

## **Innovative Behaviors between Employment Modes in Knowledge Intensive Organizations**

**Cheng-hua Tsai**

Assistant Professor

Department of Tourism and Recreation Management

Cheng Shiu University, Taiwan

E-mail: cheng-hua@yahoo.com.tw, chenghua@csu.edu.tw, Phone: +886-7310606

### **Abstract**

*There are an increasing number of knowledge intensive organizations allocating external employees. Universities in Taiwan are currently facing issues of how to allot different employment modes to maintain quality for annual uncertain project funding from Taiwan's Ministry of Education. This study conducted a survey to present a concept of innovative behavior by investigating organizational motivation, personal creative characteristics, and climate for innovation in both internal and external employees for universities in Taiwan. Results strongly indicate that external employees are more motivated by extrinsic rather than intrinsic motivation and innovative behavior of internal employees are more positive than external employees.*

**Keywords:** Innovative behavior; employment modes; internal and external employee; social exchange theory; knowledge intensive organization

### **1. Introduction**

Every organization must change and innovate in order to survive. This is not only to prosper but merely to survive in a world of increased competition. New discoveries and inventions are quickly replacing standard ways of doing things. In addition, today's organizations face a need for dramatic strategic and cultural change and for rapid and continuous innovations in technology, services, products and processes. Change, rather than stability, is the norm. Whereas change once occurred incrementally and infrequently, it is dramatic and constant. A key element of the success of organizations has been their passion for creating change (Daft, 2004). Prahalad and Hamel (1990) argued that the critical task of management was to create radical new products, which was enabled by the exploitative nature of the firm's core competences. These scholars focused not only on static resources but also the firm's inimitable skills, technologies and knowledge. No matter exploitation or exploration both rely on innovative behavior from employees. Innovative behavior is a dynamic capability which could integrate, build and reconfigure internal and external competencies to address rapidly changing environments (Teece, 1997).

Implementing a minimum budget to reach a maximum utility is a primary objective for every organization. This is particularly evident when comparing the 19th century with today. High Performance Work Systems (HPWS) are gradually being demanded by employees (Huselid, 1995). Research indicates that HPWS will lead to better organizational performance. However, HPWS will cost the organization higher expense including appraisal, reward, and insurance. Hence, more and more organizations are trying to allocate different employment modes to their working systems in order to cut budget. Surely, there is a paradox of how to effectively balance quality and budget of human capital. That means, in one way the organizations try to maintain employee quality as full time positions, on the other hand, organizations have come to rely on workers who are hired on a temporary or contingent basis to reduce budget. It has been estimated that nearly 90 percent of U.S employers use temporary workers (Von Hippel, 1997).

Meanwhile, due to rapid social changes and the desire of Taiwanese citizens for higher education, the number of universities in Taiwan has increased rapidly. The density of higher education in Taiwan is almost the top of the world. Nevertheless, the rapid growth of universities has created problems such as education quality and competitiveness. In view of this, Taiwan's government is investing resources to raise the level of university teaching and research standards in an effort to raise university competitiveness and pursue excellence in research and teaching. Starting from December 2004, the Ministry of Education in Taiwan announced the launching of a project to encourage excellence in University teaching, appropriating a budget of NT\$1 billion every year to fund on a competitive basis various university's proposed plans to improve teaching quality. Therefore, beginning in 2006, the funding has been raised to \$5 billion a year with additional budget prepared to avoid competing with normal educational funding. Since the funding is limited, not all universities will be able to receive funding.

On other hand, the Ministry of Education in Taiwan adopted a funding program in 1991 to encourage colleges and universities to improve their academic performance through developing their own medium-term funding plans. By no mean, universities in Taiwan are facing the shortage of the funding and unsure grant each year. Due to this situation, there is a trend occurring, universities in Taiwan are not only hiring temporary workers on a contingency basis but also on a similar full time basis because of the unsure funding for the following year. In other words, the universities in Taiwan are trying to hire some teachers or administrative employees on a one year contract basis due to funding they receive from the Ministry of Education in Taiwan each year. These contingency teachers and staff often have similar workloads as full time teachers and staff but with fewer benefits such as, no payment during summer or winter breaks. As we can see, universities development is in a predicament due to both insufficient funding and personnel in Taiwan. Hence, how to allocate various combinations of employment modes (permanent and temporary or internal and external) to overcome budget constraints while maintaining the quality of teaching and research, especially innovation as long-term survival of knowledge intensive organizations, is the key point for universities to realize sustained competitive advantage. (Lepak and Snell, 1999)

From a social exchange perspective, we could expect that employees in different employment modes will have different innovative behaviors due to a pattern of mutually contingent tangible and intangible exchanges worker-organization relations (Blau, 1964). However, there is a lack of empirical evidence to link different employment modes allocating affective innovative behavior in organizations. In order to bridge this information gap, we structure this paper as follows. First, we discuss the impact of employment modes in a knowledge intensive organization, cost structure, flexibility and profitability. Second, we discover the link among knowledge, innovative behavior and competitive advantage. Third, we investigate the relationships between personal creative characteristics, organizational motivation and climate for innovation. Finally, we conduct a survey to present a concept of innovative behavior by investigating organizational motivation, personal creative characteristics, and climate for innovation in different employment modes from the universities in Taiwan.

## **2. Theoretical Background**

### **Employment modes, costs, flexibility and high knowledge intensive organization**

Lepak and Snell (1999) identify the following four employment modes using the dimensions of values and uniqueness of human capital: 1) internal development; 2) acquisition; 3) contracting; and 4) alliance. Internal development and acquisition are defined as internal employees. In contrast, contracting and alliance are treated as external employees. Each employment mode carries different forms of employment relations. Temporary workers differ from permanent or core workers, who typically have full-time, long-term jobs, and who enjoy benefits such as pensions, health insurance and vacations that are not usually available to temporary workers (Segal and Sullivan, 1997). Usually the temporary workforce consists of workers who are traditionally thought of as temporary: those brought in to deal with unexpected increases in workload to handle special assignments, to work on projects of short-term duration, or to cover employee absence. Rousseou (1995) describes employment relationships as the “psychological contract of individual beliefs” shaped by the organization, regarding terms of an exchange agreement between individuals and their organizations. HR theorists (e.g. Arthur, 1992, 1994; Lawler, 1992; Kochan and Osterman, 1994; Pfeffer, 1994) have advocated high commitment and other types of high-involvement work systems that focus on making large investments in human capital to foster a sustainable competitive advantage.

However, Bettis and Hitt (1995) addressed “A new competitive landscape” characterized by increased pressure to reduce costs, a knowledge revolution, and decreased transaction costs. This new competitive landscape has evolved for reasons including globalization of markets, the rise of global competitors, the deregulation of many industries, and rapid technological change. The effects of these developments include more intense price and non-price competition, the fragmentation of markets into smaller niches, shorter product life cycles, and rapid product obsolescent (Matusik and Hill, 1998). This landscape offered great opportunities for organizations. On the contrary, it is also viewed as a threat from a dynamic environment. In order to create higher profit, organizations often 1) lower its cost structure (in order to support lower prices) and 2) respond with greater flexibility to changing market conditions. Research has also highlighted the importance of numerical flexibility, as managers report adopting temporary work in order to gain freedom to adjust staffing levels in response to changes in demand or revenue (Mangum, Mayall and Nelson, 1985). This kind of flexibility objective is increasingly important because organizations now face more volatile external competitive environments. In what follows, employers’ use of temporary-on-call, part-time and contract employment is widespread and growing (Houseman, 2001) due to the two demands as mentioned above.

Freedman (1996) suggested managers are forming their organizations by using a more flexible staffing arrangement in response to competitive pressures to lower labor costs. When the organization employs contingency workers, it usually does not pay for benefits (i.e. retirement and vacation benefits). Moreover, since many contingency workers already are specialists in performing a particular task (this is particularly true of many technical and professional contingency workers), the organization does not incur training costs (Matusik and Hill, 1998). Within this trend, contingency work in professional and technical areas is the most rapidly growing. 90 percent of organizations use contingency work in some capacity. 43 percent use it in professional and technical areas that have the potential to impact core areas of the organization (Coolidge, 1996). More generally, there is evidence that many organizations are now using contingency workers as "technical experts" for important projects, including new product development, organizational restructuring, and the design and installation of complex new information systems (Wysocki, 1996).

Furthermore, contingency work is having a greater impact on an organization's ability to accumulate knowledge, create value, and establish competitive advantage in a high knowledge intensive organization (Matusik and Hill, 1988). From a knowledge-based perspective, knowledge is created by human beings and to be efficient in knowledge creation and storage, individuals need to specialize (Simon, 1991). Specifically, educational systems depend on human beings to implement knowledge creation. In Taiwan, there are an increasing number of universities hiring contingency employees for full time positions to save retirement and vacation (summer and winter) expenses. During the semester, the full time but temporary employees largely have the same requirements to fulfill as traditional full-time employees, but are not financially supported during summer and winter vacations unless they work during vacation. Universities don't need to pay retirement funding for these employees. Since universities are generally accepted as the typical knowledge-creating organizations, students and teachers are encouraged to be creative. However, will the change of employment mode decrease the innovative behavior from contingency teachers or employees? Or because of the insecurity, will teachers or employees be more willing to be creative in order to garner a stronger commitment from the organization which employs them? These are the main research questions to be examined throughout this paper.

### **Knowledge, Innovative Behavior and Competitive Advantage**

Knowledge acquisition (learning) and creation (invention, innovation) can only occur to any significant degree in the human brain (Burton-Jones, 1999). On the other hand, organizations possess numerous resources, but it is these resources that are unique, inimitable, non-substitutable, and valuable those are central to competitive advantages (Barney, 1986, 1991). An organization's knowledge base has increasingly relied on building and creating knowledge as a necessary condition to survive in their respective competitive marketplaces (Nonaka, 1994). Quickly changing environmental demands and rapid imitation by competitors make it necessary for even leading organizations to continually build new knowledge. Not only must organizations be able to create knowledge within their boundaries, but they must also expose themselves to a bombardment of new ideas from outside in order to prevent rigidity, and to encourage innovative behavior to check their technological developments against those of competitors (Leonard-Barton, 1995). Continuous innovation seems to be the most important point for an organization to maintain their competitive advantage.

Innovation is the initiation, adoption and implementation of new ideas or activity in an organizational setting. Thus, innovative behavior is the creative act, while innovation is the first or early employment of an idea by one organization or a set of organizations with similar goals (John and Andre, 1977). There are diversely conceptualized definitions of innovation. The following are noted by Thompson (1965): (1) the first use ever of an idea, with subsequent usage being referred to as imitation, (2) the first use of an idea, product or service in organizations with similar goals, and (3) the first use by the focal organization. These definitions also recognize that innovation is a multi-phased process, not a single event occurring at a single point in time. It is influenced by external environment such as organizational motivation and climate for innovation. In fact, innovation manifests itself in myriad ways, small and large, every day. It doesn't have to be dramatic or large scale in nature. Innovation keeps organizations alive through continuous renewal and growth. Without innovative ideas and behaviors, an organization stagnates and may even cease as a going concern. Hence, innovative behavior becomes a must, rather than an option for organizations.

### **Personal Creative Characteristics and Organizational Motivation Practices**

Guilford (1950) defined creative personality as a matter of those patterns (i.e. inventing, designing, contriving, composing, and planning) of traits that are characteristic of creative persons. However, Michael Kirton (1989) argues that different problem-solving styles lead employees to go about being creative in different ways with an adaptive-innovative dimension. People with adaptive styles face problems, within established rules and frameworks, to generate new and useful outcomes that generally reinforce the given paradigm of the problem.

Employees with innovative styles are more likely to ignore established frameworks, reframe the problem itself and therefore to generate more frame-breaking outcomes in their problem-solving efforts. Also Kirton mentioned creativity as being various positive personality traits, self-motivation, special cognitive abilities, risk-orientation, and expertise in the area, diverse experience, and brilliance. This means personal creative characteristics are considered to have been somewhat successful in consistently predicting innovative behavior. Herzberg's (1966) motivator-hygiene theory divides motivating factors into two categories: "motivator" factors, which have to do with the work itself and "hygiene" factors, which are related to the surrounding context. Motivator factors include such things as responsible work, autonomy in doing the work, and satisfaction arising from the accomplishment of difficult tasks. Intrinsic work motivation from motivator factors is a cognitive state reflecting the extent to which the worker attributes the force of his or her task behaviors to outcome derived from the task, that is, from outcomes which are not mediated by a source external to the task-person situation.

Such a state of motivation can be characterized as a self-fulfilling experience. On the other hand, extrinsic work motivation from hygiene factors includes pay, security and general working conditions. It is a cognitive state reflecting the extent to which the worker attributes the force of his or her task behaviors to having and/or expecting to receive or experience some extrinsic outcome. Such a state of motivation can be characterized as a regulated or instrumental experience. From this perspective, in this paper, the focus is on the motivation factors of motivating measures an organization offers for innovative behavior. That means, this paper is concerned with what rewards employees expect from their innovative behavior as this innovative behavior is the motivating power that drives employees to work hard.

*Hypothesis 1: External employee is likely more motivated by extrinsic than intrinsic motivation.*

#### **Climate for Motivation and Innovation Behavior**

There are numerous studies which have offered empirical support for climate's effects on innovation (Abbey & Dickson, 1983; Paolillo & Brown, 1978). At the individual level, climate is a cognitive interpretation of an organizational situation that has been labeled "psychological climate" (James & Ashe, 1990). Scholars who support the psychological climate theory posit that individuals respond primarily to cognitive representations of environments (James & Sells, 1981). Climate represents signals individuals receive concerning organizational expectations for behavior and potential outcomes of behavior (Scott and Bruce, 1994). Individuals use this information to formulate expectancies and instrumentalities (James, Hartman, Stebbins & Jones, 1977). From this point of view, employees will respond to these expectations by regulating their own behavior to meet the organizations' expectation. In other words, innovative behaviors will occur when organizations encourage their members to invent new ideas and supply the relevant resources for innovation.

*Hypothesis 2: The degree to which external employee perceive climate for innovation as supportive is positively related to their innovative behavior.*

#### **Employment Modes and Innovative Behavior**

From a social exchange perspective, we could expect that external employees will adopt a more transactional view of worker-organization relations in contexts with severe labor shortages, where status tends to be voluntary (Dyne and Ang, 1998). Social exchange is a pattern of mutually contingent tangible and intangible exchanges (Blau, 1964). By virtue of their status, external employees receive less tangible and intangible benefits from their employing organizations than do regular employees. Since they chose contingency work knowing they would receive fewer inducements, the authors of this paper expected these voluntarily external employees to be less attached to their firms and to have less positive attitudes and behavior than traditional employees.

*Hypothesis 3: Innovative behavior of the internal employee is more positive than the external employee.*

### **3. Methodology**

#### **Sample**

The data for this study were obtained from seven universities in Taiwan in December 2010. Of the one hundred and fifty questionnaires sent out, one hundred and twenty four were deemed "valid" upon return. Data sources were collected from two sources: employee surveys and directors or chairpersons' innovative behavior evaluations. "A" questionnaires indicate employees while "B" questionnaires were used for chairpersons. The employee respondent was asked to submit information concerning "personal creativity traits", "climate for innovation", "intrinsic and extrinsic motivation" and "innovation behavior". For the chairpersons or directors, they will evaluate all the employees within their own departments concerning innovation behavior. Both questionnaires (A and B) were collected as one completed questionnaire.

Since in this study, the authors were interested in investigating how different employment modes influence innovative behaviors, a sampling of similar equal numbers in different employment modes was distributed. There were eleven questionnaires where only A or B questionnaires were returned. Ultimately, one-hundred and twenty four completed questionnaires were used in this study. Of the one-hundred and twenty four valid questionnaires, sixty three were internal employees and sixty one were external employees; forty five were males and seventy nine were females; four were associate professors, twelve were assistant professors, sixty were instructors, twenty-nine were administrative employees and nineteen were research or teaching assistants.

#### **4. Measurement**

##### **Organizational motivation practices**

We operationalized organizational motivation practices into intrinsic and extrinsic motivation practices. There are many controversies in classifying motivations into intrinsic and extrinsic, and especially on the decision base of the dichotomy and the relationship of perceptions in modulating between motivations and rewards. However, the dichotomy approach has been the approach which has been most frequently used in recent years. Dyer and Parker (1975) have conducted a study on the dichotomy of motivation, and the results showed that an intrinsic-extrinsic grouping was supported. Based on this finding, the authors of this paper have adopted this intrinsic and extrinsic dichotomy of motivation. "Intrinsic motivation" is a cognitive state reflecting the extent to which the employee attributes the force of his or her task behaviors to outcomes derived from "work characteristics" and "intrinsic rewards". In this study, the factors of intrinsic motivation consist of skill variety, task identification, task significance, autonomy, feedback, the feelings of self-fulfillment, and the feelings of worthwhile accomplishment. In addition, "Extrinsic motivation" is a cognitive state reflecting the extent to which the worker attributes the force of his or her task behaviors to having and/or expecting to receive or experience some "extrinsic outcome". Extrinsic motivation factors are comprised of leadership style, money rewards, profit sharing, benefit system, job protection, promotion opportunity, training opportunity, and fame and status.

##### **Personal Creative Characteristics**

Amabile and Grysiewicz (1989) constructed ten qualities of problem solvers that served to promote creativity, and five that served to inhibit creativity. Qualities of problem solvers that promote creativity are various positive personality traits, self-motivation, special cognitive abilities, risk-orientation, and expertise in the area, qualities of the group, diverse experience, social skills, brilliance, and naiveté. Qualities of problem solvers that inhibit creativity are unmotivated, unskilled, inflexible, externally motivated, and socially unskilled. People with adaptive styles work incrementally on problems, within established rules and frameworks, generate new and useful outcomes that generally reinforce the given paradigm of the problem. However, employees with innovative styles are more likely to ignore established frameworks and reframe the problem itself. Therefore, these personal creative characteristics generate a more frame-breaking outcome in their problem-solving efforts. This paper has adopted Gough's (1989) questionnaire providing individuals with thirty two descriptive statements to identify these two personal creative characteristics.

**Climate for Innovation** Scott and Bruce (1994) developed twenty two questions to measure innovation climate in testing R& D departments. However, Daft (2004) revised the questionnaire to evaluate the general organization's (such as universities) innovation climate. In this current study, the authors have adopted Daft's (2004) questionnaires to examine differences in the level of innovation encouragement within organizations. There are five items listed in our survey.

##### **Innovative Behavior**

Innovative behavior consisted of four items completed by each employee and chairperson at the universities. This scale was adopted from John and Andre's (1977) work on the stages of innovation. The questions emphasize how the employee solves problems and innovative or creative behavior occurring during work. Responses were made on a five-point Likert-type scale ranging from "strongly agree" to "strongly disagree".

All above constructs were measured using existing scales where possible. Table 1 provides a summary of the constructs, the source of the measurement scale, and the reliability of the scale.

**Table 1:** Summary of Constructs

Construct	Scale Measurement and Reliability (Cronbach's Alpha)	Source of Scale
<b>Organizational motivation practices</b>	Intrinsic motivation (7 items) and Extrinsic motivation (8 items ) (0.86)	Dyer and Parker (1975)
<b>Personal Creative characteristics</b>	30 items (0.92)	Gough (1989)
<b>Climate for innovation</b>	22 items in Scott and Bruce (1994) (0.76) Adapted from Daft (2004) 5 items	Scott and Bruce(1994) Daft (2004)
<b>Innovative behavior</b>	4 items (0.75)	John and Andre (1977)
<b>Employment mode</b>	Single question	
<b>Job tenure</b>	Single question	
<b>Seniority</b>	Single question	
<b>Nationality</b>	Single question	
<b>Educational level</b>	Single question	
<b>Salary per month</b>	Single question	
<b>Gender</b>	Single question	
<b>Age</b>	Single question	

#### 4. Results and Discussion

To verify the dimensionality and reliability of the research constructs, a purification process including factor analysis, item to total correlation analysis and Cronbach's alpha analysis were conducted for this study. The results of factor analyses are shown in Table 2. With an eigenvalue greater than 1.0 and the absolute value of factor loading greater than 0.5 in the factor analysis, there appear to be three distinctive factors to characterize the construct of innovative behavior. The total variance explained by these three factors is approximately 71.65%. Further evaluation of the item to total correlation coefficient for each factor (ranging from 0.546 to 0.897) shows that the construct dimensionality is reliable.

**Table 2** Factor analysis and reliability test of research constructs

Factor and Variable	Factor Loading	Item to total correlation	Variance Explained	
			(%)	Eigenvalue Alpha
<b><i>Climate for innovation</i></b>			78.25	2.36 0.763
1. creativity / encouraged in this organization	0.912	0.897		
2. allowed to solve the same problems in different ways	0.876	0.854		
3. get to pursue creative ideas	0.765	0.743		
4. organization /flexible and always opens to change	0.798	0.773		
5. organization publicly recognizes / rewards those innovative	0.689	0.643		
<b><i>Intrinsic Motivation</i></b>			68.43	3.63 0.874
1. varied knowledge and skills	0.881	0.804		
2. decide the speed of my scheduled progress	0.856	0.766		
3. obtain the result of my work performance	0.873	0.793		
4. outcome can affect many people	0.782	0.672		
5. personal growth and development from job	0.868	0.786		
6. devote myself to challenging work	0.844	0.745		
<b><i>Extrinsic Motivation</i></b>			69.41	2.08 0.856
1. the reasonable salary	0.902	0.631		
2. bonuses, stock ownership and stock option	0.904	0.632		
3. provides benefits for employees	0.851	0.645		
4. the chance of decision participation	0.858	0.655		
5. a sound system and won't lay off employees at will	0.789	0.674		
6. good prospects for promotion	0.661	0.555		
7. a perfect training system or offers the opportunities for further study	0.816	0.694		
8. praises employees who perform excellence in public	0.892	0.613		
<b><i>Innovative Behavior</i></b>			65.26	3.26 0.752
1. use different ways to solve the problems at work	0.684	0.546		
2. propose some creative ideas to my company	0.855	0.753		
3. got the reward because my creative behavior at work	0.876	0.777		
4. admired by my boss and colleague when I have new creative ideas	0.783	0.657		

Moreover, this study identifies the relationships among climate for innovation, personal creativity traits, motivation and innovative behavior. To achieve this objective, structural equation model is employed to test the interrelationships among research constructs of all the model variables. Figure 2 illustrates the proposed structural equation model. Before evaluating the structural or measurement models, the overall model fit must be assessed to ensure that the model adequately represents the entire set of causal relationships. Based on the approach of Arbuckle & Worthke and Vigoda, this study uses chi-square, goodness of fit index (GFI), adjusted goodness of fit index (AGFI) and root mean square residual (RMR) to evaluate overall mode fit. Hair (2006) suggested that the ratio of chi-square value to degree of freedom should not exceed three. A chi-square/df = 2.008 appears acceptable. Bearing this in mind, other measures will also be examined. Model fit improves with decreasing RMR. This study defines an RMR of 0.05 as a close fit. GFI and AGFI are not explicitly influenced by sample size, and test the degree to which the model fits better than the null model. A very good research model fit is defined as GFI and AGFI exceeding 0.9. Figure 2 and Table 3 lists the estimated model fit indices, and demonstrates a large and significant chi-square with GFI of 0.905 and AFGI of 0.911. These indices indicate moderate model fit.

Figure 1 Structure Equation Model of this Study

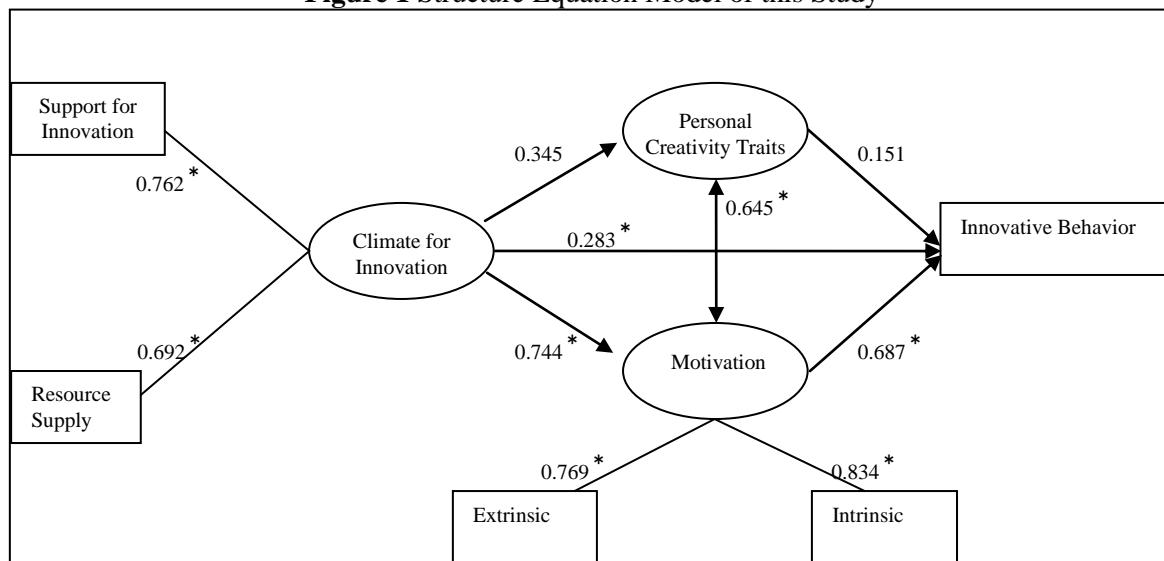


Table 3 Path Analysis for the Constructs of this Study

	Relations	Standardized Coefficients	C.R.
<b>Variables</b>	<b>Climate for Innovation</b> Support for Innovation	0.762*	A
	Resource supply	0.692*	14.400
	<b>Motivation</b> Extrinsic motivation	0.769*	A
	Intrinsic motivation	0.834*	16.001
<b>Path</b>	Climate for Innovation --->Innovative Behavior	0.283*	2.506
	Climate for Innovation <--->Personal Creativity	0.345	8.468
	Climate for Innovation <--->Motivation	0.744*	8.768
	Personal Creativity <--->Motivation	0.645*	8.487
	Personal Creativity --->Innovative Behavior	0.151	1.889
	Motivation --->Innovative Behavior	0.687*	6.637
<b>Fit Index</b>	Chi-square/d.f.	2.008	
	GFI	0.905	
	AGFI	0.911	
	RMR	0.002	

1. \*: C.R. (critical ratio) > 1.96; using a significant level of 0.05, critical ratios that exceed 1.96 would be considered significant. 2. A: the parameter compared by others is set as 1; therefore, there is no C.R.. It is determined as significant.

Descriptive statistics and ANOVA for different employment modes are shown in Table 4. The results indicate that climate for innovation, intrinsic motivation, extrinsic motivation and both innovative behavior from employee and director are significantly different between external and internal employment modes. As can be seen, the degree of different employment modes (external and internal) perceive climate for innovation (r = 0.83, p < 0.05) is different. External employee (Mean = 2.3) perceived lower innovation climate than internal employee (Mean = 3.52).

**Table 4** Descriptive Statistics and ANOVA Results for different employment modes

Variables	External Employees	Internal Employees	F-value	p-value
Personal creativity traits	54.3 (1.8)	68.54 (2.1)	2.55	0.342
Climate for innovation	2.3 (0.83)	3.52 (0.72)	15.16*	0.04
Intrinsic motivation	2.82 (0.45)	4.20 (0.67)	17.74*	0.03
Extrinsic motivation	3.76 (0.56)	1.47 (0.76)	22.4**	0.002
Innovative behavior (E)	1.67 (0.61)	4.12 (0.23)	29.5**	0.009
Innovative behavior (D)	1.8 (0.51)	3.46 (0.9)	28.9**	0.008

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001

Innovative behavior (E): indicates innovative behavior evaluating by employee

Innovative behavior (D): indicates innovative behavior evaluating by director

For the purpose of empirically investigating the relationship between constructs of employment modes, innovative behavior, personal creativity traits and organizational motivation practices in this study. Four regression models: employee-external, employee-internal, director-external, and director-internal are built into this section. Table 5 shows the relationship of independent variables to innovative behavior (Adjusted R-squared = 0.498 -0.657, F = 12.5 -34.7, p = 0.01 -0.001). Moreover, we provide both innovative behaviors from employees and directors as Model 1A & B and Model 2A & B. Harman's one factor test was used to make sure there is no common method variance issue in this study. We also discovered climate for innovation is significant on innovative behavior among all four models. Thus, Hypothesis 2 was supported. In other words, climate for innovation represents signals individuals receive organizational expectation for innovative behavior, from this result, we could predict internal employees were easier to receive the climate for innovation than external employees. In order to test Hypothesis 3, the result in Table 4, the observability of internal employee (Mean = 4.12 and 3.46) is higher than external employee's (Mean = 1.67 and 1.8) on innovative behavior (E and D, F = 29.5 and 28.9 > 4), thereby providing strong support for Hypothesis 3. Innovative behavior of internal employees is greater than innovative behavior for external employees. One thing that ought to be mentioned is, innovative behavior between employees (Mean = 4.12) and directors (Mean = 3.46) are quite different within internal employment mode. This means, there is a cognitive gap in innovative behavior between employee and director. On the other hand, it might indicate the director has higher expectations for internal employees' innovative behavior than for external employees'.

**Table 5** Regression Model between Employment mode and Innovative Behavior

Dependent Behavior	Variable-Innovative	Model 1A	Model 1B	Model 2A	Model 2B
		Employee-External	Employee-internal	Director-External	Director-Internal
<b>Independent Variable</b>	<b>Beta</b>	<b>Beta</b>	<b>Beta</b>	<b>Beta</b>	<b>Beta</b>
Personal Creativity Traits	0.342	0.456	0.378	0.452	
Climate for Innovation	<b>0.431*</b>	<b>0.325**</b>	<b>0.442*</b>	<b>0.567**</b>	
Extrinsic Motivation	<b>0.288***</b>	<b>0.432*</b>	<b>0.446***</b>	<b>0.256*</b>	
Intrinsic Motivation	<b>0.351*</b>	<b>0.234**</b>	0.678	0.137	
Job tenure	0.324	0.112	0.432	0.194	
Seniority	-0.176	<b>-0.543**</b>	-0.232	-0.182	
Nationality	0.034	0.278	0.078	0.021	
Education Level	<b>0.367*</b>	0.227	0.254	0.166	
Age	-0.045	<b>-0.337*</b>	-0.231	<b>-0.456*</b>	
Gender	0.022	0.029	0.013	0.057	
<b>F-value</b>	34.7***	32.6***	32.2**	12.5**	
<b>Adjusted R-squared</b>	0.657	0.543	0.641	0.498	
<b>N</b>	61	63	61	63	

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001

Dependent variable: Model 1A & B--Innovative behavior evaluating by employee

Model 2A&B -- Innovative behavior evaluating by director

Overall, in Table 5, the observability of personal creativity traits was not significant. This indicates inner personal traits tend not to significantly influence innovation. The climate for innovation and extrinsic motivation show a significant influence on innovative behavior. Especially in external employees, climate for innovation show more significance than internal employees. This indicates the importance for an organization leader to set up an innovative environment for contingent subordinates. Interestingly, intrinsic motivation is significantly influenced on innovative behavior in Model 1A and Model 1B.



In other words, from an employee perspective intrinsic motivation is more important than from manager perspective. Particularly significant, extrinsic motivation was strongly supported in external employment mode for innovative behavior, thereby supporting Hypothesis 1. In contrast, external employees are more likely motivated by extrinsic rather than intrinsic motivation. Consistent with a social exchange perspective, the pattern of mutually contingent exchange for external employment mode is more important in tangible exchanges, for instance, salary, employment contract, and social insurance. Furthermore, seniority and age were found to show a significantly negative relationship on innovative behavior in Model 1B. The observability of seniority indicates the longer working experience; the lower innovative behavior might occur, and same as the age influence on innovative behavior. This might indicate that keeping innovative stimulus from the organization to senior employees is necessary in increasing their innovative behavior especially for internal employees.

## **5. Conclusion**

Studying individual innovative behavior in a natural work context is a complex and difficult task because the criterion is often difficult to validate, and researchers are often limited to the use of perceptual measures. However, as organizations face increasingly turbulent environments, and innovation becomes part of every employee's job description, the need for this kind of research is ever increasing (Scott, 1994). Following this trend, this paper sought to make contributions linking innovative behavior and different employment modes. This study as a trial to compare the innovative behavior in different employment modes has not been corroborated from past studies. Therefore, our study provides an attempt at employment modes and innovative behavior from a social exchange perspective. Social exchange theory is a [social psychological](#) and [sociological perspective](#) that explains social change and stability as a process of negotiated exchanges between parties. Social exchange theory posits that all human [relationships](#) are formed by the use of a subjective cost-benefit analysis and the comparison of alternatives (Blau, 1964). In this study, we try to argue if internal employees will be more positive in innovative behavior than externals' due to the pattern of mutually contingent tangible and intangible exchange. The empirical result shows innovative behavior seems more positive among internal employees than their external counterparts.

It is consistent with what social exchange theory indicates. This theory was expanded and applied in this situation. Moreover, it would be interesting to examine the innovative behavioral processes in different countries while different employment modes are being allocated into the human resource system. Comparing the different universities innovative behavior between employment modes among different countries might be a potential area for further study. The other contribution that this study has shown is that satisfaction will be greater among motivated, external employees when extrinsic motivation techniques are applied. Extrinsic motivation seems to be a useful tool for human resource departments to execute their human resource practice when it comes to external employees. Moreover, we found the chairpersons' perception of innovation is different than the employees'. In other words, employers maintain higher expectations for internal as opposed to external employees. This different perspective might be interesting to examine in future studies addressing leader-member exchange and leader-role expectations.

Furthermore, climate is seen as a joint property of both the organization and the individual. It is both a macro and micro construct (Field and Abelson, 1982). As such, climate is a "system variable" serving to integrate the individual, group, and organization. Thus, climate has the potential to facilitate a truly integrated science of organizational behavior. Subsequently, climate has been viewed as a function of (a) the organization's structure; (b) the organization's membership; and more recently (c) the memberships' efforts to understand the organization. As can be seen, this study shows different employment modes receive different climate for innovation. Internal employees have higher climate perception in innovation than external employees. In order to link organizational and individual level research, climate for innovation should play an important role for future studies. While some positive results have emerged from this study, constraints in this study must be mentioned as well. First, this data was collected from universities. Difficulties could arise if these findings were to be applied to other industries. Second, the innovative behavior in this study focused on administrative core, rather than technical core. With this perspective in mind, the purpose of this study was to explore the early stages in innovative behavior such as intuitive problem-solving and systematic problem-solving. This is different than what R&D innovation typically entails.

In conclusion, educational institutes have been rapidly growing in number over the past decade, while simultaneously becoming more and more competitive in the higher education system. Concurrently, most universities throughout the world face an ever-increasing burden for school funding. Similar to other industries, numerous organizations are trying to rid themselves of life-long employment positions to allocate various employment modes.

The purpose of this is not only to save funding traditionally allocated to personnel but also to attempt to stimulate innovation. How to effectively allocate different employment modes to attain the highest organizational performance would be an important issue for every organization in these turbulent and competitive environments.

## References

- Abbey, A., & Dickson, J. (1983). R&D work climate and innovation in semiconductors. *Academy of Management Journal*, 26: 362-368.
- Alan Burton-Jones.(1999). *Knowledge Capitalism*. Oxford University press Inc., New York.
- Allan, Peter .(2002), "The contingent workforce: challenges and new directions", *American Business Review*, 20(2), 103-111
- Amabile, T. (1988). A model of creativity and innovation in organizations. In B. M. Staw & L. L. Cummings (Eds.), *Research in organizational behavior*, 10: 123-167. Greenwich, CT: JAI Press.
- Amabile, T., & Grysiewicz, N. (1989). The creative environment scales: the work environment inventory. *Creativity Research Journal*, 2: 231-254.
- Ancona, D., & Caldwell, D. (1987). Management issues facing new product teams in high technology companies. In D. Lewin, D. Lipsky, & D. Sokel (Eds.), *Advances in industrial and labor relations*, vol. 4: 191-221. Greenwich, CT: JAI Press.
- Axel, H. (1995). Contingent employment. *HR Executive Review*, 3(2) : 2-14.
- Barney, J.B.(1986). Strategic factor markets: expectations, luck and business strategy. *Management Science*, 32:1231-1241
- Barney, J.B.(1991). Firm resources and sustained competitive advantage. *Journal of Management*. 17:99-120
- Beard, Kathy M. & Edwards, Jeffrey R.(1995). Employees at risk: contingent work and the psychological experience of contingent workers", *Trends in organizational behavior*, V.2, 109-1
- Blau, P. (1964) *.Exchange and power in social life*. New York: Wiley.
- Boztepe, Ibrahim (2002).Contract or permanent staff: which one would you be?, *Asia Computer Weekly*, Singapore
- Dyer, Lee and Donald F. Parker (1975). Classifying outcomes in work motivation research : an examination of the intrinsic-extrinsic dichotomy. *Journal of Applied Psychology*, 60:455-458
- Foote, David A., & Folta, Timothy B.(2002). Temporary workers as real options. *Human Resource Management Review*, 12(4), 579-597
- Freeman, Audrey.(1996).Contingent work and the role of labor market intermediaries. In Garth Mangum and Stephen Mangum, eds. *Of Heart and Mind : Social Policy Essays in Honor of Sar A*.
- Gough, Harrison G. (1979). A creative personality scale for the adjective check list. *Journal of Personality and Social Psychology*, 37:1398-1405
- Herzberg, F.(1966). *Work and the Nature of Man*. Cleveland, OH: World
- Houseman, Susan N.(2001).Why employers use flexible staffing arrangements: evidence from an establishment survey. *Industrial & Labor Relations Review*, 55(1), 149-170.
- Huselid, M.(1995). The impact of human resource management practices on turnover, productivity and corporate financial performance. *Academy of Management Journal*, 38:635-72
- J.P. Guilford.(1950).Creativity. *The American Psychologist*.5:444-4445.
- James, L., & Sells, S. (1981). Psychological climate: theoretical perspectives and empirical research. In D. Magnussen (Ed.), *Toward a psychology of situations: An international perspective: 275-295*. Hillsdale, NJ: Erlbaum.
- James, L., James, L., & Ashe, D. (1990). The meaning of organizations: the role of cognition and values. In B. Schneider (Ed.), *Organizational climate and culture: 40-84*. San Francisco: Jossey-Bass.
- James, L., Mulaik, S., & Brett, J. (1982). *Causal analysis: assumptions, models, and data*. Beverly Hills: Sage.
- John L. Pierce and Andre L. Delbecq (1977). Organization structure, individual attitude and innovation. *Academy of Management Review*, 2:27-37
- Kirton, Michael (1976). Adaptor and Innovators: a description and measure. *Journal of applied psychology* ,61:622-629
- Kogut, B., (2000). The network as knowledge: generative rules and the emergence of structure. *Strategic Management Journal*, 21: 405-425.
- Leonard-Barton, D.(1995). Wellsprings of knowledge: building and sustaining the source of innovation. *Harvard Business School Press*; Boston:
- Levitt, B., & March, J. (1988). Organizational learning. *Annual Review of Sociology*, 14: 319-340.
- Mangum,Garth, Donald Mayall and Kristin Nelson.(1985). The temporary help industry: a response to the dual internal labor market. *Industrial and Labor Relations Review*,38(4):599-61
- Michael Kirton.(1989). Adaptors and Innovators: styles of creativity and problem solving. *Longdon routledge*,3.
- Nonaka. I. (1994). A dynamic theory of organizational knowledge creation. *Organization Science*.5:14-37
- Nonaka. I. and Takeuchi, H. (1995). *The knowledge-creating company*. New York: Oxford University Press.
- Powell, W. W., Koput, K. W., & Smith-Doerr, L. (1996). Interorganizational collaboration and the locus of innovation: Networks of learning in biotechnology. *Administrative Science Quarterly*, 41: 116-145.
- Prahalad Ck, Hamel G. (1990).The core competence of the corporation. *Harvard Business Review* 68(3):79-91
- Reiners, John Robert.(1999).*Contract and full-time professionals: An agency theory analysis of critical work outcomes*. Georgia State University, MI: UMI Co.
- Reusseou, D.M. (1995). Psychological contracts in organizations: Understanding written and unwritten agreements. *Thousand Oaks .CA:Sage*
- Scott, Susanne G., Bruce, Reginald A.(1994). Determinants of innovative behavior: a path model of individual innovation in the workplace", *Academy of Management Journal*, 37, 3:580-607
- Simon.(1991). "Bounded rationality and organizational learning". *Organization Science*.2:125-134.
- Teece DJ, Pisano G, Shuen A. (1997).Dynamic capabilities and strategic management. *Strategic Management Journal* 18(7):509-533
- Thompson, V.A.(1965) Bureaucracy and Innovation. *Administrative Science Quarterly*, 10:1-20
- Von Hippel, Mangum, C.S.L., Greenberger, D.B., Heneman. R.L. and Skoglund. J.D.(1997) Temporary employment: can organization and employees both with? *Academy of Management Executive*, 93-104