The Effects Of Corporate Support For Information Systems Development On The Performance Of The Accountant

NYENJE HAKEEM
NUR INDRIANTORO
Gadjah Mada University

ABSTRACT

This study, investigated the interacting effects of Management Support for Information Systems (MSIS), User Involvement in Information Systems Development (ISD) and Perceived Information Systems Benefits (PISB) on the performance of the accountant.

The data on the four variables was collected through mail surveys requesting accountants employed in different organisations to participate in the study. Thirty-eight responses were returned from a cross section of Indonesian Organisations.

The data was analysed using multiple regression models and partial derivative analyses of the regression models. To support the hypotheses, the coefficient of the interaction term in the regression had to be significant and positive. If the coefficient of the interaction was found positive, the corresponding incremental r^2 was considered statistically significant at the same probability level.

The results confirmed that, the positive effects of User Involvement in Information System Development on the accountant's performance will be higher when the level of Management Support for Information Systems is high. It also showed that Management Support for Information Systems had a positive mono-tonic effect on the performance of the accountant over the entire observed range of Perceived Information Systems Benefits and that the positive effects of User Involvement in Information Systems Development on the performance of the accountant will be higher when the level of Perceived Information Systems Benefits is high. This study, is unable to prove that, the positive effects of the combination between Management Support for Information Systems and User Involvement in Information Systems Development on the performance of the accountant will be higher when the levels of

Perceived Information Systems Benefits are high. This means that any level of PISB will lead to positive effects in the performance of the accountant. This was no different from the observations made by interviewees.

INTRODUCTION

Information systems (IS) have made a fundamental change on the work of accountants. New skills and knowledge are required to meet these changes. Computers are being introduced to meet the objectives of firms and to enhance the quality of work the accountants are producing. Accountants throughout the world need to appraise their own response to both the threats and opportunities that face the profession as information systems evolve. At the same time IS planning is increasingly considered by IS practitioners to be the most important IS issue for the century. [Ball and Harris, 1982; Dickson etal. 1984; Hartog and Herbert 1986; Leitheiser and Wertherbe, 1986] Point out for example mat, when asked to identify and rank ten key management issues for the 1980s leading IS professionals overwhelmingly ranked improved IS planning as the number one issue. The importance of this issue is reflected in the contemporary discussions, seminars and conferences of the 1990s.

Traditionally, IS have been viewed by researchers as playing only a supportive role. For example, Ein-Dor and Seger [1978] defined it as a set of facilities and personnel for " Collecting, Sorting, Retrieving and Processing information that is used or needed, by one or more managers, in performance of their duties. However, IS are drastically moving from that traditional role as an application of back-office support to one offering significant competitive advantage [MC farlan, 1984]. It is because of this that more attention is given to its development aspect in the recent past by management and its Users alike. For instance, [Parsons, 1984: Rockart, 1988]

point out that it is important for senior management and Users to understand and be involved in the use of IS for competitive advantage. Several authorities have pointed out mat in order for a system to be successful, it must first have the support of management [Flaaten, et.al., 1992]. IBM's BSP[1] methodology recommends that the BSP team be led by an "executive with broad business perspective," who is supported by two to five managers from various functional areas and by one representative from (User) IS department. While several studies have been done to demonstrate positive relationship between User Involvement in Information System Development (ISD) and several measures of; IS success such as system use, user attitudes and satisfaction [Bernard, 1988], All such researches crowd the results because they do not focus on a particular type of users' is manual is IBM's description of Business Systems Planning. The current edition can be obtained throughout local IBM branch offices, contributions. Management, as a major player in designing IS deserves to be identified separately and its contributions to performance assessed. While some researches have been done to test the impact of management support in areas like planning [Raghunathan and Raghunathan, 1988], few attempts have been made to link it to the performance of accountants. Accountants have been the major producers of information for quite sometime. It is assumed that as IS attract the attention of *the* organization" policy makers and it's users, the performance of accountants will be improved.

Besides that, management invests in IS because of the benefits it envisages. Some benefits lead to changes in measurable outputs, such as the reduction of stocks or cost reduction. These can readily be quantified, but many changes create intangible outputs, such as improved decision making processes and User satisfaction. Thus, investment in IS has often had to proceed based on arguments containing a combination of measurable and immeasurable benefits [Carr, 1985]. The matters discussed above have got a bearing on the performance of the accountant. It is the

---

[1] This manual is IBM's description of Business Systems Planning. The current edition can be obtained throughout local IBM branch offices.

accountant who will usually be called upon to justify expenditures towards IS. The accountant will analyse the consequences of investing any amount of resources in IS. This study tries to figure out the interactions between the seemingly increasing managements support and User Involvement in the development of IS and the benefits purported to rise out of the IS to the performance of the accountant. That can be summed up as a study of corporate support given to the Information Systems Development process in relation to the performance of the accountant.

Development of hypotheses:

It is commonly believed that User Involvement in ISD improves the efficiency of IS. This is reflected in to days ISD approaches that advocate for User Involvement in the designing and implementation of IS. Many studies have attempted to investigate the relationships between User Involvement and several measures of system success such as system use, user attitudes, and user satisfaction Lucas [1975], Powers and Dickson [1979]. However, the positive relationship or interactions between User Involvement and other factors to the performance of the accountant have failed to get any prominence, yet accountants are the major providers of information in the organisation. Research or studies should therefore provide insights into the way in which User Involvement in ISD impacts the performance of the accountant. Besides that. User involvement in ISD cannot act in isolation. Traditionally, Management Support is seen o play a support role. Its management that provides the necessary resources to run the whole process of system analysis and design. Management Support will in fact affect the psychology of individuals involved in the development of IS. It will compel them to work hard for success. The higher management is seen to support the IS planning processes, the higher will users involved in ISD process work hard. It is therefore assumed that when Management Support for IS is high, users involved in the planning of IS will produce to their best and the reverse is true. Thus, the interaction between Management Support for Information Systems (MSIS) and User Involvement in ISD improves the performance

of an IS and hence the performance of the accountant. To put it in another way, the effects of User Involvement in ISD on the performance of the accountant will depend on the level of MSIS. The reasoning above suggests the following hypothesis: -

H_1 The positive effects of User Involvement in Information Systems Development (Xj) on the accountants performance (Y) will be higher when the level of Management Support for Information Systems (X_2) is high.

This hypothesis is tested using the following regression equation:

$$Y - a + b_1 X_1 + b_2 X_2 + d_3 X_4 + e, \qquad (1)$$

Where

Y   =   Accountants performance

X_1 =   User Involvement in Information Systems Development

X_2 =   Management Supportf or Information Systems

X_4 =   Interaction between X, and X_2

e   =   Error term

The hypothesis   predicts   that d_3 will be positive and that mathematically: will be positive for high values of X_2 and negative for low values. That is:

$$\sigma Y / \sigma X_1$$

will be positive for high values of X_3 and negative for low value. That is:

$$\frac{\sigma Y}{\sigma X_1} = b_7 + b_9 X_3$$

On the other hand, when an IS fails, one cause may be its inability to meet its perceived benefits . It is the Perceived Information Systems Benefits (PISB) that will drive management and users alike to contribute much to the IS planning process. PISB is accounted for by the interests of particular individuals. Ginzberg (1981) examined the realism of user expectations and found that they could provide early

warning of an IS implementation outcomes. From that it is assumed that, when the PISB level is high, Management will get much involved in the planning and development of IS. On the other hand, management will be reluctant to support IS planning if it perceives its benefits to be low. Therefore, It is assumed that the interaction between PISB and MSIS improves the quality of IS which in turn improves the performance of the accounting function. In other words, while one may argue that, high PISB cause increased MSIS, the question that needs to be answered is whether there is a relationship between this hypothesised "fit" and the accountants' activities. So, does the relationship between MSIS and the accountants performance remain the same regardless of the level of PISB?. This brings us to the following hypothesis for testing :

H_2 The positive effects of Management Support for IS (X_2) on the performance of the accountant (Y) will be higher when the level of PISB (X_3) is high. This hypothesis is tested using the following regression equation:

$$Y = a + b_4 X_2 + b_5 X_3 + b_6 X_5 + e, \qquad\qquad (2)$$

Where

Y   =   Accountants performance.

X_2 =   Management Support for information systems.

X_3 =   Perceived   information   systems' benefits.

X_5 =   Interaction between X_2 and X_3

e   =   Error term.

The hypothesis predicts that b_6 will be positive and that mathematically

Y/ X_2

will be positive for high values of X_2 and negative for low values. That is :

$$\frac{\sigma Y}{\sigma X_2} = b_4 + b_6 X_3$$

The same argument holds for User Involvement in ISD. The contribution of the users to the ISD process will be much determined by the PISB. Thus, where PISB levels are high, it is assumed that users involved in ISD will contribute much. So it can be argued that high levels of PISB (X_3) causes users involved in ISD to contribute much to it. This assertion needs to be questioned. One of the objectives of this study is to provide some answers to that type of questions. As such, the interaction between PISB and User Involvement in ISD greatly affects the performance of the accountant. Thus, the following hypothesis:

H_3 The positive effects of User Involvement in IS development (X_1) on the performance of the accountant (Y) will be higher when the level of PISB (X_3) is high.

This hypothesis is tested by the following regression analysis:

$$Y = a + b_7X_1 + b_8X_3 + b_9X_6 + e \qquad\qquad (3)$$

Where

Y = Accountants performance.

X_1 = User Involvement in information systems development

X_3 = Perceived information systems benefits.

X_6 = Interaction between X_1 and X_3

e = Error term.

The hypothesis predicts that b_9 will be positive and that mathematically

$$Y/ X_1$$

will be positive for high values of X_2 and negative for low values. That is :

$$\frac{\sigma Y}{\sigma X_1} = b_7 + b9X_3$$

It is therefore assumed that the interactions among PISB, MSIS and User Involvement in ISD positively induces the performance of the accountant as already

suggested in hypothesis 2 and 3 respectively. The effects to the performance of the accountant are those presumed to be directly related to both MSIS, and User Involvement in ISD. It is commonly believed that MSIS and User Involvement in ISD will be more effective where PISB levels are high. Therefore, the contributions from MSIS planning and User Involvement in ISD may be partly due to PISB. The foregone discussion implies that both MSIS and User Involvement in ISD will be affected by the level of PISB. The performance of the accountant will be influenced by the interaction among those three variables. This leads to the following hypothesis for analysis:

H4 The positive effects of the combination between Management Support for Information Systems (X_2) and User Involvement in Information Systems Development (X_1) on the performance of the accountant (Y) will be higher when the levels of Perceived Information Systems Benefits (X_3) are high.

The multiplicative model of Althauser, 1971; Allison, 1977 was adopted for testing that interaction effect:

$$Y = i + a_1X_1 + a_2X_2 + a_3X_3 + b_1X_4 + b_2X_5 + b_3X_6 + c_1X_7 \quad (4)$$

Where

Y   = Accountants performance

X_1 = User Involvement in the development of Information Systems

X_2 = Managements Support for Information Systems

X_3 = Perceived Information Systems Benefits.

X_4 = Interaction between X, and X_2

X_5 = Interaction between X_1 and X_3

X_6 = Interaction between X_2 and X_3

X_7 = Interaction among X_{17} X_2 and X_3

It's assumed that c, will be positive and that mathematically:

$$\frac{\beta Y}{\beta X_2}$$

Will be positive for higher values of X_3 ith a fixed X_1 and negative for low values. That is:

$$\frac{\beta Y}{\beta X_2} = a_2 + b_1 X_1 + b_3 X_3 + c_1 X_5$$

MEASUREMENT OF VARIABLES

The construct validity of all the variables in the questionnaire was satisfactory in view of the computed *Pearson's product-moment correlation coefficient* exceeding 0.3 and statistically significant at ($P<0.10$). The questionnaire was also studied by a number of experts in the respective area of study. So, it was deemed to have a good content validity.

Perceived Information Systems Benefits:

Carr categorized the benefits of information technology in four ways; Cost displacement, time savings improved work quality and improved work environment. Each of these contributes to either efficiency or effectiveness in work produced. They are described as follows;

1. Cost displacement is when Information Systems improve existing procedures by rendering them unnecessary or automate all or part of a continuing procedure.
2. Time saving arises from the application of Information Systems aids to a task or group of tasks so that objectives are met more quickly.
3. Improved work quality can occur in several ways; better presentation, better service and improved information quality.
4. Improvements in the work environment; for example interesting work.

The four dimensions above were measured using a nine-item scale adopted from the work of Szajna [1993]. It asked respondents to choose the best alternatives corresponding to their opinions. The instrument was apparently found useful in measuring PISB. It was also improved upon to accommodate all the dimensions above. A simple average of the responses to these nine items was used as an index of PISB. For this study, the instrument achieved a sufficient Cronbach alpha of 0.87. Management Support for Information Systems.

This can be seen from eight dimensions namely; Managements' policy towards IS, Managers own desire to participate, Mandatory involvement, the extent to which IS are given considerations by management, the rate to which internal controls in the system are questioned by management, the extent to which resources are provided for IS functions. Finally, the overall grading of the involvement of management in IS development.

This was measured by a modified version of Sirka and Blake [1994] Likert scale. The modification includes omitting some questions and inserting certain others to adjust it to the needs of this study. The instrument requested participants to state their opinions on the characteristics of management towards IS. The scores on each of the items were combined to provide a representative index. This instrument achieved a Cronbach alpha of 0.75.

User Involvement in Information Systems Development

Several researches have been carried out on matters concerning User Involvement in ISO (Baroudi, et.al. , 1986; Kon and Lowrence, 1988). These studies focused on activities which end users could respond objectively to representativeness perceived by the users. The instrument used in this study is adopted from the study of Low and Lawrence [1989]. It comprises of five questions answered on a seven-Likert scale that measures representativeness by the extent to which the respondent perceived users of IS had been consulted and their views incorporated in the IS. A simple average of the responses was used as an index of User Involvement in ISD.

This questionnaire is considered more appropriate for all sizes of companies, because it covers all aspects that a typical business using user led IS development approach would be concerned with. This instrument had a Cronbach alpha of 0.74.

Performance Of The Accountant

The performance of the accountant was measured through rating the activities of the accountant. This approach is derived from Mahoney et.al [1963] who, while measuring the performance of managers, rated managerial activities. On that account, the accountants' performance was measured in terms of a seven-item self-rating scale that required accountants to evaluate their performances on a Likert scale for generally four accounting activities; Recording, classifying, summarizing and interpreting financial reports. Where appropriate the activities were indirectly hinted upon in the questionnaire. A self rating measure was used since it is difficult to obtain that data from other circles.

The scores on each questionnaire concerning the accountants' performance were combined to produce one aggregate index of the accountants' performance. The Cronbach Alpha for this instrument was 0.52.

RESEARCH METHODOLOGY:

About eighty accountants in different organisations were requested to participate in the study. The area of study comprised the major activities of the accountants. These accountants were expected to be in top, middle or lower positions in their companies hierarchy. This was to ensure different working environments. The research methodology used in the study was through two major activities discussed as follows:

1. Questionnaires:

Letters, together with the questionnaires were delivered or sent to the respondents. The respondents were provided with a stamped researcher-addressed envelope to allow easy and quick responses. To reinforce the importance of the

study, a letter appealing to the respondent was attached to each questionnaire. In all, 43 responses were returned and 38 processed. The other five dropped because of discrepancies in responses.

It was recognised early in the design stage that although the questionnaire is relatively straight forward, the language used may create resistance from the respondents. So, the questionnaire was provided in two languages; Bahasa Indonesia and English.

2. Interviews:

Upon completion of the first stage of the study. Follow up interviews were carried out with 6 of the respondents who showed interest in being interviewed. The purpose of the interviews was to pursue lines of thought and interesting responses that arose. The interview revealed other areas where research is necessary. It also highlighted interesting responses.

Sample design:

The sample reflected the characteristics of the accountants in Indonesia. It was assumed that the sample accountants were already employed as accountants or employed on jobs compatible with their profession. The respondents were selected from organisations meeting several criteria as follows;

1. Each organisation should have taken or be undertaking a computerization of Information Systems. It is thought that the organisations will be using computers in such areas as office automation, view data applications, accounting, local and/or wide area networks, distributed processing, electronic point of sale or financial modelling systems.

2. Collectively the organisations should present a reasonable representation of the Indonesian economy from the public to the private and from the manufacturing to the services sector. The expected organisations are the banking, insurance, financial services, super markets, hotels, big retail shops, computer agents,

industries, communication companies, hospitals, Universities and public accountants.

3. The organisation accountants should be willing to participate in the study. Geographically, accountants and the organisations that met the criteria are widely spread. It is important to recognise this fact while sampling. For simplicity, all the respondents were located on the Java Island considering the normal experiences in questionnaire response rates. This area was felt to be satisfactory. The organisations, whose accountants participated, were thereafter randomly selected according to convenience. Statistical analysis and results Descriptive statistics for the variables studied are provided in the following

TABLE 2

Hypothesis 1	$d_3 = +0.138$
Hypothesis 2	$b_6 = +0.133$
Hypothesis 3	$b_9 = +0.13$
Hypothesis 4	$c_1 = +0.195$

To support the hypotheses in this study the coefficients of the interaction terms d_3, b_6, b_9 and c_1 in the regression models have got to be significant and positive. If they are significant and positive, the corresponding incremental r^2 will also be statistically significant at the same probability level. This means that the introduction of the interaction terms in the respective equations added significantly to the variance explained. Since the focus of interest are the contingent relationships, the coeffiecints of interactions are of interest. The results which show that the coefficients are significant and positive are reproduced Table 2 below;

TABLE 2

Hypothesis 1	$d_3 = +0.138$
Hypothesis 2	$b_6 = +0.133$
Hypothesis 3	$b_9 = +0.13$
Hypothesis 4	$c_1 = +0.195$

Those findings support the hypotheses in this study that; the interaction between User Involvement in ISD and MSB, the interaction between MSIS and PISB, the interaction between User Involvement in ED and PISB and the combination among MSIS, User Involvement in ISD and PISB had a positive and significant impact on the performance of the accountant.

However the results above provide no information on whether the relationships are monotonic or not. This can be obtained by examining the partial derivative from the equations used to examine the hypotheses. If the value of the derivative is positive and negative over the entire observable range of the varrying variable then the relationship is non-monotonic. To investigate this possibility the inflection points of the slopes are calculated. The partial derivatives of the regression models provide the following:

Derivative of equation 1

$$\delta Y/\delta X_1 = -0.57 + 0.138(X_2)$$

That equation will be zero when the levels of (X) reaches 4.13 and that is the inflection point. Therefore the equation will be positive when (Xj) exceeds 4.13 and negative for levels below that. The inflection point falls within the observed range. 4.13 is also close to the mean of the observed sample. So, the results indicate that for greater levels of MSB, the positive effects of User Involvement in ISD on the accountants performance will be higher.This relationship is non-monotonic on the

performance of the accountant over the entire observed range. Derivative of equation 2

Derivative of equation 2

$$\delta Y/\delta X_2 = -0.410 + 0.133(X_3)$$

This equation will equal to zero when (X_3) is 3.08. So, the impact on the performance of the accountant will be positive when the level of PISB is above 3.08 and negative if its below that. The point 3.08 falls outside the range of the observed scores for PISB (X_3). The results show that high levels of PISB will exhibit a positive impact on the performance of the accountant. On the other hand, lower levels of PISB (X_3) have a negative impact on the performance of the accountant. The lower levels are outside the observed scores. This means that, MSIS has a monotonic effect on the performance of the accountant over the entire observed range of PISB.

Derivative of equation 3

$$\delta Y/\delta X_1 = -0.69 + 0.13(X_3)$$

The equation above will approximately equal to zero when (X_3) is 5.3. This implies that the performance of the accountant will be positive when the levels of PISB are above 5.3 and then fall where the PISB are observed to be below 5.3. This point falls within the observed range of (X).

This implies that PISB effects on the performance of the accountant will be positive for higher levels and negative for lower levels. Apart from satisfying the first step, Jj also satisfies the second Step. So based on that analysis, User Involvement in ISD has a nonmonotonic effect on the performance of the accountant over the entire range of PISB.

Derivative of equation 4

$$\delta Y/\delta X_2 = 3.9 + (1.06)(1.6) + X_3 + 0.195(1.6)X_3$$

The above equation will equal to zero when (X_3) is equal to -1.68. The performance of the accountant will therefore be positive and negative at levels above and below -1.68 of (X_3) respectively. This level fells outside the observed ranges of (X_3) implying that whatever the levels of (X_3), the performance of the accountant will experience a positive impact. So, all levels of (X_3) will positively affect the performance of the accountant. The inflection point -1,68 can not be achieved given the possible scores on the scale. Therefore, the interaction among the three factors has got a monotonic effect on the performance of the accountant over the entire range of PISB. Thus, even the lowest possible levels of PISB will have a positive impact on the performance of the accountant. So, the prediction made in rj cannot be proved with the collected data in this study.

Coefficient of determination (R) tests

Figure 1 provide the r^2 results of the regression models performed to test the four hypotheses

Figure 1

	A	B	Increment in r^2
Equation 1 Significant F	r^2 = 0.19453 0.0227	r^2 = 0.21245 0.0414	0.1792
Equation 2 Significant F	r^2 = 0.19688 0.0216	r^2 = 0.21878 0.0365	0.219
Equation 3 Significant F	r^2 = 0.05195 0.393	r^2 = 0.6544 0.5060	0.60245
Equation 4 Significant F	r^2 = 0.22672 0.2061	r^2 = 0.25301 0.2222	0.2629

The above Figure 1 provide the coefficients of determination results of the multiple regressions carried out to test the hypotheses in the study. The results in column A show the results before the interaction terms are introduced per equation. Column B shows the results after introducing the interaction terms. The Coefficient of determination per regression model for each hypothesis increased after introducing the interaction terms to each equation. This means that the introduction of the interaction terms improved the predictive ability of the models. The results therefore support the hypotheses as stated. It should be noted that the results of regression models 1 and 2 are supported with Significant-F levels of 0.0414 and 0.0365 respectively which fall within range of the commonly acceptable level of 0.05. Well as equations 3 and 4 are supported with high Significant-F levels of 0.5060 and 0.2222 which fall outside the commonly acceptable level of 0.05. However, because of the high levels of multicollinearity, the T and F statistics cannot be employed to support or to reject a hypothesis. In such a situation, its the changes in R^2 that can be used to test the significance of the findings.

Discussion

This study tried to determine the impact of PISB and/or in combination with managements and User Involvement in developing IS to the performance of the accountant. The results clearly support the first hypothesis, that User Involvement in ISD contributes to the accountant's performance when combined with high levels of MSIS . On the other hand, low levels of MSIS will impair the performance of the accountant. This is because the accountant depends on the quality of Information for performance. This is consistent with findings of the interviews.

Similarly, MSIS will influence the levels of User Involvement in ISD. User morale and initiatives will depend on Management Support for Information Systems. This will be reflected in the performance of the accountant. It is only appropriate levels of MSIS that will enhance the quality of Information Systems and therefore the performance of the accountant.

The results also showed that, there is a positive relationship between the performance of the accountant and MSIS over the entire range of PISB. However, there is a possibility that low PISB will lead to a negative impact on the performance of the accountant in the real world. This is exactly what interview results showed.

Lastly, the results were unable to prove that low levels of PISB will lead to a negative contingent relationship between MSIS and User Involvement in ISD. This means that any level of PISB will lead to positive effects in the performance of the accountant. This was no different from the observations made by interviewees. It is only necessary that some level of IS benefits is perceived by Users of IS and management for a positive impact on the performance of the accountant.

Implications of the study

In relation to that, one needs to be conscious of three issues when designing an Information System:

1. In order for the performance of the IS and the accounting function to be successful, substantial efforts should be devoted to gaining support of management for the Information systems.
2. Users and managers alike should be able to see or feel the benefits of an IS.
3. Users should have a proper substantive psychological state reflecting their attitude towards the system. In other words Users should be made to feel part of the Information System Development process.

From a research standpoint, the study is a response to the numerous studies that have repeatedly emphasized the necessity to conduct research to link IS to performances. The study is generally directed at finding out the extent to which work patterns or performance of the accountant corresponds to the emphasis laid upon IS by users and management alike and how PISB will affect it. The intention is to create a picture of where the accounting function stands in relation to IS at the midpoint of this decade.

Limitations of the study:

In evaluating this study, several Iimitahons should be noted. The sample was drawn from one Island in Indonesia representing around a half of the entire nation's population. Generalizing the results therefore should be done with caution. In addition, this study is also focusing accountants evaluating and rating their own performances. Biaseness cannot be ruled out and above all, performance of any profession providing intangible services is hard to measure. There are other more objective measures that can be used to measure the accountants' performances. However, although the study involves a good deal of personal judgement, accountants as a group have much keener awareness of events in the organisation than other persons. Thus, their opinions on the variables are taken more seriously.

Generally, accountants in Indonesia can be broadly categorized into two groups; Academic accountants and professional accountants. Consequently, all these are included in the sample whatever their level of education may be. Because of the topical nature of the study, it is considered that responses might be biased as regards responses to their performances. The use of follow up interviews is an attempt to throw additional light on this problem.

Lastly, another potential problem is the variation across the sample in the elapsed time between the developing of the IS and when the data was collected. Overtime, factors other than the independent variables mentioned in the research are likely to become salient in influencing the IS and thus the accountants' performance. This fact may be partly responsible for the correlation between the independent variables and the accountants' performance.

Recommendations for Future Research

This study focused accountants evaluating their performance. There are other more objective measures which future studies can use for evaluating the performance of the accountant. These may include grading the quality of financial reports, determining the ratio of the number of reports that is necessary for a particular

organisation and the reports that are actually produced, how long it takes to produce annual reports, or comparing the accounting function in one organisation to another in similar environments.

The variables included in this research are only a proportion of the whole range of factors that affect the performance of the accountant. Other variables such as the accountants level of education, structure of IS, position of the accountant in the organisations' setting and other contingent relationships may affect the performance of the accountant. For example, it is possible that the performance of the accountant is more affected by the structure of IS in contingent relationship with the education of Users of IS. So, the higher the education of Users of IS in combination with a particular IS structure, the higher the performance of the accountant. These are all possible areas for future research.

The author of this study was highly incapacitated by language. So interviews could not be used to their very best. This research needs to be replicated but basing more emphasis on the results of the interviews. Interviews provide expert experiences and opinions that are more legitimate compared to mathematical manipulations. They can be used to explair some unique responses to questionnaire bul at best they can be used for collecting dat« on the factors researched.

Summary

This shady, using multiple regression models and their coefficients of determination examined the different combinations of the interactions among Management Support for Information Systems, User Involvement in Information Systems Development and Perceived Information Systems Benefits on the performance of the accountant. The results showed that all the three variables interacting among themselves are important. Any neglect of one is bound to affect the others' contribution to the performance of the accountant, the Information System and the organisation.

BIBLIOGRAPHY

Allison, P.O., "Testing For Interaction in Multiple Regression," *American journal of sociology* (1977) pp. 144-153.

Althauser, R.P., *Multicollinearity and non-additive Regression Models, in Blalock, H.M. (ed.) causal Models in the social sciences, pp.* 532-572 (Chicago: Aldine-Atherton, 1971).

Ball, L., and R. Harris, "SMIS Members: A membership Analysis," MIS *Quarterly* (March 1982),pp. 19-38.

Bernard, W., " User Involvement in Systems Development: An Attributional Approach." *The Journal of Information Systems (* Spring 1988), Vol. 2, Number. 2. pp. 3-14.

Bernadette, S and Scamell, " The Effects of Information System User Expectations on Their Performance and Perceptions," MIS *Quarterly* (December 1993), pp.493-516.

Baroudi, J.J., Olson, M., and Ives, B. "An Empirical Study of the Impact of User Involvement on System Usage and Information Satisfaction," Communications of the ACM (29:3), March 1986, pp. 232-238.

Carr., J.G., *Information Technology and the Accountant: Summary and Conclusions,* Great Britain, Department of Trade and Industry, 1985.

Dickson, G.W., R. L. Leitheiser, J. C. Wetherbe, and M. Nechis, "Key Information System Issues for the 1980s," *MIS Quarterly* (September 1984), pp.135-160.

Ein-Dor. P., and E. Seger, " Organisational Context and the success of Management Information Systems/' *Management Science* (June 1978), pp. 135-160.

Flaaten, P.O., D. J. McCubbrey., P.Declan O'Riordan and Keith Burgess., *Foundations of Business Systems,* Second Edition., The Dryden Press., 1992.

Ginzberg, M.J., "Early Diagnosis of MIS Implementation Failure: Promising Results and Unanswered Questions," *Management Science* (April 1981), pp. 459-478.

Hartog, C., and M. Herbert, "1985 Opinion Survey of MIS Managers: Key Issues," MIS *Quarterly* (December 1986), pp. 351-362.

Kon, H.L. and Lawrence, M.J. "Effects of User Involvement and Top

Management Support on MIS Success: Australian Evidence," *proceedings of the Australian Computer Conference, Australian Computer Society, Sydney,* September 21-23, 1988, pp.419-434.

Leitheiser, R. L. and J.C. Wetherbe, "Service Support Levels: An Organisational Approach to End-User Computing," MJS *Quarterly* (December 1986), pp.337-350.

Lucas, H.C., Jr., Why Information Systems Fail (Columbia University Press, 1975).

Mahoney, T. A., T. H. Jerdee and SJ. Carroll," Development of Managerial Performance: A research Approach", *Cincinnati, OH: South Western,* 1963.

McFarlan, F.W., " Information Technology Changes the Way You Compete," *Harvard Business Review* (May/June 1984), pp. 98-103.

Parsons, G.L., "Information Technology: A New Competitive Weapon," *Sloan Management Review,*

Paul, N. Finlay and Andrew C. MitchelL, " Perceptions of the Benefits from the introduction of CASE: An Empirical Study" *MIS Quarterly* (December 1994), pp. 353-370.

Raghunathan, B. and T.S. Raghunathan., " Impact of Top Management Support on IS Planning", *The journal of Information Systems,* (Spring 1988), Vol. 2. Num. 2, pp 15-23.

Rockart, J.F., " Chief Executives Define Their Own Data Needs," *Harvard Business Review* (March/April 1979), pp. 81-93.

Sirka,   LJ. And I. Blake, "Executive Involvement and Participation in the Management of Information Technology," MIS *Quarterly,* December (1993)