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# Creating Strategic Alignment Between Organizations and IT Professionals Through Compensation

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## ABSTRACT

As information systems become an important competitive advantage for firms in the information age, how to attract and retain IT professionals through compensation plans has been a critical issue in human resource management. This paper presents the rationale of designing compensation for IT professionals based on the perspectives of agency theory and contingency theory. With rapid change in IT professions and increasing complexity of IT work, firms face the challenges of ineffective monitoring and outcome uncertainty. Under these constraints, incentive-based and competency-based compensation are encouraged as they help create risk-sharing and reduce uncertainty for firms. In addition, they motivate IT professionals to achieve firms' strategic goals and encourage continuous learning.

## Keywords

Knowledge workers, agency theory, contingency theory, competency, IT compensation

## INTRODUCTION

With the advent of knowledge-intensive economies, organizations have become ever more reliant on the competence of knowledge workers to create competitive advantage. Consequently, IT professionals as knowledge workers have become increasingly significant. Compensation is identified as a critical lever in attracting and retaining IT professionals; therefore, how to appropriately reward IT professionals has become a critical issue in the information age. Agency theory, presuming that rewards should reflect individual behaviors, can be used to examine compensation schemes in organizations (Eisenhard, 1989). However, most agency theory research in this stream has focused on compensation contracts for middle or top executives (Beatty and Zajac, 1994; Westphal and Zajac 1994), while compensation programs for IT professionals are still under-researched. To fill this gap, the purpose of this paper is to study the design of appropriate compensation for rewarding IT professionals.

In addition to agency theory, the fit of contingency theory has been studied by compensation theorists as a crucial notion, which assumes that effective reward systems should match internal and external factors specific to the organization so that organizations enhance performance and attain goals (Boyd and Salamin, 2001; Salter, 1973). The fit between organizational characteristics, types of industry, and compensation schemes for IT professionals is important in that appropriate compensation plans can influence IT professionals' behaviors and enhance competitive advantage for organizations. Although considerable studies have examined the relationship between organizational strategy and reward systems, to date, relatively few compensation studies have been focused on IT professionals (Ang, Slaughter and Ng, 2002). As such, the second purpose of this paper is to explore the relationship between organizational strategy and rewards for IT professionals at macro-levels. Specifically, this paper examines the impacts of three contingency factors – stage in product life cycle, size of organization, and trait of industry – on the design of compensation plans for IT professionals.

This paper first identifies the significance of IT professionals as knowledge workers in knowledge-intensive economies, followed by a review of compensation literature. Available compensation plans and criteria/dimensions for determining general compensation plans are summarized. Next, drawing on perspectives of agency theory and contingency theory, propositions for designing compensation for IT professionals are developed. Implications to practice and research are presented at the closing section.

## IT Professional as Knowledge Workers in Knowledge-Intensive Economies

The rapid change in market environments has seen the gradual replacement of capital- and labor-intensive economies by knowledge-intensive economies, where routine work has gradually been replaced by knowledge work (Starbuck, 1992). In knowledge-intensive firms (e.g. IT, legal consulting and insurance), products or services often contain high information

content; sophisticated information technologies are used to deliver these information-intensive products or services (Palmer and Griffith 1998). In this regard, IT professionals as knowledge workers play an important role in knowledge-intensive firms. In addition to organizations in the above industries, commentators have noted that, in practice, government and all organizations across service and industrial are becoming more knowledge intensive (Drucker, 1988). All of these have shown that IT professionals have become more and more critical in the information age. As such, an organization's success in attracting and retaining outstanding IT professionals will provide a competitive edge.

The nature of knowledge work involves the creation of new knowledge of organizations or markets, and the application of this knowledge in valued technologies, products/services or processes (Boland and Tenkasi, 1995). Hence, to complete knowledge work requires competency in the professional area. Indeed competency of knowledge workers is a valued human capital for organizations. Human capital theory suggests that differences in compensation should reflect differences in human capital endowments among workers, such as education and experience (Becker, 1975; Mincer, 1970). Therefore, competency of IT professionals is an important aspect to be considered when a compensation plan is designed.

Dougherty (1992) further contends that a critical feature of knowledge work is that it requires interdisciplinary expertise and mutual learning of experts in different fields in order to achieve a complex synthesis of highly specialized state-of-the-art technologies and knowledge domains. For example, IT planning and design in a financial consulting firm require integration of differentiated pools of knowledge and expertise in information system, financial management, etc. Even in pure IT firms, collaboration among IT professionals has been relied on to complete large projects. Indeed, group performance along with competency of employees is the key to the success of organizations; therefore, effective compensation schemes should motivate IT professionals to enhance learning, share knowledge and contribute to group performance.

## **REVIEW OF EXISTING LITERATURE ON COMPENSATION PLANS AND COMPENSATION CRITERIA**

The two most prominent options of compensation plans in compensation research are fixed pay (base salary) and incentive pay/variable pay (including commissions, bonuses, and profit sharing) (Stroh, Brett, Baumann and Reilly, 1996). Practically, these two options are often combined with each other with the ratio contingent on different conditions. These two categories are referred to as monetary compensation plans.

Alternatively, non-monetary compensation plans include career opportunities (e.g. promotion and training program), adjustment of work content (e.g. assignment of responsibility and recognition), and affiliation (e.g. entitlement of memberships) (Sethia and Von Glinow, 1985). In practice, these compensation plans are not mutual exclusively. Indeed a mixed plan is a viable and feasible option. The first table in Appendix 1 provides a summary of these monetary and non-monetary compensation plans. The information is primary based on the study of Basu, Srinivasan, and Staelin (1985) and the work of Sethia and Von Glinow (1985).

In addition to compensation plans, Gomez-Mejia and Welbourne (1989) reviewed compensation literature and categorized seventeen criteria/dimensions of determining compensation plans. The characteristics of these criteria are tabulated in table 2 in the Appendix. Competency-based (skill-based) criterion, which is pertinent to the attribute of knowledge work, is further elaborated in the following section.

### **Competency-Based Compensation**

Linking compensation with the concept of competency is a new development. A 1996 American Compensation Association Survey reported that compensation is the least common and newest application of competency (Cira and Benjamin, 1998). Competency including skill, education, learning and leadership, is a predictor of job performance. Organizations using competency-based approaches to rewards are essentially valuing an employee's ability to perform various activities critical to the operation, rather than emphasizing a specific set of tasks associated with one job (Kanin-Lovers and Porter, 1991). The advantages of competency-based reward systems include the encouragement of continuous learning, the improvement of productivity, the delegation of decision-making, and the enhancement of quality (Sahraoui, 2002). The dimensions that the above advantages highlight match the components of effective change in organizations, both in IT aspects and in people aspects. It implies that competency-based rewards are an important mechanism to achieve effectiveness for organizations in dynamic environments or in the process of implementing change.

## THEORETICAL PERSPECTIVE ON COMPENSATIONS FOR IT PROFESSIONALS

### Agency Theory Perspective

Agency theory has been an important perspective to studying compensation contracts. According to agency theory, there are two prominent options for compensation contracts: behavior-based compensation contracts (i.e. base salary), and outcome-based compensation contracts (i.e. incentive pay). To better reflect the complexity of compensation planning in reality, Eisenhardt (1989) suggested researchers consider agency contracts as a continuum rather than a dichotomy between behavior-based and outcome-based contracts. She also suggested researchers incorporate a broader spectrum of contract forms in that reward systems typically have multiple components. Several studies thereafter adopted mixed-pay between base salary and incentive pay (Rajagopalan and Finkelstein, 1992; Roth and O'Donnell, 1996) or introduce new contract forms such as beyond/average-market level pay plans (Roth and O'Donnell, 1996). Adopting Eisenhardt's suggestions, this paper views compensation contracts as a continuum between base salary and incentive pay. In addition, this paper incorporates competency-based compensation and non-monetary compensation in discussing remuneration for IT professionals.

Agency theory assumes that principals purchase agent's behaviors to complete the tasks. The agency problem arises because of incongruence between the goals of the principal and the agent, and because of difficulty in monitoring or verifying agent's behavior (Zajac & Westphal, 1994). A principal can limit the agency problem by investing in information for monitoring purposes or by contracting at least partially on the basis of the outcomes of the agent's behaviors since agents are "utility maximizers" (Eisenhardt, 1988). However, in more complex situations, difficulty in monitoring or verifying agents' behaviors result from information asymmetries, such as when agents have more specialized knowledge than principals regarding task performance (Gomez-Mejia and Balkin, 1992), or lower task programmability, such as when the task requires specific knowledge and therefore behaviors can not be easily defined and measured. If difficulty in monitoring exists, according to Agency Theory, outcome-based compensation is suggested since it approaches goal-alignment between agent and principal through risk sharing.

According to this perspective, information asymmetry may easily occur between principal and IT professionals because the agent possesses specialized knowledge and skills that the principal lacks. Since investing in information to monitor IT professionals' behaviors is costly, emphasis on incentive pay is expected to account for a higher proportion in compensation since incentive pay reduces outcome uncertainty.

*P1. Given the occurrence of information asymmetry, incentive pay accounts for higher proportion in the total compensation plan for IT professionals.*

Also, task complexity and cooperation required for IT projects tends to lower task programmability and increase difficulty in verifying individual performance. Tasks are even more difficult to be defined and measured during the process of IT development or innovation, which is associated with high risk. Therefore, incentive pay is relied on during this process.

*P2. Incentive pay for IT professionals is more effective in the process of IT development or innovation.*

Similarly, incentive compensation plans for IT professionals are more effective for online businesses than for physical businesses. This would apply not only because monitoring of behavior is more difficult and costly without physical presence, but also because online businesses face greater uncertainty and thus higher risk in the marketplace. Risk sharing and goal congruence facilitated by incentive compensation further motivates IT professionals to devote greater effort to achieve success of the firm.

*P3. Incentive pay for IT professionals is more effective for online businesses than for physical businesses.*

The other factor influencing the extent of difficulty in monitoring is the expected length of the agent-principal relationship. Agency theory assumes that in short-term relationships, collecting precise information about the agent's behavior is more difficult to achieve; therefore, outcome-based incentive pay should account for a higher proportion of compensation (Eisenhardt, 1989). Accordingly, compensation for IT professionals undertaking outsourcing tasks should consist of a higher proportion of incentive reward because principal-agent relationship in outsourcing is relatively short in time duration.

*P4. Incentive pay accounts for higher proportion of the total compensation plan for outsourcing IT professionals.*

The fact that IT jobs require specialized knowledge and skills has implications for competency-based compensation. Competency in terms of education level and work experience serves as a predictor of agent's performance and reduces uncertainty related to adverse selection of agent in the recruiting stage. Therefore, the level of IT-related degree and length of work experience are positively associated with the level of compensation; IT professionals with IT-related degrees tend to receive higher compensation than those with IT certificates or those with non-IT degree. The benefits of recognition of

competency include motivating IT professionals for continuous learning, which is highly required given rapid changes in technology. Literature has shown that non-monetary rewards such as promotion opportunities and affiliation to organizations are motivators to IT professionals (Reich and Kaarst-Brown, 1999). Hence promotion and affiliation are expected to increase commitment of IT professionals and facilitate goal alignment between IT professionals and organizations.

*P5. IT professionals with IT-related degree receive higher compensation than those with IT certificates or those with non-IT degree.*

### **Contingency Theory Perspective**

Contingency theory has long been linked to research on executive compensation. The underlying assumption of the contingency perspective is that effectiveness at realizing intended strategies depends significantly on the existence of a fit among organizational strategy, organizational conditions and environment. As agency theory stresses the influence of micro-level factors on compensation schemes, contingency perspectives are concerned with the impact of macro-level factors.

Balkin and Gomez-Mejia (1987) pioneered studies in this stream. They identified that the effectiveness of reward systems was contingent on characteristics of firms such as size, stage in the product life cycle, and traits of industry. Organizations at the growth stage face great uncertainty and are more vulnerable. They face high rates of technological change and are dependent on success of new product (or service) innovations to achieve stability in the marketplace (Hofer, 1975). The expenditures in establishing technology, equipment, and R&D are high compared to firms in mature stage. Under this uncertain environment, organizations are more likely to attract risk-taking technical personnel who are willing to trade off job security and immediate rewards for the expected utility of anticipated growth (Ettlie, 1983). Therefore, firms in the growth stage are expected to emphasize incentive pay. During the growth stage, incentive pay schemes function not only to motivate individual and group performance, but also to finance future growth (Balkin and Gomez-Mejia, 1987). The incentives are paid to employees when the strategic objectives have been reached so that the firms can ensure more flexibility in investing in R&D and technical innovation while paying later with a proportion of the profits (Balkin and Gomez-Mejia, 1990).

*P6. Firms at growth stage place greater emphasize on incentive pay for IT professionals.*

As firms enter into the mature stage, their status in the market is more stable and the environment is more predictable. Since maintaining current market share and current IT systems are the primary objective, the need for change and anticipated growth are reduced (Balkin and Gomez-Mejia, 1987). Consequently, new products as a percentage of sales declines and R&D expenses drop rapidly from growth to maturity (Anderson and Zeithaml, 1984). Under this condition, incentive pay for IT professionals is less attractive in the mature stage. Base salary and job security are expected to account for a higher proportion of compensation in this stage (Balkin and Gomez-Mejia, 1990). All in all, incentive pay is more attractive for firms in the growth stage than firms in mature stage, while base salary is less appealing for firms in the growth stage than firms in the mature stage.

*P7. Firms in mature stage will emphasize base salary and job security for IT professionals.*

Following this line of logic, physical firms tend to pay higher base salary compared to their virtual counterparts because their business model is known, and supply chain and customer relationships are established. Base salary in this case signals risk aversion. The current trend has seen that physical firms are moving into the domain of e-commerce (click and mortar). This diversified strategy of doing business both online and offline typically reduces risk. Therefore, IT professionals working in online business division of physical firms are expected to receive a higher proportion of their total compensation as “base pay” than IT professionals in pure online companies.

*P8. IT professionals working in online business division of physical firms receive higher proportion of base pay in their total compensation plan than those in pure online companies receive.*

According to these arguments, IT professionals working for dot.com are expected to be remunerated less in the form of base salary as online commerce is still at the developing stage. Online companies whose business model and customer relationships are still in the developing stage face greater fluctuation and higher uncertainty than their physical counterparts. IT professionals receiving incentive compensation are treated as risk takers and are motivated to devote their efforts to achieving strategic goals of companies. Currently, online businesses suffer from dynamic turbulence. Many dot.coms not only lost money but went out of business. This is another reason that base salary is expected to account for a smaller proportion of compensation since emphasizing incentive compensation scheme help dot.coms defer the burden of IT personnel expenditures and provide increased flexibility to pay off immediately debts.

*P9. IT professionals in dot.coms receive higher proportion of incentive pay than base salary.*

The above arguments also imply that during the IT development stage firms are inclined to reward IT professionals with lower base pay. With remuneration based on incentive pay in the IT growth stage, IT professionals are treated as co-risk-takers, and firms benefit from the flexibility to allocate financial resources into technical development. Firms' IT strategies can further influence the compensation for IT professionals. Firms with a strategy of adopting cutting edge IT tend to remunerate with higher percentages of incentive pay than firms following a strategy of expanding on existing technology. Again, this may be due to the fact that expenditures on technical innovation are more expensive and are associated with higher uncertainty and risk. Conversely, expenditures for expanding an existing IT platform are relatively low. Because firms have more knowledge and experience of the existing systems, uncertainty and risk are reduced.

*P10. Firms in IT development stage rely on higher proportion of incentive pay to IT professionals than base salary.*

*P11. Firms acquiring new IT systems emphasize incentive pay to IT professionals more than firms expanding on existing IT infrastructure and systems.*

The other contingency factor influencing compensation schemes is the size of the firm. Smaller organizations with limited budgets are less able to afford fixed personnel expenditures so that they are inclined to pay lower base salary in exchange of securing short-term financial stability (Balkin and Gomez-Mejia, 1987). This approach permits smaller companies to compete while reducing cash outlays (Balkin and Gomez-Mejia, 1987). Larger firms tend to establish performance evaluation systems that emphasize consistency, centralization, and standardization; hence, positions are remunerated based on a fixed scale (Balkin and Gomez-Mejia, 1987). Accordingly, incentive pay for IT professionals in smaller firms is expected to account for greater proportion of the total reward package, and based pay for IT professional is likely to be preferable and more effective in larger firms. In addition, IT professionals in larger firms are expected to receive less diversified compensation plans since large firms tend to establish centralized and standardize pay scales. Alternatively, IT professionals in small firms usually have greater bargaining power. Differences in compensation among individual IT professionals are expected to be more common, as it is less likely to be regulated by salary policy.

*P12. IT professionals in smaller firms will receive a higher proportion of incentive pay in the compensation plan.*

*P13. Difference in compensation among individual IT professional is more common in smaller firms than that in larger firms.*

In addition to organizational factors of market strategy and size, industrial trait is an important contingency variable as well. Researchers have shown that incentive pay as a proportion of total compensation is higher in high-tech firms and the use of incentive pay is more effective in technical industries (Galbraith and Merrill, 1991). This is attributed to the concept that incentive pay compensates the high risk assumed by employees (Balkin and Gomez-Mejia, 1987). Accordingly, the proportion of incentive pay in the total compensation for IT professionals is expected to be higher in high-tech-oriented firms than for IT professionals in traditional, not-technical-oriented firms.

*P14. IT professionals in high-tech-oriented firms will receive a higher proportion of incentive pay in the total compensation than those in non-high-tech-oriented firms receive.*

#### **IMPLICATIONS FOR CORPORATE COMPENSATION POLICY MAKERS**

Both agency theory and contingency theory predict that incentive compensation plays a more important role in attracting and retaining IT professionals. This may be because IT professionals are within a highly competitive and rapidly changing technical environment. While new hardware, software, and telecommunications products emerge at an exponential rate, risk and outcome uncertainty are enhanced. In addition, the task complexity of managing IT systems encourages the use of specific incentive pay where performance indicators are not available.

Rapidly change in the IT field presents growth opportunities, but at the same time challenges IT management, which require specialized knowledge, experience and skills. To improve effectiveness of IT management, combining competency-based pay with incentive pay is an effective option. As mentioned before, the advantages of a well-designed competency-based pay system include encouraging continuous learning, improving productivity, delegating decision-making, and enhancing quality. These dimensions have been identified as components of effectiveness of IT planning and management (Sahraoui, 2002) and increase the likelihood of alignment of IT with business strategy.

## IMPLICATIONS FOR FUTURE RESEARCH

### Stream of Agency Theory

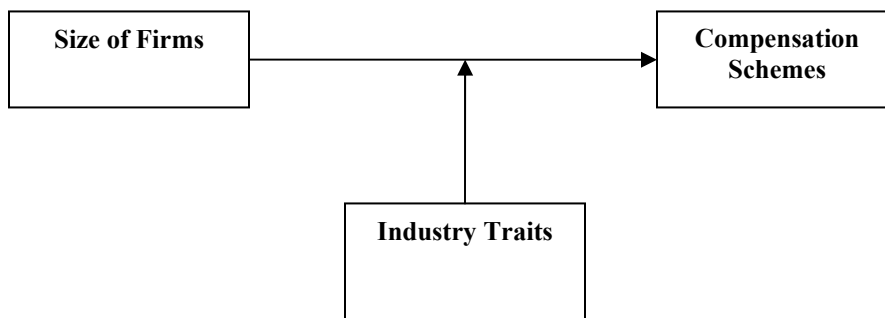
According to the perspective of agency theory, rewards should reflect individual's performance. If a company can accurately measure individual performance and align rewards accordingly, the reward system would serve as a reinforcement of desired behaviors. However, individual behavior of IT personnel is hard to monitor and measure. Given that competency is an important predictor of IT professional's performance, future IT compensation research in this stream is suggested to include competency such as education level and work experience as criteria for determining compensation contracts.

In addition, future research in this stream is encouraged to incorporate desirability and availability of non-monetary and intangible reward into the options of compensation plans. The influence of promotion opportunities and affiliation on IT professionals' performance needs further clarification as well.

### Stream of Contingency theory

This study discusses the main effects of contingency factors on the choice of compensation plans for IT professionals. However, the interaction effects between contingency factors is likely to exist. For example, the proportion of incentive pay in IT professionals' compensation plans is expected to be higher in smaller firms than in larger firms. This may not be the case, however, if the smaller firm is in a traditional industry and the larger firm is in a volatile high-tech industry. This example illustrates that industry trait may affect the relationship between organizational size and choice of compensation schemes, as illustrated in Figure 1. Therefore, in addition to testing the main effects of each contingency factor, empirical studies are encouraged to test interaction effects across various contingency factors.

Future research on compensation for IT professionals is also encouraged to incorporate multiple theories to gain a more comprehensive insight. Organizational studies tend to evaluate compensation schemes from the perspective of organizations, whereas many compensation theories focus on individuals. Future studies are also suggested to examine reward systems from the viewpoint of IT professionals and examine if IT professionals and top-managers perceive the reward systems differently. The impact of compensation for IT professionals on organizations' IT strategy, outcome of R&D, and IT development are other domains in need of research attention if alignment of IT compensation is to help support strategic alignment of IT and business.



**Figure 1: Example of interaction effect among contingency factors.**

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## APPENDIX

	<b>Relevant Situations</b>	<b>Advantages</b>	<b>Disadvantages</b>	<b>Characteristics</b>
<b>Base Salary /Fixed Pay</b>	When teamwork is involved and individual's effort is difficult to measure; When the management wishes to achieve long-term objective; appealing to security oriented people	Rather easy to administer;	Inability to provide a strong motivation for excelling and to induce high performance; discourage innovation	Behavior-based/competence based
<b>Commissions/Incentive Pay/ Variable Pay</b>	When short-term growth is preferred; When agents has good control of external environment, Appealing to achievement oriented people; appealing to risk-takers	Relative fair for rewarding individual achievement; encourage motivation and productivity.	Ineffectiveness in engaging in activities not directly linked to commissions; discourage internal cooperation; result in a perception of unstable earnings and job insecurity and thus a difficulty in retention during bad times.	Outcome-based
<b>Career</b>	When long-term performance and effort is desired, promotion opportunities can be an incentive performance	Ensure job security		Training and development program/ promotion opportunity
<b>Work Content</b>	Motivate achievement-oriented employees		Could be a challenge to agent	Intrinsic reward; responsibility; recognition; promotion
<b>Affiliation</b>	Establish long-term employment			Membership

**Table 1: Summary of Available Compensation Plans.**

Sources of Information: Basu, Srinivasan, and Staelin (1985) and the work of Sethia and Von Glinow (1985)

<b>Strategic Compensation Dimensions/Criteria</b>	<b>Characteristics</b>	<b>Characteristics</b>
<b>Job vs. Skill (competency)</b>	Job-based pay: used when job value can be determined; commonly used in traditional settings	Skill base pay: used when jobs are fluid, employee exchange is frequent and so on; often combined with job-based pay
<b>Performance vs. Seniority</b>	Performance-based pay: used when performance can be measured	Seniority-base pay: If performance can be measured, this can be an alternative
<b>Individual vs. Group Performance</b>	Individual-base pay: used if individual contribution can be measured	Group-based pay: used when cooperation is needed; when there is a lack of individual output indicators
<b>Short vs. Long-Term Orientation</b>	Short-term Orientation: short-term performance is easily measured; information for measurement is easily obtained; used when maintaining current market share is the business strategy	Long-term orientation: performances is not easy to measure; information for measurement is not easy to obtain; used when firms experience growth, acquiring new business and taking financial risks
<b>Risk Aversion vs. Risk Taking</b>	Risk-aversion pay: used in mature stage	Risk-taking pay: used in growth stage
<b>Corporate vs. Division Performance</b>	Corporate-performance-based pay: used when market is stable and corporate is vertically integrated	Division-performance-based pay: used in start-up phase or growing through acquisitions
<b>Beyond market level vs. average/ below market level</b>	Beyond market level pay: attracting and retaining high qualified employees	Average/below market level pay: for low skill jobs
<b>Internal vs. External Equity</b>	Internal equity: dependent division	External equity: autonomous division
<b>Qualitative vs. Quantitative</b>	Qualitative measure of performance: suitable for vertically integrated companies; suitable for long-term goals; used in new product development	Quantitative measure of performance: suitable for short-term goals; suitable for firms growing through mergers and acquisitions
<b>Fixed Pay vs. Incentives</b>	Fixed pay: lower risk; associated with strategy of maintaining market share	Incentives pay: higher risk; associated with strategy of extending market share
<b>Frequency of Raises or Bonuses</b>	Frequent bonus and merit pay: associated with short-term performance	Deferred compensation: associated with long-term performance
<b>Intrinsic vs. Extrinsic</b>	Intrinsic rewards: suitable for achievement-oriented employees; suitable for firms that seldom make adjustments	Work better if it combines with intrinsic rewards
<b>Centralization vs. Decentralization of Pay Policies</b>	Centralized pay policy: used when economy of scale is realized; when expertise from headquarters is necessary; when internal equity is emphasized	Decentralized pay policy: used when local innovation is beneficial; when business units are in different markets or at different stages in product life cycle
<b>Open vs. Secret Pay</b>	Open pay policy: encourages communication and involvement	Secret pay policy: lead to low trust
<b>Participation vs. Low/Nonparticipation of employees</b>	Participation of employees: related to nontraditional compensation systems and highly knowledgeable workers	Low/ nonparticipation: fits the traditional, bureaucratic compensation approach
<b>Bureaucratic vs. Flexible Policies</b>	Bureaucratic pay policy: formalized and centralized	Flexible pay policy: allow for modifications when necessary

**Table 2: Criteria for Determining Compensation Scheme** (Source of information: Gomez-Mejia and Welbourne (1989))