + \beta_1 \text{ Log } TE_i + \beta_j \times ij + \epsilon_i$$

where: E_i = expenditure by Singaporean tourist i on tourist products

TE_i = total household expenditure of Singaporean tourist i as measured by gross monthly income

X_{ij} = other independent variables pertaining to Singaporean tourist i (gender, marital status, occupation, age)

β_0 = constant term

$\beta_1 - \beta_j$ = coefficients of the parameters

ϵ_i = error term

With the use of the Engel curve function the coefficients of the total expenditure will be its elasticity values. The influence of an increase of total expenditure (gross income) on each tourist expenditure category will be indicated by a positive (negative) value of the total expenditure coefficient. The coefficients of the other set of variables will indicate the influence of variables on each expenditure category.

The impact of the dummy variables (age, gender, marital status and occupation) is

TABLE 2
Samples of respondents by regions

Region	Large	Medium	Small	Total
Northern	14	17	31	62
Central	66	12	63	141
Southern	6	4	18	28
East Coast	2	3	15	20
E. Malaysia	-	-	-	-
	88	36	127	251

Note: large: more than 100 rooms;
medium: 50 - 99 rooms;
small: fewer than 50 rooms

examined in relation to each expenditure category. Since the dependent variable is in a logarithm, the coefficient will be transformed to obtain the anti-logs of the various coefficients. The resulting values will provide estimates of the percentage differences in demand for each dummy variable category (e.g. marital status vs. single status).

RESULTS

The OLS estimates of the expenditure patterns on various major tourist products are summarized in Table 3. The results indicate that expenditure on accommodation, food and local transport is relatively more significant than expenditure on services and shopping and souvenirs.

Expenditure on Accommodation

The F-test indicates that the three variables considered in the model have influences on the expenditure on accommodation. However, only the total household expenditure variable is highly significant. The three variables account for approximately 60% of the variation in the expenditure on accommodation.

The influence of the variables in terms of the signs are consistent with the findings of Mak *et al.* (1977), Dardis *et al.* (1981), and Fareed and Riggs (1982). When total household expenditure (gross income) of the tourists increases more will be spent on accommodation. The influence of occupation may have been accounted for by income due to correlation between the two variables.

As age increases the propensity to spend on accommodation lessens (Fareed and Riggs 1982). With fewer dependents (especially children), the non-nested visitors may reduce the priority of expenditure on accommodation facilities while on visits.

Expenditure on Food Outside Hotels

The final results indicate that three variables influence tourist expenditure on food outside hotels. This set of variables accounts for about 64% of variation in the expenditure on food. All three variables are positively correlated to expenditure on food. The relationships of gender and marital status and expenditure on food may imply that that male and married Singaporean tourists are more inclined to spend on food outside hotels. This may be

TABLE 3
Regression estimates of Singaporean tourist expenditure

Variable	Major Expenditure Items				
	Food	Accom	Local Trans.	Services	S & S
Constant	- 0.632	- 0.659	- 0.089	- 1.203	1.565
Log TE	0.840 (7.38)	0.785 (9.42)	0.631 (6.35)	1.324 (4.08)	1.488 (5.43)
Age		- 0.062 (1.81)	- 0.023 (1.41)	0.166 (0.76)	0.042 (1.03)
Marital status	0.066 (1.94)		- 0.132 (1.75)	- 0.215 (1.64)	0.056 (1.36)
Occupation		0.022 (1.34)	- 0.076 (0.62)		
Gender	0.056 (1.43)		0.0854 (1.47)	- 0.201 (1.57)	
Adj. R ²	0.642	0.594	0.565	0.408	0.234
F	18.49	23.12	11.80	3.96	3.86

Note: t values are shown in parentheses
TE is total household expenditure

useful information for restaurant and food stall operators running businesses in the vicinity of hotels.

Food outside hotels is relatively cheaper than food in hotels. However, personal service is lacking and it is relatively less safe and clean. The estimated results indicate that when total household expenditure or gross income of Singaporean tourists increases, they have the tendency to spend less on food outside their hotel.

Expenditure on Local Transport

Approximately 57% of the variations in transport expenditure are explained by five variables. Total household expenditure (TE) proved to be a highly significant factor in influencing expenditure on local transport. However, demographic variables (gender, age, marital status and occupation) are shown to be marginally influential. The accessibility of Malaysian destinations to Singaporean tourists by road may explain the lack of significance of the variables included. Furthermore, with the relatively higher standard of living among Singaporeans in general, most of them can afford to travel to Malaysia in their own vehicles. As a result, expenditure on local transport in Malaysia by Singaporean tourists, i.e. for buses, trains and air, is limited. Fareed and Riggs (1982) suggested that among elderly tourists, the propensity to spend on local transport was lower.

Expenditure on Services

The results reveal that expenditure on services is positively related to total household expenditure and age, although the latter variable is not highly significant. Other demographic variables (gender and marital status) are shown to be inversely related to expenditure on services, but their influence was less significant. The direct relationship between household expenditure and spending on services presents potential for the development of tourist and recreational services to attract more Singaporean tourists. Furthermore, as Coltman (1989) pointed out, visitors in the 25 – 39 year age group tend to spend

more on recreational services.

Expenditure on Shopping and Souvenirs

Relatively, the expenditure function for shopping and souvenirs produces the lowest level of goodness of fit; only about 24% of the variations are explained by the three variables included. However, the significance of total household expenditure as an influencing variable is consistent with the results found by Houthakker and Taylor (1970).

Coefficients of Elasticities of Expenditure

The economic implications of the tourist expenditure patterns can be gauged by looking at the coefficients of elasticities for each major item; the coefficient indicates whether the expenditure on each category is sensitive to changes in factors pertaining to it. Using the natural logarithm function, the coefficient of the total household expenditure (the elasticity value) is the response of the expenditure on a category due to a percentage change in total household expenditure. When total household expenditure is assumed to equal the family gross income, the coefficient of the variable indicates the response of the expenditure on each major item as a percentage change in the visitor's income.

The values of the elasticities of expenditure are 1.49 for shopping and souvenirs, 1.32 for services, 0.84 for food, 0.79 for accommodation and 0.63 for transport. This means that a 1% increase in total household expenditure of Singaporean tourists will result in a 1.49% increase in expenditure on shopping and souvenirs. An increase of 1% in total household expenditure will result in a 0.63% increase in expenditure on local transport; a 1.32% increase in expenditure on services; and a 0.79% increase in expenditure on food outside hotels.

The Engel curve can be used to classify goods into luxury, necessity or inferior goods (Deaton and Muellbauer 1980). The coefficients of the total household expenditure with respect to the expenditure on each item are used to define luxuries ($\xi > 1$) and necessities ($\xi < 1$). The coefficients for local transport, accommodation and food imply that these

products are considered necessities by Singaporean tourists whereas the coefficients for recreational services and souvenirs classify them as luxuries. The result is fairly consistent *a priori* since relative to transport, food and accommodation, souvenirs and recreational services can be viewed as luxuries. (The use of a single equation model, as in this study, results in loss of information on cross-elasticity).

Dummy Variables

The dummy variables used for the demographic characteristics (age, gender, marital status and occupation) are examined in terms of their significance to the expenditure on each major item. Since the dependent variables (expenditure on major tourism items) are in logarithmic form, each dummy variable coefficient is transformed so that the anti-logs of the various coefficients provide the estimates of the percentage differences in demand for each dummy variable relative to the omitted variable.

Married Singaporean tourists are found to spend about 14% more than singles on shopping and souvenirs. Further, the difference in spending on this item between the elderly and younger tourists is about 10% with the elderly spending more. Male, older and married Singaporean tourists spend slightly more on local transport than female, younger and single tourists (21% for males, 5% for the older age group and 35% for married tourists).

The survey of expenditure on services indicates that there are big differences in the spending patterns among the various tourist categories. Male tourists tend to spend about 59% more for recreational services than females, older tourists spend about 47% more than the younger ones while married tourists spend about 64% less than the singles. For accommodation, the older tourists tend to spend about 15% more than the younger tourists. The occupational difference does not seem to greatly affect the spending pattern of Singaporean tourists; wage-earners spend about 5% more than non-earners.

As shown in the results, only two socio-demographic variables are slightly influential

on the food expenditure pattern. Married and male Singaporean tourists are found to spend about 16% and 14% more respectively on food than singles and females.

CONCLUSION

The analysis of tourist expenditure patterns has significant implications for marketing strategy as well as for public policy on tourism promotion. The Singaporean tourist market is highly dominated by male tourists, with a fair distribution between married and non-married. Although there is no significant difference between the expenditure pattern of male and female tourists, the married spend slightly more on certain major items. Thus, supplying tourist products and services that cater for family vacations should be able to encourage more visits as well as spending by these groups of people. The majority of Singaporean tourists are in the 25-39 year age group. Their average annual gross income is S\$62,000. With leisure, vacation and business as the main purposes of their visits, they stay an average of 4.7 days in Malaysia.

A comparison of the coefficients of elasticities of expenditure proves instructive in revealing the sources of differences in the expenditure patterns of Singaporean tourists. Their expenditure patterns are affected highly by total household expenditure (gross family income) and, to a lesser extent, by several demographic characteristics such as age, gender, occupation and marital status. The results indicate that total household expenditure has a very strong influence on all the expenditure categories or major items (local transport, recreational services, accommodation, food and shopping and souvenirs).

The elasticities of total expenditure for food, transport and accommodation are found to be relatively inelastic ($\xi < 1$). The results imply that although total household expenditure as a proxy for gross family income affects the spending patterns of the tourists for these items, there is little change in their spending patterns with changes in total household expenditure. Based on the elasticity coefficients, transport, accommodation and food are classified as necessities by the

Singaporean tourists. Thus, in terms of pricing policy, a lowering of prices of these items may not increase demand for them; on the other hand, improvement and increased availability will help create more revenues by shifting the demand for them. Recreational services and souvenirs are expenditure elastic ($\xi > 1$), making them luxuries; thus it may be implied that adjusting prices of these items can increase revenue.

The information obtained from the survey can be used as guidelines in formulating programmes to encourage more spending on various major items by various groups of Singaporean tourists. For instance, improvement and increased availability of transport, accommodation and food outside hotel facilities would be more beneficial for the lower income Singaporean tourists. Providing up-market accommodation facilities would be more attractive to higher income Singaporean tourists since they prefer the accompanying in-house food and recreational services.

Because the study is confined to the analysis of total household expenditure and certain demographic variables, it is assumed implicitly that all Singaporean tourists spend on all the major items. It would be interesting to examine the impacts of other characteristics such as party size, length of stay and per capita daily expenditure on the expenditure of each of the major item. Such information would provide additional insights about changing patterns of expenditure on these major items, especially in relation to expenditure on souvenirs and recreational services.

It is noted that the scope of the study is limited to the data made available from questionnaires distributed only in hotels. This may have resulted in biases in the estimated coefficients since expenditures of other segments of Singaporean tourists are excluded, in particular, Singaporean tourists who are staying with friends and relatives. Additional research is needed to establish the competitiveness of particular products and services to be offered to Singaporean tourists as well as the way they should be organized in the market. Using functional relationships that take into account effects of changes of

tourist products on other items, that is, use of simultaneous techniques, will allow estimation of cross-price elasticities that may be useful to policy-makers.

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ABSTRAK

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Keywords: expenditure patterns, Singaporean tourists, Malaysia

ABSTRACT

This paper examines the expenditure patterns of Singaporean tourists in Malaysia. The study is based on data collected from a survey of 100 Singaporean tourists who visited Malaysia in 1991. The results show that the average expenditure per tourist per day is RM120. The highest expenditure is on accommodation, followed by transport and food. The study also shows that the majority of tourists are from the private sector and are on business trips.

INTRODUCTION

The tourism industry in Malaysia has been growing rapidly in recent years. This is due to the increasing number of tourists from Singapore and other neighboring countries. The government has been promoting tourism as a key sector of the economy. This paper examines the expenditure patterns of Singaporean tourists in Malaysia. The study is based on data collected from a survey of 100 Singaporean tourists who visited Malaysia in 1991.

INTRODUCTION

The tourism industry in Malaysia has been growing rapidly in recent years. This is due to the increasing number of tourists from Singapore and other neighboring countries. The government has been promoting tourism as a key sector of the economy. This paper examines the expenditure patterns of Singaporean tourists in Malaysia. The study is based on data collected from a survey of 100 Singaporean tourists who visited Malaysia in 1991.

The study also shows that the majority of tourists are from the private sector and are on business trips. The highest expenditure is on accommodation, followed by transport and food. The study also shows that the majority of tourists are from the private sector and are on business trips.

Sampling Size and Auditors' Judgements: A Simulation

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ABSTRAK

Auditor gunapakai teknik-teknik kos efektif dan efisien untuk mendapatkan bukti-bukti yang membantu mereka didalam memberi pendapat keatas penyata kewangan. Salah satu teknik audit yang lazim digunakan ialah persampelan dan di UK auditor menggunakan saiz sampel sekecil 25 item. Kajian ini menggunakan teknik simulasi Monte Carlo untuk menentukan samada pendapat auditor berdasarkan pelbagai saiz sampel dan aras ralat adalah dibawah paras ketepatan bolehterima. Keputusan kajian mendapati firma-firma yang menggunakan saiz sampel yang kurang daripada 25 item tidak cukup besar untuk memberi pelan persampelan yang berjaya kecuali pada tahap nilai ralat yang rendah. Untuk memperbaiki pelan persampelan dan kualiti audit, adalah dicadangkan saiz sampel minimum hendaklah melebihi 50 item.

ABSTRACT

Auditors usually seek cost-effective and efficient techniques to accumulate evidence in an effort to express their opinions on financial statements. One such technique is audit sampling, and in the United Kingdom auditors use sample sizes as small as 25 items. This study uses the Monte Carlo simulation technique to determine whether an auditor's opinion using both different sample size and error levels is within an acceptable degree of accuracy. The results suggest that samples of fewer than 50 items are not large enough to provide a successful sampling plan unless the error value is very low. To improve the sampling plan and the quality of the audit, the sample size should, therefore, be increased to more than 50 items.

INTRODUCTION

The high cost of audit sampling in recent years has forced auditors to reduce the size of audit samples. To be cost-effective, audit samples have been reduced significantly, as reported in the literature (Mohamad-Ali 1993), where a sample of 25 items was used to test accounting populations of several thousand items. However, a small audit sample is subject to the possibility of a lack of credibility and accuracy, in terms of giving a true and fair view of the accounts being audited. This study tests whether small samples do provide the auditor with the degree of assurance he needs to state the accounts under audit give a "true and fair" view of the financial condition of the company.

An auditor faces the challenge of two conflicting objectives in gathering evidential matter. First, the collection of excessive evidence at the expense of the client may lead him to seek the services of a more cost-efficient auditor. Second, the auditor is subject to litigation if the client perceives that the auditor had the means, but did not give the most reasonable opinion. Therefore, an auditor needs to maintain a balance between controlling the cost of evidence gathering and the possible consequences of expressing an opinion based on inadequate data.

One way of determining an optimal size of audit sample is to use a well-tested statistical formula. In a recent survey

(Mohamad-Ali 1993) it was found that the use of statistical sampling is on the increase, with 43% using statistical sampling techniques at some stage of their audit procedures and the majority of medium-sized accounting firms stating that they drew a minimum sample size of 25 items from an account under audit. On average, most firms stipulated a sample size of 20-40 units per account audited. Another study (McRae 1982) noted that statistical sample sizes in the UK appear to be significantly smaller than those in North America, with most firms in the UK imposing a minimum sample size of 25 units and a maximum of 100 units.

Although statistical sampling has been in use as an effective audit tool for more than forty years, there is little published evidence on the issue of sample size. The lack of research on this important practical problem is possibly due to the cost of carrying out a proper test on a large population of data. To test the accuracy of the sample on an actual population of accounts is time consuming and costly as every item in the population must be checked for error.

One possible solution to this problem is to develop a computer program which can generate a series of book and audited values (any differences being an error), thus simulating the audit of a real accounting population. This study attempts to determine whether an auditor's opinion on the sampled population is likely to be within an acceptable degree of accuracy when the auditor uses varying audit sample sizes.

RESEARCH DESIGN

This study utilized the Monte Carlo simulation technique to examine problems with a stochastic or probabilistic basis (Hammersely and Handscomb 1964). Principally, a computer program is used to generate a series of book values and error values. These error values are seeded into the book values to become the accounting population, which is later used to generate a series of matching audited values. The book values and the error values are taken from a series of actual book and error values noted by auditors. The

TABLE 1
Frequency distribution and major characteristics
of book values

Class	Book Amount (\$)	Number of Accounts
1	$0 < x \leq 90$	1,070
2	$90 < x \leq 230$	715
3	$230 < x \leq 400$	450
4	$400 < x \leq 650$	337
5	$650 < x \leq 1,500$	455
6	$1,500 < x \leq 3,500$	409
7	$3,500 < x \leq 5,000$	149
8	$5,000 < x \leq 10,000$	238
9	$10,000 < x \leq 25,000$	210
Total		4,033

Source: Neter and Loebbecke (1975) p. 26

distribution of the generated book and error values are shown in Table 1 and 2 respectively.

POPULATIONS USED IN THIS STUDY

In order to generate a series of book and audited values several elements in the simulated accounting population need to be specified and explained.

First, to generate the distribution pattern of values (the skewness) in this study, the actual elements found in audited accounting populations were sampled (taken from Population 4 of Neter and Loebbecke's (1975) study¹ of accounting population parameters). Population 4 consists of 4033 trade debtors' accounts and contains only one-sided errors owed to a large US manufacturer. Table 1 illustrates a frequency distribution of these book values representing the trade debtors' accounts. It shows that the distribution is skewed to the right, implying smaller number of items of high value in the population suggests larger number of errors are expected in small value items.

¹ Neter and Loebbecke's (1975) study consists of Populations 1, 2, 3 and 4. The Neter and Loebbecke populations are well known in the audit sampling literature and have been widely used by other researchers for comparing the performance of alternative sampling techniques (for example, see Frost and Tamura (1982)).

TABLE 2
Tainting percentages: a classification by relative size of the item in error

Tainting	Audited Items		
	Exceeding \$10,000	\$2,000-\$10,00	Less than \$2,000
0 - 1%	35%	19.0%	3%
> 1 - 10%	33%	25.0%	17%
> 10 - 20%	5%	12.0%	19%
> 20 - 99%	17%	19.0%	21%
100%	10%	23.5%	37%
> 100%	0%	1.5%	3%
	100%	100.0%	100%

Source: McRae (1982)

Second, there are errors of principle and operational errors (Taylor 1974). Operational errors can be classified further, into procedural errors and errors of value. This study is concerned with measuring accidental errors of value, which are also referred to as substantive errors; most are monetary errors (McRae 1982). We have ignored deliberate or fraudulent errors in our simulation because the pattern and incidence of such errors are likely to be very different from those of accidental errors and therefore require a separate research study.

The error rate is defined as the proportion of errors in a population. Thus an error rate of 20% means that out of a total population of 100 items, 20 items are in error. The error rate in most accounting populations is very low; however, the acceptable level of error varies from sample to sample. For example, Jones (1947) suggests that error rates below 0.3% are "acceptable" and below 0.9% are considered to be "fair" in clerical work. Vance (1950) used 0.5% as an acceptable rate and 3% as an unacceptable error rate in clerical work. The National Audit Office in the UK applies an unacceptable upper error rate of 2.5% to their audit work on government accounts.

In this study we use three error rates, 1, 2.5 and 5% and define these errors as low, medium and high, and seed them into the population via our simulation program.²

Third, the value of the errors and the pattern of distribution of the errors are

summarized in Table 2. The term "tainting" used in audit sampling describes the ratio between the value of an error and the value of the item in error. For example, an item of \$60 containing a \$15 error is said to be 25% "tainted". In actual practice the probability of finding a given tainted percentage appears to be influenced by the relative size of the items in error (McRae 1982). This study classifies the tainting percentage into three groups following McRae's study, that is, audited items exceeding \$10,000, those less than \$2,000 and those between \$2,000 and \$10,000.

THE SIMULATION

The simulation program consists of two interrelated BASIC programs. The first program generates 4033 random numbers and stores them on data files. The numbers between 0 and n are generated by using the formula $\text{INT}[\text{THETA} \cdot \text{LOG}(\text{RND})]$, where INT and RND are BASIC functions standing for integer and random number respectively. The second program uses the data inserted into the data file by the first program. Table 3 describes the simulation in detail.

² According to Neter and Loebbecke's study the number of items in the population is 4033. Thus to make the process simpler, the error items are set to be 50, 100 and 200 errors respectively, that is, for example 2.5% of 4033 is 100 (rounded to ten). This approach creates three populations to be tested.

TABLE 3
The simulation process

STEPS	DESCRIPTION
1. Generate the file holding the population	The intention is to generate 100 files with each file containing 4033 items.
2. Population generation	Within this step we generate a population of 4033 values. The values generated correspond to the book and audited values of each item. The program creates a set of audited values by seeding error values into population of book values.
3. Sampling selection	<p>A sample is now extracted from each population using the monetary unit sampling (MUS) procedure as described below:</p> <ol style="list-style-type: none"> <li data-bbox="628 648 1259 703">a) Create a cumulative book value for each population of accounts. <li data-bbox="628 707 1259 797">b) Randomly select a number = y between 1 and the sampling interval within the cumulated value. We shall call this sampling interval (SI). <li data-bbox="628 801 1259 856">c) Select the account whose cumulative book values index is just $> y + SI = X$. <li data-bbox="628 860 976 887">d) Repeat C, by $X + SI = X_2$
4. Estimate audit value	Estimate the total audited value of all 4033 accounts based on the samples of 25, 50 and 100 items sampled using the MUS procedure.
5. Decision taken	Decide whether the total audited book value is to be accepted or rejected based on level of tolerable errors.
6. Repeat	Repeat Steps 2, 3, 4 and 5 for 100 runs. This step will measure the probability that the confidence levels claimed by the auditor using this procedure are reasonably accurate.

AUDIT SAMPLING PROCEDURE

Monetary unit sampling (MUS) is a commonly used statistical procedure for expressing an opinion on the validity of the accounts audited from evidence collected from a sample. Mohamad-Ali's (1993) and McRae's (1982) surveys suggest that over 90% of applications of statistical sampling use some form of MUS. The MUS procedure used in this study is a simplified version of the DUS (dollar unit sampling) method described in Leslie *et al.* (1980). This procedure is outlined in Table 4.

This method divides the total population value into equal dollar segments. A dollar unit, sometimes called the "hit" dollar, is then systematically selected from each seg-

ment. Thus a sampling interval is calculated as follows: $SI = BV/n$, where BV is the book value and n is the sample size. In our case let us say $BV = \$600,000$ and $n = 88$, then the sampling interval is \$6,818 ($\$600,000/88$). The initial step in the sampling selection process is to pick a random number between 1 and 6,818. The auditor then selects the value item that contains every 6,818th dollar thereafter in the population. Assuming a 5,000 random number start, the four sample items selected are as shown in Table 4. It should be noted that though we are sampling individual monetary units in single dollars, the results concern the entire value associated with the "hit" dollar.

TABLE 4
Systematic selection procedure in MUS sampling

Logical unit	Book values	Cumulative values	Numbers selected	Items selected for audit
1	1,200	1,200		
2	6,043	7,243	5,000	6,043
3	2,190	9,433		
4	3,275	12,708	11,818	3,275
5	980	13,688		
6	1,647	15,335		
7	4,260	19,595	18,636	4,260
8	480	20,075		
9	7,150	27,225	25,454	7,150
	600,000	600,000		

EVALUATING THE RESULTS OF THE MUS SAMPLE

The next stage is to evaluate the results of the sampling procedure. Here the auditor considers (1) the projected error value determined by the sample, (2) the degree of error allowed for sampling risk, and (3) the upper error limit determined by the sample. Item (3) is calculated from items (1) and (2). The evaluation process now differs depending on whether any errors are found in the sample.

Sample Selection with No Errors Found

The error results found in the sample are used to estimate the error in the total population. When no errors are discovered in the sample the allowance for sampling risk will equal the upper error limit, which is equal to or less than the level of tolerable error specified in designing the sample. Therefore the auditor can ordinarily conclude, without making additional calculations, that the book value of the population is not overstated by more than the level of tolerable error at the specified risk of incorrect acceptance.

When no errors are found in the sample, the sampling risk factor consists of basic precision (BP). The amount is obtained by multiplying the reliability factor (RF) for zero errors at the specified risk of incorrect acceptance by the sampling interval (SI). In

the case under discussion, let us say that the required level of confidence is 95%, thus $RF = 3.0$ (derived from the Poisson distribution), then the basic precision is \$20,454 (computed as: $BP = RF \times SI = 3.0 \times \$6,818 = \$20,454$). Since the projected error is zero, this amount is also equal to the upper error limit, which is less than the \$30,000 tolerable error specified in the sample design. Thus, the auditor may now state that the book value for the population is not overstated by more than \$20,454 at the 5% risk of incorrect acceptance.

Sample Selection with Some Errors Found

If some errors are found in the sample, the auditor must calculate both the projected error value in the population and the allowance for sampling risk in order to determine the upper error limit for overstatement errors. The upper error limit is then compared with the tolerable error.

Projected Population Error

A projected error amount for the population is estimated by first calculating the error for each sampled unit containing an error and then adding these errors for the entire population. The projected error is calculated as follows:

TABLE 5
Determination of projected error

Book Value (BV)	Book Value (AV)	Tainting Percentage (TP = (BV-AV)/BV)	Projected Error (TP × SI)
950	855	10	682
2,500	0	100	6,818
5,300	5,035	5	341
8,750	5,890		7,841

Tainting percentage = (book value - audit value) / book value
Projected error = tainting percentage × sampling interval

- Multiply the ranked projected errors by the appropriate factor and sum the products.

Table 6 illustrates the first step.

To illustrate, let's assume that the debtors' accounts reveal the following errors as in Table 5. The total error in the sample is \$2,860 (\$8,750 - \$5,890) and the total projected error in the population is \$7,841.

Allowance for Sampling Risk

The allowance for sampling risk of samples containing errors has two components: (1) basic precision, and (2) an incremental allowance resulting from the errors. The calculation of basic precision (RF × SI) is the same as explained previously for a sample with no errors. Thus, in the case studied the amount of this component is again \$20,454.

The calculation of the incremental allowance involves the following steps:

- Determine the appropriate incremental change in the reliability factor.
- Rank the projected errors from the highest to lowest.

The data in the first two columns are the specified risk of incorrect acceptance (5% in this illustration). Each entry in the third column is the incremental reliability factor. The values in the last column are obtained by subtracting one from each value in the third column. The second and third steps are illustrated in Table 7, which has the projected errors in the first column (taken from Table 5) and incremental reliability factors in the second column (taken from Table 6).

The incremental allowance for sampling risk is the product of columns one and two, and the incremental allowances for the projected errors are then summed to determine the total incremental allowance, which is \$5,580 in this example. The total allowance for sampling risk is the sum of basic precision and incremental allowance for projected errors. For example, in the case under study, the total allowance is computed to be \$26,034, which is estimated as follows:

TABLE 6
Incremental change in reliability factor minus one 5% risk of incorrect acceptance

Number of Overstatement Error	Reliability Factor (RF)	Incremental Change in RF	Incremental Change in RF Minus One
0	3.00	-	-
1	4.74	1.74	.74
2	6.30	1.56	.56
3	7.75	1.45	.45
4	9.15	1.40	.40

TABLE 7
Incremental allowance for sampling risk

Ranked Projected Errors	Incremental Change in Reliability Factor Minus One	Incremental Allowance for Sampling Risk
\$ 6,818	.74	\$ 5,045
682	.56	382
341	.45	153
		\$ 5,580

Basic precision	\$20,454
Incremental allowance for projected errors	5,580
Total allowance for sampling risk	<u>\$26,034</u>

Upper error limit for overstatement errors. The upper error limit equals the sum of the projected errors plus the allowance for sampling risk, that is, \$33,875 (\$7841 + \$26,034). Thus, the auditor may conclude that there is a 5% risk that the book value is overstated by \$33,875 or more.

The figure thus calculated is then compared with the tolerable error for the item under consideration. If the upper error limit is less than the tolerable error the auditor can accept the population. If the opposite is true, the auditor may adjust the upper error limit for any error found (assuming that the client agrees to the adjustment) to determine whether that reduces the upper error limit to below the tolerable error. If the upper error limit remains above the tolerable error the auditor should carry out such procedures as are laid down by the audit firm to deal with such a situation.

Generally, if the upper error limit is less than the tolerable error, the sample results support the conclusion that the population book value is not mis-stated by more than the tolerable error at the specified risk of incorrect acceptance. In the case under review, the upper error limit exceeds the tolerable error of \$30,000 specified in designing the sample. Thus, in this case, the population should be rejected.

HYPOTHESES TO BE TESTED

In this study, the simulation model used tested the following hypotheses:

H1 Auditor's conclusion on the population audited: using a 100-sample size

The hypothesis tested is that this sampling plan, using a sample size of 100 items, accepts the population correctly over 90% of the time at all levels of error rate: 1, 2.5 and 5%.

H2 Auditor's conclusion on the population audited: using a 50-sample size

The hypothesis tested is that this sampling plan, using a sample size of 50 items, accepts the population correctly over 90% of the time at all levels of error rate: 1, 2.5 and 5%.

H3 Auditor's conclusion on the population audited: using a 25-sample size

The hypothesis tested is that this sampling plan using a sample size of 25 items, accepts the population correctly over 90% of the time at all levels of error rate: 1, 2.5 and 5%.

The various sample sizes used in testing these hypotheses are based on the research conducted in the UK which used sample sizes of 25 and 50 items to test large populations³ under audit. The error value found in

³ We assume that all accounting populations audited using sampling consist of several hundred and usually several thousand items.

TABLE 8
Auditor's conclusion on the population

Sample Size	Error Rate					
	1%		2.5%		5%	
	Accept	Reject	Accept	Reject	Accept	Reject
100	100	0	96	4	95	5
50	92	8	63	37	64	36
25	55	45	19	81	18	82

accounting populations is reported to be 0.5-5%. An auditor is likely to reject an accounting population thought to contain an error value exceeding 1%. The hypotheses above are intended to ascertain whether populations containing an error value of various magnitudes are likely to be rejected by an auditor using sample sizes of 100, 50 and 25 units.

RESULTS AND DISCUSSION

A simulation test was carried out to ascertain whether the sampling sizes used by auditors are likely to result in correct conclusions being drawn by the auditor on the acceptability of the population under audit, given three error levels and sample sizes.

The end product of the audit is either to reject or to accept the population under audit. If the upper error limit generated by the sample is less than the tolerable error, the sample results support the prior hypothesis that the population book value is not misstated by more than the tolerable error.

The simulation results are then compared with the actual data to ascertain the reliability of the auditor's conclusions. Table 8 shows the auditor's conclusions based on the various sample sizes and the percentage of times the auditor would accept or reject each particular population under the various conditions stated. The auditor's conclusion is that the population book value under audit is, or is not, in error by more than the tolerable error at the specified degree of risk.

If the level of correct decision as to acceptance or rejection generated by our simulation lies below the 90% level (the

auditor makes a wrong decision more than 10% of the time) then the audit procedures used would seem to be inadequate. For example, the audit testing procedure is telling the auditor to reject the population under audit when he should be accepting the population.⁴

The audit sampling plans using a sample size of 100 accepted the audited populations that should have been accepted over 90% of the time at all levels of error rate. The sampling plans using sample sizes of 25 and 50 units provided very different results.

With the error rate at 1% a sampling plan with a sample size of 50 accepts the population correctly more than 90% of the time. However, at an error rate of 2.5 and 5% a sampling plan of 50 provides acceptances far below 90% that is, it only accepts the population (the correct decision) 63% and 64% of the time respectively. The sampling plan based on a sample size of 25 produces an incorrect decision at all levels of error rate, that is, it produces the correct decision less than 90% of the time at all levels.

These findings suggest that firms using samples of fewer than 50 units for auditing accounting populations with low error rates have an unacceptably low probability of arriving at a correct conclusion on the quality of the population under audit and so should increase their minimum sample size per population audited to at least 50 units, and preferably 100 units. The auditor is too

⁴ If an Auditor rejects a population he should accept this is called Alpha risk. If an Auditor accepts a population he should reject this is called Beta risk.

often rejecting populations he should accept, thus requiring needless extra audit work by both the auditor and the auditee.

However, in practice there are certain other qualitative issues that need to be considered in reaching an overall conclusion on accepting or rejecting an accounting population under audit. These qualitative factors might influence the auditor's conclusions derived from the audit sampling plan. It must also be noted that in this study the simulation was applied only to debtors' account of one particular industry.

However, the type of industry is unlikely to affect the conclusions since the statistical parameters of accounting distributions do not vary much between industries (Neter and Loebbecke 1975). The level of skewness attached to debtor distributions is similar to that attached to most other accounting distributions such as creditors and inventory. The rate of error and the distribution of total error are unlikely to vary in an inventory distribution compared to a debtor's or creditor's distribution. Therefore, we doubt if this parameter variation would have much effect on our conclusions as to the validity of the decisions to be drawn by auditors from small audit samples.

CONCLUSION

The objective of this study was to ascertain whether the different sample sizes drawn by audit firms do provide the auditor with an acceptable level of assurance as to the quality of the population under audit. The auditors must design a cost-effective sampling plan which will minimize both alpha and beta risk, that is an assurance that populations which should be rejected are not accepted, and vice-versa.

The simulation was based on an actual accounting distribution taken from Neter and Loebbecke (1975) Population 4. The sample sizes used were 25, 50 and 100 random items with a required confidence level set at 90 %. The findings are summarized in Table 9.

The results show that within the range of sample sizes normally used by auditors in practice, namely 25-100 units per population audited, the procedures only work consis-

TABLE 9
Summary of results of simulation analysis

Hypothesis	Accept/Reject
Hypothesis 1	Accepted +
Hypothesis 2	Rejected in part *
Hypothesis 3	Rejected

* at error rate of 1%, 2.5% and 5%, it is significantly above 95%

+ at error rate of 1%, the hypothesis is accepted

tently if the sample size is in the region of 100 random items. With samples of 50 random items the results vary somewhat, but for samples of 25 random items, the results are consistently negative. Since many earlier researchers (McRae 1982; Maysmor-Gee *et al.* 1984; Mohamad-Ali 1993) used fewer than 50 sample items per population audited (on average), the findings of this study should alert them in their future audit work. Hopefully, the size of their audit samples in the future would be increased to at least 50 items and preferably 100 items per population audited. This is based on the assumption that the populations under audit consist of several thousand items, though these results might also be true for very small accounting populations consisting of a few hundred items.

IMPLICATIONS FOR THE AUDITORS

Since the study covered only one accounting population, namely debtors, with a relatively low number of simulation runs (100), the conclusions drawn are largely tentative. Nevertheless, the results suggest that an auditor using any form of sampling should be concerned about the validity of the conclusions drawn from the sample when the sample size is below 50 units per population sampled. The findings suggest that audit samples below 50 are not large enough to mitigate alpha and beta risk.

To further validate the findings of this study, it is suggested that a larger number of accounting populations with other error distributions and larger simulation runs are collected and tested. It might also be useful to

run the simulation using other estimators, such as the so-called (MEST) bounds suggested by McCray (1980).

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Preparation of Manuscript

Typing and Paper

The manuscript should be typed double spaced on A4 paper with 4cm margins on all sides. It should be limited to 25 pages including tables, illustrations and references.

Title Page

The title of the paper, name of author and full address of the institution where the work was carried out should appear on the title page. A short title not exceeding 60 characters should be provided for the running headlines.

Abstract

English and Bahasa Melayu abstracts of 200 words each should follow the title page. Papers from outside Malaysia may be submitted with an English abstract only.

Keywords

About six to ten keywords are required and these should be placed directly above the abstract.

Tables

Tables should be typed on separate pages and numbered using Arabic numerals. Each table should be referred to in the text, have a brief title and include explanatory notes, if necessary, below it. Vertical rules should not be used. Footnotes in tables should be designated by symbols or superscript small italic letters. Tables should conform to page size.

Equations

These must be clearly typed triple-spaced. They should be identified by numbers in square brackets placed flush with the right margin.

Illustrations and Photographs

Illustrations including diagrams and graphs are to be referred to in the text as 'figures' and photographs as 'plates' and numbered consecutively in Arabic numerals. All photographs (glossy black and white prints) should be supplied with appropriate scales.

Illustrations should be of print quality; output from dotmatrix printers is not acceptable. Illustrations should be on separate sheets, about twice the size in print. All letters, numbers and legends must be included on the illustration with the author's name, short title of the paper and figure number written on the verso. A list of captions should be provided on a separate sheet.

Spelling & Measurements

The Oxford English Dictionary should be consulted for spelling. Metric units must be used for empirical measurements.

Citations and References

Citations to the literature in the text are to be indicated by the author's name and year of publication in parentheses, e.g. (Barnett and Lewis 1982). If an author is quoted in the text, the year of publication should immediately follow in parentheses. e.g. Barnett and

Lewis (1982) state that "....." Citation of a particular page follows the date and is preceded by a comma, e.g. Humphrey 1990, p. 26-27.

For works with multiple authors, the first author's surname is used followed by *et al.* The full form of citation is used for two authors.

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When several authors are cited, they are to be arranged in chronological order and separated by semicolons, e.g. Zaharah 1960; Yong 1980; Lewis 1990.

Serials are to be abbreviated as in the *World List of Scientific Periodicals*. The abbreviation for *Pertanika Journal of Social Science and Humanities* is *Pertanika J. Soc. Sci. Hum.*

The following reference style is to be observed:

Book

Shamsher Mohamed, Shamsuddin Ismail & Annuar Mohd. Nassir. 1989. *Asas Belanjawan Modal*. 197p. Serdang: Universiti Pertanian Malaysia Press.

Chapter in Edited Book

Zahid Emby. 1990. The Orang Asli Regrouping Scheme - converting swiddeners to commercial farmers. In *Margins and Minorities - The Peripheral Areas and Peoples of Malaysia*, ed. V. T King & M.J.G. Parnwell, p. 94-109. Hull: Hull University Press.

Unpublished Materials (e.g. theses, reports, documents) Shahwahid, H.O. 1989. Price competitiveness and demand behaviour of Malaysia Meranti lumber and hardwood plywood in the United States' import market. Ph.D. Dissertation, State University of New York, Syracuse.

Ministry of National Unity. 1973. A socio-economic survey on the new villages in Perak and Melaka. 67p. Malaysia.

Serials

Noran Fauziah Yaakub. 1990. A multivariate analysis of attitude towards teaching. *Pertanika* 13(2): 267-273.

Conference Proceedings

Amir Awang. 1992. Counselling, human resources development and counseling services. In *Proceeding of Asia Pacific Conference on Human Resource Development*, ed. Sulaiman M. Yassin, Yahya Mat Hassan Kamariah Abu Bakar, Esah Munji and Sabariah Mohd Rashid, p. 243-246. Serdang: Universiti Pertanian Malaysia.

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