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Research Note

**The Interaction Effect of Information Asymmetry
and Decentralization on Managers' Job
Satisfaction: A Research Note**

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This study investigates the interaction effect of information asymmetry and decentralization on the job satisfaction level of sub-unit managers. Responses gathered by means of a questionnaire survey from 42 managers in Singapore were generated and analyzed using regression analysis. The findings indicate the presence of nonmonotonic relationship between information asymmetry and job satisfaction over the range of the degree of decentralization in the organizations. More specifically, the results indicate that a higher level for information asymmetry was associated with a higher level of job satisfaction for managers working under conditions of high decentralization.

KEY WORDS: agency theory; information asymmetry; decentralization; devolution; job satisfaction; two-way interaction.

INTRODUCTION

Descriptive studies (e.g., Arrow, 1964; Tiessen & Waterhouse, 1983; Yost, 1990) in the agency theory and contingency theory literature have discussed and provided interesting theoretical insights into the positive relationship between information asymmetry and decentralization³ in the organization. Decentralization as a control tool has been identified in the

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³In this study, the term "decentralization" is used in a more general sense to refer to the delegation of decision-making to sub-unit managers. A more specific term would be "devolution" which reflects a transfer or allocation of authority and responsibility for decision-making from top management to sub-unit managers. My acknowledgment to the editor for clarifying this issue.

contingency theory literature (Otley, 1980; Gul and Chia, 1994; Chia, 1995). However, the success of decentralization in achieving organizational objectives such as performance and job satisfaction depends on certain factors (e.g., environmental uncertainty, strategy, technological complexity) under contingency theory perspective. The concept of information asymmetry, which is an underlying assumption in agency theory, has not been studied empirically as a contingent variable. Briefly, an information asymmetry state arises when one party has more information than another party about a situation. The greater the difference in the level of information, the greater is the level of information asymmetry. Despite the identified relationship between decentralization and information asymmetry, there were few attempts made to link the variables to organizational objectives. One of such organizational objectives is manager's job satisfaction. Job satisfaction has been ignored in prior empirical agency-related studies despite its importance as a motivation attribute and as a measure of the welfare of its members (Locke & Schweiger, 1979; Young, 1985). The aim of this paper is to mitigate the situation. In particular, this paper reports the results of a study on the proposition that the effects of information asymmetry on the job satisfaction level of sub-unit managers will depend on the degree of decentralization.

The next section of the paper presents the variables considered in the study and a theoretical discussion of the linkage of the interaction effect of information asymmetry and decentralization on job satisfaction, including a statement of the proposition. The subsequent sections address the research method, results and discussion, implications of results and conclusions.

THEORETICAL DEVELOPMENTS

This section discusses the relationships of the variables that are considered in the study, namely information asymmetry, decentralization, and job satisfaction. The discussion provides arguments for the linkage between information asymmetry and decentralization and how the interaction effect impacts on the level of job satisfaction of the affected sub-unit managers.

Information Asymmetry

Information asymmetry is a relatively new variable used in empirical research. This is an important agency variable because it affects the motivation aspects of the individual managers as well as being potentially dysfunctional to organizational performance. There are few studies which utilize information asymmetry as a research variable (e.g., Penno, 1984;

Chow, Cooper, & Waller, 1988; Dunk, 1991). Dunk (1991) defines information asymmetry as “the extent to which the subordinate has more information than the superior relating to subordinate’s area of responsibility.” This is the dominating view of information asymmetry in the literature and the definition provides for the existence of information asymmetry in situations where the subordinates (as agents) have more information relating to their own jobs than their respective superiors (as principals). Under agency theory, this divergence of information between the principal and the agent results in a loss to the organization. This is because the agent who has more information about his job tasks and the environment in which he operates, is assumed to utilize the “private” information to make decisions in his self-interest.

Decentralization

Organizational structure affects how information, such as management accounting information and performance evaluation information, is gathered, processed and communicated in the organization. For example, in an uncertain environment, the unforeseen requirements for action cannot be broken down or distributed automatically through the functional roles defined within the organization. However, through decentralization an organization is able to provide its managers with greater responsibility and control over its activities and also greater access to the required type of information (Waterhouse & Tiessen, 1978).

One of the structural parameters which has received a great deal of attention in organizational research is the one that defines the extent to which decision-making within the organization is centralized or decentralized. Decentralization is one type of organizational structure which refers to where decisions are taken within the organization, i.e., the level of autonomy that is delegated to managers for their decision-making. The higher the degree of decentralization, the lower the hierarchical level in the organization where the decisions are taken. This also implies that sub-unit managers in more decentralized organizations will operate under a greater degree of devolution in decision-making.

Job Satisfaction

With high financial performance being seen as an inadequate measure of an organization’s overall performance, the maintenance of a high level of job satisfaction is increasingly being considered as a vital input to the organization’s overall performance index. Job satisfaction has been defined by Locke (1976, p. 1297) as “. . . a pleasurable or positive emotional state

resulting from the appraisal of one's job or job experiences." Locke (1976, p. 1328) further " . . . viewed (job satisfaction) as an end in itself, since happiness, after all, is the goal of life." Accounting researchers (e.g., White & Hellriegel, 1973) have found an inverse relationship between job turnover and job satisfaction for professional employees of public accounting firms. In the case of auditors, Ferris (1977) has found job satisfaction and job performance to be positively related.

Link Between Information Asymmetry and Decentralization

Tiessen and Waterhouse (1983) discussed how the location of information affects the organizational structure under contingency theory. They argued that in situations of either high environmental uncertainty or non-routine technology, information that is necessary to adapt to the uncertainties is frequently localized with a particular manager. The manager will not have the same perceptions of the future events as his immediate superior. However, in situations of either stable environment or routine technology, the manager will share the same perceptions of the future events as his superior. In such situations, it is possible for information to exist in standard operating procedures or other operating manuals. From this discussion, it can be reasoned that uncertainty causes differences in the location of information. The location of information will indicate where information asymmetry exists. The greater the environmental uncertainty or non-routine technology, the more likely it is for information to be located near the source of the problem area. Similarly, decentralization will be higher when environmental uncertainty is high. This enables the sub-unit manager to respond more quickly to any event as he is considered to possess the "local" information for dealing with such event. Also, the level of information asymmetry will be higher as more information is required to make decisions under uncertainty. Furthermore, as the sub-unit managers possess more private information, it is more effective for decision-making to be devolved and located near the source of the problem. Therefore, it is posited that the higher the level of information asymmetry in an organization, the greater is the likelihood of a higher degree of decentralization.

Linking Information Asymmetry and Decentralization to Job Satisfaction

Perceptions of managers have been discussed and investigated widely in organizational behavior literature (e.g., Lawrence & Lorsch, 1967; Govindarajan, 1986). Weick (1969), for example, contends that the environment is enacted or created by the members of the organization through a process of attention to selected stimuli. If the environment is defined as

a set of stimuli, it, therefore, lacks meaning or information value until perceived by the individual (Downey, Hellriegel, & Slocum, 1975). This means that the conditions of the environment facing the organization are determined perceptually. Similarly, it can be argued that it is the perception of the degree of decentralization and the perceived level of information asymmetry rather than both of the actual degree of decentralization and level of information asymmetry that is present in the organization that determines how the sub-unit managers feel with respect to their jobs.

In practice, the relationship between decentralization and information asymmetry may not be as discussed theoretically. Some organizations are perceived to be less decentralized than others regardless of the prevailing perceived level of information asymmetry by their respective sub-unit managers. It is also possible to have situations where there are sub-unit managers who are responsible for the performance of their respective sub-units but perceive the lack of authority to make certain decisions (i.e., a low degree of devolution of decision-making to the sub-unit managers). For example, when there is a high level of information asymmetry between a sub-unit manager (as agent) and his immediate superior (as principal), the two parties will have different perceptions when resolving a situation. This will give rise to conflict in decision-making between the sub-unit manager and his superior in a less decentralized organization. Inevitably, the superior's decision prevails. When this happens, the sub-unit manager, who has responsibility but is not afforded the appropriate authority to utilize his private information (which is deemed as more relevant) in his decision-making, may feel frustrated. Therefore, the presence of conflict may cause a reduction in the job satisfaction level of the sub-unit manager. Furthermore, the sub-unit manager will be less satisfied because the opportunity to utilize his "private" information to learn and develop skill in decision-making is not available. This is especially true in a less decentralized organization.

The conflict situation can be moderated when the sub-unit manager perceives that a highly decentralized decision-making structure is in place in the organization. The sub-unit manager may perceive that he is delegated with the decision-making authority in his sub-unit. He has control and is able to utilize his private information to make the necessary decisions without having to refer such decisions to his immediate superior. Hence, the job satisfaction level of the manager would be improved as there would be minimum conflict to resolve. It is also likely that the more private information which a sub-unit manager possesses (thus implying a higher degree of information asymmetry in his favor), the more likely will be his ability to make better informed decisions and to benefit from those decisions.

From an agency theory perspective, it has been contended that decentralization, the delegation of authority from the principal to the agent, provides a degree of underfulfillment of the interests of principal by the agent (Donaldson, 1990). This is because of the divergence of interests between the principal and the agent, and the outcome is termed as an agency loss to the organization. The agency loss is due to the loss of control by the principal on the agent's actions. In a decentralized organization, the monitoring of the agent to prevent him from indulging in opportunistic behavior is hampered. Thus, in a decentralized organization, the perceived job satisfaction level of the agent can be enhanced when he can take those actions and make decisions to further his self-interests. Therefore, the foregoing discussion suggests the following proposition:

Proposition 1. The greater the degree of perceived decentralization, the greater is the positive impact of a perceived high level of information asymmetry on the perceived level of a manager's job satisfaction.

RESEARCH DESIGN

The measurement instruments for the variables in the questionnaire were developed from existing studies to enhance their validity and reliability. The responses to the various variables related to the perceptions of the individual respondents and were measured using a Likert-type scale. The subsequent subsections discuss the various instruments and the method for gathering data.

Information Asymmetry

Information asymmetry is measured using the instrument developed by Dunk (1991). Each of the six items in the instrument has a 7-point Likert scale. A response scale of (1) to any item indicates that the superior has more information and a response scale of (7) indicates that the subordinate has more information than the superior. A score of 4 indicates that both the superior and the subordinate have the same level of information. Information asymmetry was calculated by excluding from the analysis those respondents who scored an average of less than 4 since this would imply that the superior had more information than the subordinate. This is in line with the definition used in the earlier section on information asymmetry to operationalize the variable. The measurement instrument in Dunk's study has a Cronbach alpha (Cronbach, 1951) value of 0.79.

Decentralization

The instrument for measuring organizational structure — decentralization is adapted from Gordon and Narayanan (1984). Five questions are used to measure the degree of decentralization of decision-making. The classes of decision-making are the development of new products or services, the hiring and firing of managerial personnel, selection of large investments, budget allocations, and pricing decisions.

Job Satisfaction

The measure for job satisfaction is adapted from the job satisfaction construct of Weiss, Dawis, England, and Lofquist (1967). The six questions for this construct are selected from the short version of the Minnesota Satisfaction Questionnaire and measured the extrinsic index of satisfaction (Price & Mueller, 1986). The questions asked the respondents to state on a 7-point scale (1 for very dissatisfied and 7 for very satisfied) how dissatisfied/dissatisfied they were, with their respective present jobs.

Method

One hundred companies were randomly selected from the Business Listing of the Telecommunications Authority of Singapore (1990). Each company was sent the questionnaire with a cover letter and a self-addressed prepaid envelope. There were 51 returned questionnaires, of which nine were unusable. Of the latter nine, six respondents had a mean score of less than 4 on the scale for the information asymmetry construct and the other three questionnaires were incomplete. A total of 42 completed questionnaires were used in the final analysis. Senior management level staff were approached to participate in the study as they were the most appropriate personnel in terms of experience and being responsible for the performance of their organizations.⁴ The managers who responded were requested to view themselves as subordinates and to respond to the questions on the bases of their perceptions. The average time spent by the respondents in their respective companies was 3.5 years (range is 1–17 years).

⁴Senior management level staff are personnel who are holding managerial positions. As reported in *The Straits Times Weekly Overseas Edition* (December 21, 1991, p. 20), the Stock Exchange of Singapore has defined managerial position as “. . . the position of a head of department or division and any other positions which are higher.” In this study, none of the respondents was owner–manager of an organization. Each of the respondents reported to a higher authority in their respective organizations.

DATA ANALYSIS AND RESULTS

The internal reliability for the variables was computed and multiple regression equations were analyzed. The results from (i) factor analysis of the data for construct validity (Kerlinger, 1964; Chenhall & Morris, 1986); (ii) computation of the Cronbach alpha statistics for internal reliability of the variables; (iii) descriptive statistics of the variables; and (iv) test of proposition for interaction effect are presented in the respective tables.

Descriptive Statistics

Table I reports the descriptive statistics for the variables identified in the study as well as the correlations among the variables under study. The Kaiser-Meyer-Olkin measure of sampling adequacy (MSA) values for the various variables are at an acceptable level of above 0.50 (Kaiser & Rice, 1974) and provide evidence of construct validity of the variables. Satisfactory internal reliability of above 0.60 for the variables was achieved as reflected by the Cronbach alpha statistics reported in Table I (Nunnally, 1978).

Table I. Descriptive Statistics: Independent and Dependent Variables

Variables	Mean	Standard deviation	Range	MSA values	Cronbach alpha coefficient
Information asymmetry	5.25	0.89	4.00-7.00	0.65	0.74
Decentralization	4.07	1.43	1.00-6.50	0.65	0.67
Job satisfaction	4.54	1.28	1.67-6.83	0.83	0.89

Correlation Matrix of the Variables			
Variables	Information asymmetry	Decentralization	Job satisfaction
Information asymmetry	1.00	0.04 (n.s.)*	-0.46 ($p < 0.002$)
Decentralization		1.00	0.09 (n.s.)*
Job satisfaction			1.00

*Not significant at $p < 0.05$.

Multiplicative Model

The proposition was tested by regressing the dependent variable (i.e., job satisfaction) against the other two preceding variables (i.e., information asymmetry and decentralization). The use of multiple regression analysis to study single or joint contributions of one or more independent variables on a dependent variable is commonly applied in this contingency-type of studies (e.g., Schoonhoven, 1981; Hirst, 1983; Govindarajan & Fisher, 1990). Following the approach adopted by Govindarajan and Gupta (1985), the results are mathematically reflected in Eqs. (1) and (2):

Two-Way Interaction Model Equations to Predict the Level of Job Satisfaction

$$Y = i_1 + a_1X_1 + a_2X_2 + e \quad (1)$$

$$Y = i_1 + a_1X_1 + a_2X_2 + b_1X_1X_2 + e \quad (2)$$

where Y = dependent variable of job satisfaction; i_1 = intercept; a_1 , a_2 , b_1 = regression coefficients; X_1 and X_2 = the independent variables of information asymmetry and decentralization respectively; X_1X_2 = the interaction of X_1 and X_2 ; and e = error term.

The proposition proposes that b_1 will be positive when $b_1 > 0$. If b_1 is significant the corresponding R^2 (R -square) will also be statistically significant at the same probability level (Southwood, 1978). This means that the introduction of the interaction term in Eq. (2) adds significantly to the variance explained.

The results in themselves do not indicate if the level of information asymmetry (X_1) always contributes positively to the level of job satisfaction regardless of the degree of decentralization. The partial derivative of Eq. (2) is examined to test for the presence of contingency vs. universalistic interaction effect of the two independent variables on the dependent variable. This indicates if a nonmonotonic or symmetrical effect is present. The existence of nonmonotonic effects provides information as to where in the range of the contingent variable does a change in the direction of a slope occurs (Schoonhoven, 1981). The partial derivative of Eq. (2) is shown as Eq. (3) below:

$$\partial Y/\partial X_1 = a_1 + b_1X_2 \quad (3)$$

Discussion of Results

Support for Proposition 1 can be seen from Table II which provides the results of the multiple regression model performed to test the proposition. Equation A shows the results of the regression done on information asymmetry and decentralization. Equation B indicates the results of the regression done on Equation A and the inclusion of the two-way interaction of information asymmetry and decentralization.

From the results of Equation B in Table II, the regression coefficient of the two-way interaction term is positive and significant ($b_1 = 0.38$, $p < 0.017$). The introduction of the interaction term resulted in a significant increase in R^2 (which is the variance) and explains for 11.01% of variance in job satisfaction.⁵ This significant result provides support for the presence of a two-way interaction between information asymmetry and decentralization as proposed in Proposition 1.

Table II. Results of Multiple Regression Analysis^a

Variables	Equation A	Equation B
IA ^b	-0.66** (0.20)	-2.29* (0.68)
DEC	0.06 (0.13)	-1.94** (0.81)
IA × DEC	—	0.38** (0.15)
R^{2c}	21.88%	32.89%
<i>F</i> value	5.46	6.21*

^a $N = 42$; standard errors are in parentheses.

^bIA = Information Asymmetry, DEC = Decentralization, Interaction between the variables are denoted by "X"

^c R^2 (variance) explained by significant 2-way interaction term = 11.01%.

* $p < 0.0025$.

** $p < 0.025$.

⁵The inclusion of the responses of the six managers (whose average information asymmetry scores were below 4) in the analysis made no difference in the results; $b_1 = 0.35$ and remaining significant at $p < 0.0172$.

The partial derivative of Equation B over X_1 (information asymmetry) gives the following results:

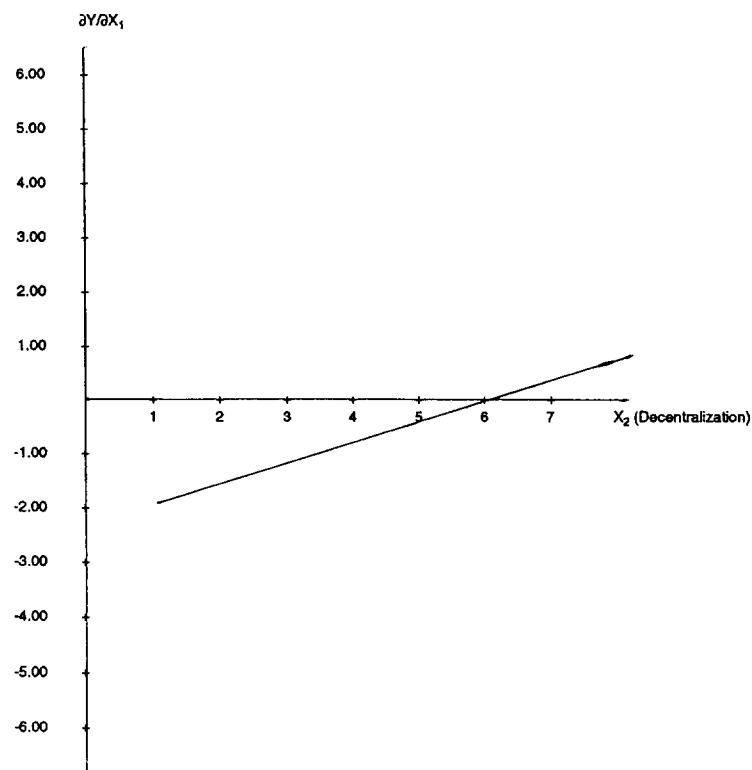
$$\partial Y/\partial X_1 = -2.29 + 0.38X_2 \quad (4)$$

Equation (4) yields zero when X_2 has a value of 6.03. Figure 1 shows the graph that is derived from the partial derivative of the equation. The value of 6.03 is the inflection point and is within the observable range for the values of decentralization (X_2). When X_2 is above the value of 6.03, the partial derivative equation is positive and it is negative when X_2 is below 6.03. This means that information asymmetry contributes positively to the increase in the level of job satisfaction in the range of decentralization (X_2) above 6.03 since the slope of the graph is positive. Below that inflection point, the degree of decentralization corresponds to the decrease in the level of job satisfaction as can be seen from the negative slope. The results suggest that information asymmetry has a contingent (nonmonotonic) effect on the level of job satisfaction over the range of the degree of decentralization.

Implications

The results provide empirical evidence to support the interaction relationship between information asymmetry and decentralization on the perceived level of manager's job satisfaction. Furthermore, the results suggest the presence of a contingent relationship between the level of job satisfaction and the level of information asymmetry over the range of the degree of decentralization existing in the organizations. To the organizational designer, the practical implication is that when undertaking the designing of organizational structures, there is a need to be conscious of the above results.

More importantly, in the presence of a high information asymmetry state, it is imperative that top management devolves the decision-making authority to the sub-unit managers to enhance their job satisfaction levels. Refusal to delegate will result in those sub-unit managers who are keen on developing and accepting more responsibility to leave the organization when good external opportunities arise. These sub-unit managers often look for new employment because their needs for accomplishment and achievement are frustrated. As observed by Lawler (1973), studies in the relationships between job satisfaction and turnover have consistently shown that dissatisfied employees are more likely than satisfied workers to resign from their jobs.



$$\begin{aligned}\frac{\partial Y}{\partial X_1} &= a_1 + b_1 X_2 \\ &= -2.29 + 0.38 X_2\end{aligned}$$

Point of inflection on $X_2 = 6.03$

Fig. 1. Graph showing the effects of decentralization (X_2) on the relationship between information asymmetry (X_1) and job satisfaction (Y).

In addition, it is to the organization's advantage to devolve the decision-making authority to sub-unit managers who possess more information as these managers will be able to make more timely and better informed decisions. Furthermore, they will be given the training and the opportunity to learn through experience.

The concern about the dysfunctional effects of information asymmetry can be mitigated through the implementation of other control subsystems

such as a more sophisticated management accounting system to monitor the activities and behaviors of those sub-unit managers who possess more private information. For example, Kren and Liao (1988) suggested that information asymmetry in an organization is determined by both the attributes of the management accounting system and the level of perceived environmental uncertainty.

CONCLUSION AND CONTRIBUTIONS OF THE STUDY

The results of the study provide support for the proposition that was forwarded. Generally, the two-way interaction term and the *F*-ratio value of the empirical model are significant. More specifically, the main finding is that information asymmetry and decentralization significantly interacts in a nonmonotonic manner to affect the level of managers' job satisfaction in the organization.

Theoretically, the results provide additional knowledge on the interaction effects of an agency variable (e.g., information asymmetry) and an organization control subsystem (e.g., decentralization) on the manager's job satisfaction. At the practice level, the results provide guidelines indicating that centralizing control of decision-making is not the solution to minimize the dysfunctional impact of information asymmetry. On the contrary, where there is a prevailing high degree of information asymmetry, the organizational structure should be made more decentralized so as to capitalize on the private information of the sub-unit managers in making better informed decisions for the organization as a whole. Moreover, Horngren and Foster (1991) identified that one of the benefits of decentralization is that sub-unit managers " . . . are usually more highly motivated when they can exercise greater individual initiative" (p. 853). Thus decentralization under a high information asymmetry state serves to satisfy the needs of sub-unit managers, and job satisfaction is deemed as a condition of need fulfilled (Cunningham, Aldag, & Block, 1993).

LIMITATIONS OF THE STUDY AND DIRECTIONS FOR FUTURE RESEARCH

Given the nature of the job satisfaction instrument, it could be that the cross-sectional approach may not be sufficient for the investigation of job satisfaction. In addition, there are other circumstances in which the level of job satisfaction can either increase or decrease. Perhaps longitudinal studies and case study style research may serve to complement the present approach (Merchant & Simons, 1986; Briers & Hirst, 1990).

Other limitations of the study include the possibility of a non-response bias; and that since the sample was drawn from a developing country, the results should not be generalized to other countries. Furthermore, the sample size of 42 out of a population of 100 companies seems to be small although this compares favorably to other studies (Shields & Young, 1993).

The observations on the three variables used in this study were gathered by means of subjective assessments via questionnaires. As such, a limitation of this study is that the research methodology did not consider the testing for the evidence of the presence of method variance, that is, “. . . associations among measures stemming from properties of the measurement methods used” (Loehlin, 1992, p. 92).

The results must be interpreted within the confines of the theoretical proposition and it should be recognized that possibilities exist for higher order interactions between the two identified independent variables of information asymmetry and decentralization and other unidentified contextual variables (such as environmental uncertainty and strategy) on job satisfaction. However, having established the impact of two-way interaction of variables on job satisfaction, the next logical approach would be to conduct three-way interaction of variables on job satisfaction as was being done by Gul and Chia (1993).

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BIOGRAPHICAL NOTE

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