

The Influence of Organizational Creative Climate on Product Innovation: A Study of Malaysian Manufacturing Firms

AIZZAT MOHD. NASURDIN^a, TAN CHENG LING^{b*} AND
KHOR BOON HOU^c

^{a,b,c}Universiti Sains Malaysia

ABSTRACT

The purpose this study is to examine the effect of organizational creative climate on product innovation. Organizational creative climate is conceptualized as comprising of challenge, freedom, idea support, trust/openness, dynamism/liveliness, playfulness/humour, debate, conflict, risk taking and idea time. A total of 163 large manufacturing firms in Malaysia were sampled. Ten hypotheses were tested using regression analyses. Our results showed that of the eight dimensions of organizational creative climate (risk taking & idea time, playfulness/humour & dynamism/liveliness, absence of conflicts, trust/openness, debates, challenge, idea support, freedom), only challenge, debate, and idea support were found to have significant positive effects on product innovation. Implications and limitations of the study are also discussed.

Keywords: product innovation, organizational creative climate, manufacturing industry, Malaysia

INTRODUCTION

In this competitive and ever-changing world, product innovation is critically important and is being greatly emphasized, particularly in manufacturing industry. Utterback (1994) suggested that organizations need to be more creative and innovative towards improving their products, in order to survive, to compete, and to grow. To achieve such position, these organizations need to constantly focus on the introduction of new product and continuously develop their capability in product innovation. As noted by Radas and Bozic (2009), most studies on product innovation have been undertaken in developed countries, and consequently

* Corresponding Author: E-mail: tanchengling@usm.my

Any remaining errors or omissions rest solely with the author(s) of this paper.

policy-makers from developing countries primarily look at those findings when formulating policy measures. For Malaysia, studies on innovation are still in its infancy (Abdullah, Chik, & Deen, 2006; Ismail, 2005; Pawanchik & Sulaiman, 2010). In its efforts to become a knowledge-based economy, Malaysia has also placed a great emphasis on the need for innovation in all sectors of its economy (Ministry of Science, Technology and Innovation, Malaysia (MOSTI), 2006). However, despite calls for greater innovative activities, the level of innovation in Malaysia is still low. In fact, the outcome of the national survey of research and development 2008 (Ministry of Science, Technology and Innovation, Malaysia (MOSTI), 2012), indicated the Malaysia's ratio of national gross expenditure on research and development (GERD) to gross domestic product (GDP) was only 0.64 in relation to other countries under the East Asian Newly Industrialising Economies (NIEs), such as Korea (2.98), and Singapore (2.36), as well as those of the new emerging economies like China (1.33) and India (0.84). In fact, the Malaysian manufacturing industry is at risk of losing its competitive advantage as global competition intensifies with the emergence of low-cost developing countries like China, India, and Vietnam (Yusuf & Nabeshima, 2009; Pawanchik & Sulaiman, 2010). Although Malaysia has been involved in the semi-conductor industry as early as 1970s, this industry is still focused on low-value activities, i.e. assembling and testing (Santhapparaj, Sreenivasan, & Loong, 2006). As a result, this industry is prone to downswings in demand as well as subjected to external threats from new low-cost players such as China. Realizing this drawback, the Malaysian government has proposed the Economic Transformation Program (ETP) which aims to boost the nation's manufacturing growth in order to achieve its Vision 2020. Thus, in order to succeed, firms have to innovate. This line of thought is in line with the claim made by Shipton, Fay, West, Patterson, and Birdi (2005) that the ability for organizations to innovate is the key factor to improve their performance and ensure their success. Innovation is often linked with the introduction of new and superior products. Tung (2012) concluded that product innovation increase a firm's leverage in a highly competitive market. In the case of Malaysia, product innovation is crucial in order for the country to create more superior, higher value-added manufacturing outputs in order to compete internationally in line with the recommendation made based on the Malaysia National Innovation Model (National Innovation Council, 2007).

Since product innovation is important for a firm's competitive position, a range of studies were conducted to identify its antecedents. The literature has grouped these antecedents into three broad categories: individual, organisational and interactive factors (Amabile, 1991; Damanpour, 1991; Damanpour, Szabat, & Evan, 1989; Kimberly & Evanisko, 1981). Among all the possible predictors of product innovation, interactive variables have been argued as playing a prominent

role (Amabile, 1991). According to Amabile (1991), one interactive variable that has emerged as an important predictor of product innovation is organizational creative climate. This is not surprising since organizational creative climate is an attribute of the organization, reflecting a conglomerate of attitudes, feelings, and behaviours that characterizes life in an organization. Besides, organizational creative climate also exist independently of the perceptions and understandings of organizational members which affects the results of the operations of the organization (Ekvall, 1988; 1991; 1996), which in turn, exerts a strong influence on the product innovation. Organisational creative climate are created and reinforced by the presence of specific practices and procedures and accompanying reward mechanisms. The organizational creative climate bears a natural association with the practice of organizational innovation and resulting performance, which are all necessary for product innovation (Cummings & Oldham, 1997). In essence, organisational creative climate consists of ten dimensions: challenge, freedom, idea support, trust/openness, dynamism/liveliness, playfulness/humour, debates, conflicts, risk taking, and idea time. According to Ekvall (1996), these ten dimensions would have a profound effect on innovation. In the manufacturing context, since product innovation could lead to greater winning opportunities for Malaysian firms to market their products and compete globally, investigating the predictors of product innovation is considered crucial. Against this backdrop, the goal of this study is to examine the effect of organisational creative climate (which consists of challenge, freedom, idea support, trust/openness, dynamism/liveliness, playfulness/humour, debates, conflicts, risk taking, and idea time) on product innovation within the Malaysian manufacturing industry.

LITERATURE REVIEW

Product Innovation as a Type of Innovation

Innovation is a very broad research field and there are many definitions of innovation that have been proposed. In general, innovation has been conceived as the process of making changes, large or small, radical or incremental, to products, processes, and services that result in the introduction of something new for the organization (O'Sullivan & Dooley, 2009). There are various types of innovation classified by past scholars, such as product innovation (Damanpour, 1992; Johanessen, Olsen & Lumpkin, 2001; Knight, 1967), process innovation (Damanpour, 1992; Mavondo, Chimhanzi, & Stewart, 2005), and administrative innovation (Chuang, 2005; Mavondo, et al., 2005). Of the innovation types that have been examined, product innovation has been posited to result in better organizational performance (Porter,

1998; Cottam, Ensor, & Band, 2001). Product innovation is defined as forming a new product category or implementing small-scale alterations to existing products for the benefit of customers (Gopalakrishnan & Damanpour, 1997). In simple terms, product innovation is the introduction of a new product in the market that uses different technology and has a higher utility for the consumer than the existing products (Tung, 2012). Product innovation reflects performance derived from the significant improvements in technical specifications, components and materials, incorporated software, user friendliness, or other functional characteristics of the product (Toner, 2011). In view of the fact that manufacturing firm's performance relies heavily on the introduction of new products and services and significant improvements in the functional or user characteristics of existing products and services, this form of innovation is regarded as a key source of competitive advantage.

Organizational Creative Climate

Many conceptualizations of organizational creative climate have been made based on the different views regarding organizational climate. For instance, organizational climate refers as a set of shared perceptions regarding the policies, practices, and procedures which an organization rewards, supports, and expects (Schneider & Reichers, 1983). Martin (2002) viewed organizational climate as the manifestation of practices and patterns of behaviour rooted in the assumptions, meanings and beliefs that make up the culture. In a similar vein, organizational creative climate can be conceived as a set of shared attitude, value and beliefs about the organization which affects employee attitudes and behaviour towards innovation (Ferris, Arthur, Berkson, Kaplan, Harrell-Cook, & Frink, 1998). Ekvall (1996) proposed a theoretical model of organizational creative climate by conceptualizing the construct as an objective property of the organization separate from the collective perceptions of employees. Ten factors that can facilitate or hamper creativity and innovation comprised of challenge, freedom, idea support, trust/openness, dynamism/liveliness, playfulness/humour, debates, conflicts, risk taking, and idea time. According to Ekvall, Arvonen, and Waldenstrom-Lindblad (1983), organizational creative climate has the power to influence organizational process such as communications, problem solving, decision-making, co-ordination, motivation, and commitment. Creating an organizational creative climate within the organization is therefore essential in determining success of product innovation (Ekvall, 1996). In fact, a high level of organizational creative climate has been suggested by other researcher (Cokpekin & Knudsen, 2011) as one method for enhancing product innovation.

Organizational Creative Climate and Product Innovation

Based on the model of creativity and innovation proposed by Amabile (1988), organizational motivation, resources, and management practices constitute the work environment for individuals and teams working within the organization. These elements of the work environment will impact individuals' and teams' creativity and innovation. According to Schneider (1990), organizational creative climate consists of a set of specific practices and procedures and accompanying reward mechanisms, which serves as the primary driver of product innovation. This means that a creative work climate will enable individuals and teams in the organization to continuously create new products. This aligns well with the argument by Glick (1985) that the organizational creative climate is expected to strengthen organizational capability to innovate. Since organizational creative climate has been identified as having ten dimensions: challenge, freedom, idea support, trust/openness, dynamism/liveliness, playfulness/humour, debates, conflicts, risk taking, and idea time, our main hypothesis is as follows:

H₁ : Organizational creative climate (challenge, freedom, idea support, trust/openness, dynamism/liveliness, playfulness/humour, debates, conflicts, risk taking, and idea time) will be positively related to product innovation.

Risk taking and product innovation

Risk taking is defined as the tolerance for uncertainty in the firm (Ekvall et al., 1983). Decision-making is prompt, attention is being paid to arising opportunities, and experimentation is preferred to detailed investigation and analysis. Employees feel as though they can "take a gamble" on some of their ideas (Isaksen, Lauer, & Ekvall, 1998). When employees can take bold action even if the outcome is unclear, it will definitely encourage them to experiment, leading to the development of new products or alterations of existing ones. In line with the discussion, the sub-hypothesis is conjectured as below,

H_{1a} : Risk taking will be positively related to product innovation.

Idea time and product innovation

Idea time is conceptualized as the amount of time that employees can use for planning new ideas (Ekvall et al., 1983). In a high idea time situation, opportunities exist for employees to discuss and test impulses and non-routine suggestions. In an environment with high idea time, employees are allowed to spend time to explore,

develop, and elaborate on ideas and alternatives (Isaksen, et al., 1998). Under such circumstances, employees are encouraged to generate new and improved products. In contrast, time pressures make thinking beyond planned routines impossible. Hence, the sub-hypothesis is presented as below,

H_{1b} : Idea time will be positively related to product innovation.

Playfulness/Humour and product innovation

Playfulness/Humour is regarded as the spontaneity and ease that is displayed among employees in the firm. Such organizations maintain a relaxed atmosphere with jokes and laughter (Ekvall et al., 1983). Isaksen et al (1998) added that an easy-going and light-hearted atmosphere would create a fun workplace. In this type of work environment, employees will feel relax, and their capacity to think increases, leading to greater idea generation for product development and improvement. Thus, we posit that:

H_{1c} : Playfulness/humour will be positively related3 to product innovation.

Dynamism/Liveliness and product innovation

Dynamism/liveliness is conceptualized as the eventfulness of life in the firm (Ekvall et al., 1983). In a highly dynamic situation, changes are rampant all the time, in terms of activities and ways of thinking (Ekvall et al., 1983). In such situation, new things are happening all the time and new ways of thinking and handling issues often occur (Isaksen, et al., 1998). Constant changes make the atmosphere lively. When employees are exposed to this kind of work environment, they are bound to accept change as the norm, and become energized and be more willing to generate new ideas concerning product development. Therefore, we postulate that:

H_{1d} : Dynamism/liveliness will be positively related to product innovation.

Trust/Openness and product innovation

Trust/openness is defined as the emotional safety in the relationship among employees (Ekvall et al., 1983). In an atmosphere of trust, communication is open and employees are willing to share their opinions, as initiative is taken without fear of reprisal and ridicule in case of failure (Ekvall et al., 1983). In additions, a climate involving a high level of trust and openness also provides emotional safety

in relationships where everyone in the organization dares to put forward their ideas and opinions (Ekvall, 1996). In such situation, employees are likely to share ideas and knowledge on product development and alterations. Hence, we conjecture that:

H_{1e} : Trust/openess will be positively related to product innovation.

Debate and product innovation

Debate is conceptualized as the occurrence of encounters and clashes between ideas and different experiences. In a debating firm, voices with different perspectives are heard (Ekvall *et al.*, 1983). A debating climate is said to exist when organizational members and teams are allowed to exchange ideas verbally and make frequent interactions with one another (Ekvall, 1996). The debate climate will encourage employees to voice concerns and challenge ideas, leading to creativity, and ultimately higher product innovation. In line with this discussion, our sub-hypothesis is:

H_{1f} : Debate will be positively related to product innovation.

Challenge and product innovation

Challenge refers to the emotional involvement of the employees of the firm in its operations and goals (Ekvall *et al.*, 1983). When employees experience joy and meaningfulness in their job, they tend to become more energetic in their work. Besides, employees who are exposed to a high level of challenge will be more likely to spend time trying new things (Cokpekin & Knudsen, 2011). According to Ekvall *et al.* (1983), high challenge climate stimulates creativity and innovation among employees, which are likely to increase their innovative capability to develop new product. Thus, the following sub-hypothesis is offered:

H_{1g} : Challenge will be positively related to product innovation.

Idea support and product innovation

Based on Ekvall *et al.* (1983), idea support is regarded as the way in which new ideas are treated. When new ideas are well received by superiors and peers in an organization, employees are likely to judge their organization as supportive. As

suggested by Isaksen *et al.* (1998), in a constructive and positive atmosphere, employees feel encouraged to try out new ideas and initiatives, leading to greater product innovation. In line with the discussion, we speculate that:

H_{1h} : Idea support will be positively related to product innovation.

Freedom and product innovation

Freedom is conceptualized as the independence in behaviour exerted by the employees in a firm (Ekvall *et al.*, 1983). In a climate characterized by freedom, employees make contacts, share information, evaluate alternative, and make decisions for problem-solving (Ekvall *et al.*, 1983). When employee are free to share information and knowledge, the flow of knowledge and information becomes smoother and faster, and this will help provide faster feedback to the management authorities, resulting in prompt decision-making (Chen & Huang, 2009). Hence, freedom is necessary for the development and establishment of context that will foster product innovation. Following the above discussion, the following sub-hypothesis is suggested.

H_{1i} : Freedom will be positively related to product innovation.

Absence of conflicts and product innovation

Conflict is defined as the presence of personal and emotional tensions, where, in a firm with a high level of conflict, employees dislike each other, and that the climate can be liken to a war (Ekvall *et al.*, 1983). Plots, traps, gossip, and slander are usually present. The absence of conflict enables employees to become matured thinkers, and more likely to deal effectively with diversity. Absence of conflict suggests that people tend to behave in a more matured manner as they have higher psychological insight and greater control of impulses (Isaksen, *et al.*, 1998). When there is less personal tension, employees are likely to channel their energy to the development and improvement of products. Therefore, our final sub-hypothesis is:

H_{1j} : Absence of conflicts will be positively related to product innovation.

METHODOLOGY

Sample and Data Collection

The list of large manufacturing firms was retrieved from the Federation of Malaysian Manufacturers (FMM) Directory (2010) and Invest Penang Directory (2010). Questionnaires were distributed to a total of 688 large manufacturing firms located in six states of Peninsular Malaysia. These states comprising of Penang, Kedah, Perak, Selangor, Kuala Lumpur, and Johor, were identified as having a high percentage of innovating firms (MOSTI, 2006). Participating firms were given two months to complete the questionnaires. After the specified period, 163 useable questionnaires representing a response rate of 23.7 percent were returned and consequently analysed.

Measurement

The independent variables in the present study relates to organizational creative climate, comprising of ten dimensions: challenge, freedom, trust/openness, dynamism/liveliness, idea time, playfulness/humour, conflict, idea support, debate, risk taking. Each dimension was measured using 5 items adopted from Ekvall, et al. (1983). All measures of organizational creative climate are based on a 7-point Likert scale ranging from (1) “strongly disagree” to (7) “strongly agree”. The mean score for each construct will serve as an indicator of the level of challenge, freedom, trust/openness, dynamism/liveliness, idea time, playfulness/humour, conflict, idea support, debate, risk taking respectively. The dependent variable is product innovation, measured using thirteen items where eight items adapted from Langerak, Hultink, and Robben (2004) and five items adapted from and another 5 items scale adapted from Zhang (2006). A similar seven-point response format was used. An index for product innovation was computed by taking the mean score of the all the items used to measure product innovation. A higher mean score indicates higher product innovation.

Method of Analysis

Two demographic variables that have been previously found to affect innovation, such as size of company (Jiménez-Jiménez & Sanz-Valle, 2005; Shipton, et al., 2005), and years of company in operation (Jiménez-Jiménez & Sanz-Valle, 2005) were controlled in the regression analyses in order to prevent confounding effects. Multiple regression analyses were employed to test our sub-hypotheses.

RESULTS

Profile of Participating Firms

Out of the 163 participating large manufacturing firms, 62.6% were from Penang, 11.0% were from Selangor, 10.4% were from Kedah, 9.2% were from Johor, 3.7% were from Perak, with the remaining 3.1% were from Kuala Lumpur. In terms of type of industry, the participating firms came from a various industries: radio, television and communication (17.8%), chemicals and chemical products (6.7%), electrical machinery (12.9%), paper and paper products (3.1%), fabricated metals products (17.2%), textile (0.6%), motor vehicle, trailers and semi-trailers (3.1%), recycling (0.6%), medical, precision, optical instruments, watches and clocks (9.2%), office, accounting and computing machinery (11.0%), leather products (0.6%), rubbers and plastic products (15.3%), and basic metals (1.8%). With regards to ownership, 38.0% were 100% local-owned companies, 50.3% were 100% foreign-owned companies and 11.7% were joint-ventures companies. The median for the size of company (measured in terms of the number of employees) is 300 (S.D. = 1137.90). Meanwhile, the mean value for years of company in operation is 21.12 years (S.D. = 11.24).

Factor Analysis

Results of the factor analysis on the 50 items revealed that 4 items had either differences between cross loading less than 0.1 (Snell & Dean, 1992) or factor loadings lower than 0.45 (Hair, Anderson, Tatham, & Black, 2006). These items were eliminated from further analysis. Factor analysis is rerun on the remaining items. Table 1 shows the results of factor analysis on organizational creative climate.

Table 1 Results of factor analysis on organizational creative climate items

Items	Factor loadings								
	F1	F2	F3	F4	F5	F6	F7	F8	F9
Factor 1: Risk Taking and Idea Time									
There is a follow through of new ideas in this organization.	0.76	0.12	-0.10	0.18	0.26	0.15	0.16	0.13	0.05
People in this organization dare to take the initiative, even if the outcome is uncertain.	0.73	0.19	0.10	0.04	0.21	0.13	0.13	0.26	-0.08

Table 1 (Cont'd)

There is a clear tendency for risk taking in this organization.	0.72	0.28	0.12	0.14	0.16	0.14	0.05	0.18	-0.03
People in this organization are confident and act quickly.	0.70	0.13	-0.07	0.15	0.17	0.20	0.32	0.01	0.08
Coming up with new ideas is regarded as an important part of the operation of this organization.	0.66	0.25	-0.20	0.13	0.16	0.02	0.10	0.18	0.10
Normal ideas in this organization are quickly adopted into this organization.	0.64	0.36	-0.01	0.12	0.07	0.21	0.27	0.10	0.06
The Pace of work in this organization allows for the testing of new ideas	0.60	0.06	-0.01	0.17	0.43	0.07	-0.01	0.24	-0.08
People in this organization take time to discuss new ideas.	0.53	0.13	-0.12	0.21	0.38	0.08	0.07	0.20	0.09
Factor 2: Playfulness/ Humour & Dynamism/ Liveliness									
There are a lot of activities in this organization.	0.13	0.73	-0.08	0.19	0.02	0.20	0.16	0.02	0.20
People in this organization tend to joke quite a lot.	0.22	0.69	0.01	0.10	0.34	0.01	0.11	0.21	-0.01
One can usually see many cheerful faces in this organization.	0.24	0.69	-0.17	0.25	0.34	0.18	0.04	0.04	-0.05
People here have a sense of humour.	0.20	0.67	-0.10	0.11	0.42	0.01	0.03	0.16	0.01
A lively atmosphere prevails in this organization.	0.18	0.67	-0.23	0.29	0.15	0.29	0.18	-0.01	0.14
There is an informal atmosphere in this organization.	0.22	0.66	-0.08	0.29	0.15	0.03	0.20	0.29	-0.10
The atmosphere here is exciting.	0.23	0.64	-0.16	0.30	0.27	0.37	0.14	-0.06	0.10
There is a lot of energy and drive in the operation of this organization.	0.26	0.63	-0.21	0.30	0.13	0.29	0.20	-0.06	0.18

The Influence of Organizational Creative Climate on Product Innovation

Table 1 (Cont'd)

Factor 3: Conflicts									
Quite a number of personal conflicts exist in this organization.	0.05	-0.01	0.89	-0.09	-0.04	-0.06	-0.12	0.05	-0.09
It is common in this organization for people to plot against each other.	0.00	-0.11	0.89	-0.06	0.04	-0.06	-0.03	-0.05	0.05
Quite a number of people in this organization cannot tolerate one another.	-0.02	-0.14	0.88	-0.09	0.00	-0.03	-0.13	-0.02	-0.04
There are power and territory struggles in this organization.	-0.09	-0.05	0.87	-0.14	0.00	-0.04	-0.06	0.00	0.02
There is a considerable amount of tension here because of conflicts.	-0.07	-0.10	0.83	-0.07	0.00	-0.05	0.03	0.04	0.06
Factor 4: Trust/Openness									
People here do not talk behind others' back.	0.08	0.19	-0.10	0.84	0.22	0.20	0.02	0.10	-0.01
The communication between people in this organization is straightforward.	0.21	0.24	-0.09	0.78	0.06	0.18	0.24	0.07	0.12
Conflicts and opposition in this organization are dealt with openly.	0.19	0.23	-0.08	0.77	0.10	0.10	0.31	-0.02	0.16
In this organization there is no fear of being stabbed in the back.	0.17	0.22	-0.23	0.75	0.21	0.22	-0.02	0.08	-0.09
People here trust each other.	0.16	0.26	-0.15	0.74	0.25	0.17	0.11	0.17	0.04
Factor 5: Debate									
People here are anxious to talk about their ideas.	0.26	0.17	0.07	0.13	0.78	0.07	0.13	0.07	0.08
Many new ideas are floating around in this organization.	0.32	0.25	0.07	0.14	0.75	0.09	0.23	0.09	0.08
There is a great variety of views in this organization.	0.22	0.32	-0.08	0.12	0.73	0.14	0.14	0.11	0.04
Many different points of view are expressed in this organization.	0.21	0.22	-0.02	0.29	0.66	0.15	0.24	0.01	0.22
Unusual ideas often come up in discussions in this organization.	0.25	0.22	0.03	0.23	0.52	0.15	0.25	-0.03	-0.01

Table 1 (Cont'd)

Factor 6: Challenge									
People in this organization usually enjoy their job.	0.08	0.13	-0.09	0.17	0.06	0.83	0.17	0.24	-0.08
Most people here enjoy contributing to this organization.	0.14	0.23	0.08	0.08	0.08	0.79	0.20	-0.02	0.07
Most people in this organization consider their work meaningful and stimulating.	0.15	0.15	-0.06	0.25	0.15	0.76	0.03	0.29	-0.04
People in this organization feel deeply committed to their job.	0.18	0.10	-0.13	0.24	0.16	0.68	0.11	0.15	0.09
Most people here strive to do a good job.	0.30	0.12	-0.20	0.12	0.08	0.52	0.13	0.09	0.41
Factor 7: Idea Support									
People in this organization receive support and encouragement if they present new ideas.	0.27	0.23	-0.17	0.25	0.24	0.24	0.69	0.25	0.03
People in this organization feel welcome when presenting new ideas.	0.20	0.23	-0.28	0.20	0.29	0.30	0.63	0.18	0.06
Initiatives in this organization are often received favourably, so people here feel encouraged to generate new ideas.	0.27	0.24	-0.06	0.11	0.37	0.32	0.61	0.19	-0.08
People in this organization generally dare to take risk to share their ideas, because others listen and encourage them.	0.37	0.21	-0.06	0.14	0.33	0.12	0.60	0.20	-0.03
This organization usually accepts new ideas.	0.29	0.24	-0.23	0.32	0.30	0.19	0.54	0.11	0.07
Factor 8: Freedom									
People in this organization make decisions on their own to a fairly large extent.	0.23	0.05	0.04	0.09	0.13	0.19	-0.03	0.79	-0.09
Most people in this organization prioritize their work to a rather large extent by themselves.	0.27	-0.03	-0.01	0.16	0.01	0.21	0.13	0.73	0.21

The Influence of Organizational Creative Climate on Product Innovation

Table 1 (Cont'd)

There is quite a lot of freedom in this organization.	0.12	0.37	0.03	0.00	0.07	0.04	0.22	0.72	-0.02
It is common for people in this organization to take their own initiative in solving problems.	0.31	0.05	-0.03	0.03	0.09	0.20	0.29	0.54	0.17
Factor 9: Creative People									
Many people in this organization are full of ideas.	0.01	0.13	0.05	0.07	0.16	0.05	-0.01	0.08	0.82
Eigenvalue	5.25	5.11	4.42	4.33	4.24	3.81	2.94	2.83	1.23
% Variance Expectation	11.42	11.10	9.60	9.40	9.22	8.28	6.39	6.16	2.68
Total Variance Explained		71.57							
KMO		0.90							
Bartlett's Test of Sphericity		6490.38**							

Note: N = 163. Bold font loadings indicate the inclusion of that item in the factor; *p < 0.05;** p < 0.01.

The KMO measures of sampling adequacy value for the items of organizational creative climate, was 0.90, which indicates that the items are interrelated and shared common factors. Bartlett's Test of Sphericity was found significant (Approximate Chi Square of 6490.38, $p < 0.01$), indicating the significance of the correlation matrix and thus appropriateness for factor analysis.

Results of the varimax rotated analysis indicate the existence of nine significant factors with eigenvalues greater than one explained 71.57 % of the variance. The results of a scree test also provide support for a nine factor solution. Factor 1 includes 5 items relating to risk taking and 3 items relating to idea time. This first factor (eigenvalue = 5.25) with factor loading ranging from 0.53 to 0.76 accounted for 11.42% of the variance in the data. Therefore, factor 1 was labelled as "Risk Taking and Idea Time". Factor 2 includes 4 items relating to Playfulness/Humour, Dynamism/Liveliness, and 4 items relating to Dynamism/Liveliness. This second factor (eigenvalue = 5.11) with factor loading ranging from 0.63 to 0.73 accounted for 11.10% of the variance in the data. Therefore, factor 2 was labelled 'Playfulness/Humour and Dynamism/Liveliness'. The third factor which was represented by five items was labelled as "Conflict". This factor with eigenvalue = 4.42, accounted for 9.60% of the total variance in the data. The factor loading for items ranging from 0.83 to 0.89. Items in Factor 3 include personal conflicts exist in the organization, people plotting against each other, people cannot tolerate one another, power and territory struggles, and tension because of conflicts. The fourth factor was represented by 5 items and named as "Trust/Openness". This factor

with eigenvalue = 4.33, accounted for 9.40% of the total variance in the data. The factor loading for items was ranging from 0.74 to 0.84. Factor 5 was represented by 5 items and named as “Debate”. This factor with eigenvalue = 4.24, accounted for 9.22% of the total variance in the data. The factor loading for items is ranging from 0.52 to 0.78. Factor 6 was represented by 5 items and named as “Challenge”. This factor with eigenvalue = 3.81, accounted for 8.28% of the total variance in the data. The factor loading for items ranging from 0.52 to 0.83. The seventh factor was represented by 5 items and named as “Idea Support”. This factor with eigenvalue = 2.94, accounted for 6.39% of the total variance in the data. The factor loading for items ranging from 0.54 to 0.69. Factor 8 was represented by four items and named as “Freedom”. This factor with eigenvalue = 2.83, accounted for 6.16% of the total variance in the data. The factor loading for items ranging from 0.54 to 0.79. Factor 9 was represented by only 1 item which was originally under the dimension of Dynamism/Liveliness (e.g. many people in this organization were full of ideas). This factor with eigenvalue = 1.23, accounted for 2.68% of the total variance in the data. The factor loading for this item reads 0.82. Therefore, Factor 9 was relabelled as “Creative People”.

Product innovation consisted of 13 items. Principal component’s analysis with orthogonal varimax rotation was used to identify the appropriate factors of the items. A three-factor solution was discovered. Table 2 shows the final results of factor analysis on product innovation.

Table 2 Results of factor analysis on product innovation items

Items	Factor loadings		
	F1	F2	F3
Factor 1: Product Innovation – Financial Aspects			
My organization’s new/improved product contributed to profitability relative to our major competitors.	0.81	0.28	0.13
My organization’s new/improved product contributed to profitability relative to our original objectives.	0.79	0.29	0.01
My organization’s new/improved product contributed to sales relative to our original objectives.	0.77	0.13	0.09
My organization’s new/improved product contributed to sales relative to our major competitors.	0.75	0.10	0.35
My organization’s new/improved product contributed to customer satisfaction relative to our major competitors.	0.54	0.10	0.44

The Influence of Organizational Creative Climate on Product Innovation

Table 2 (Cont'd)

Factor 2: Product Innovation – Quality Aspects			
My organization's new/improved product replaced inferior products.	0.21	0.72	-0.06
My organization's new/improved product provided higher quality than our competing products.	0.28	0.65	0.37
My organization's new/improved product solved problems for our customers.	0.07	0.62	0.16
My organization's new/improved product offered unique benefits for our customers.	0.06	0.62	0.33
My organization's new/improved product was highly innovative.	0.31	0.58	0.16
Factor 3: Product Innovation – Differentiation Aspects			
My organization's new/improved product was radically different from our competitor products.	0.12	0.15	0.76
My organization's new/improved product was superior to our competing products.	0.31	0.34	0.68
My organization's new/improved product offered solutions not possible with our existing products.	0.07	0.12	0.60
Eigenvalue	3.07	2.37	2.05
% Variance Expectation	23.60	18.23	15.76
Total Variance Explained	57.59		
KMO	0.84		
Bartlett's Test of Sphericity	781.77**		

Note: N = 163. Bold font loadings indicate the inclusion of that item in the factor; *p < 0.05; ** p < 0.01.

As indicated in Table 2, the KMO measures of sampling adequacy value for the items of product innovation was 0.84, indicating that the items were interrelated and shared common factors. Bartlett's Test of Sphericity was also found to be significant (Approximate Chi Square of 781.77, $p < 0.01$), indicating the significance of the correlation matrix and thus, appropriateness for factor analysis.

Results of the varimax rotated analysis indicate the existence of three significant factors with eigenvalues greater than one that explained 57.59 % of the variance. The results of a scree test also provided support for a three-factor solution. Factor 1 includes 5 items relating to financial aspect of product innovation. This first factor (eigenvalue = 3.07) with factor loadings ranging from 0.54 to 0.81 accounted for

23.60% of the variance in the data. Therefore, Factor 1 was labelled as “Financial Aspects of Product Innovation”. Factor 2 includes 5 items relating to quality aspect of product innovation. This second factor (eigenvalue = 2.37) with factor loading ranging from 0.58 to 0.72 accounted for 18.23% of the variance in the data. Therefore, Factor 2 was labelled as “Quality Aspects of Product Innovation”. Factor 3 includes 3 items relating to differentiation aspect of product innovation. This third factor (eigenvalue = 2.05) with factor loading ranging from 0.60 to 0.76 accounted for 15.76% of the variance in the data. Therefore, Factor 3 was named, “Differentiation Aspects of Product Innovation”.

Restatement of Hypotheses

Results of the factor analyses required a restatement of the initial hypotheses. Our revised hypotheses are as follows:

H₁ : The Organizational Creative Climate (i.e.: Risk Taking & Idea Time, Playfulness/Humour & Dynamism/Liveliness, Absence of Conflicts, Trust/Openness, Debates, Challenge, Idea Support, Freedom) will be positively related to Product Innovation (i.e.: Financial Aspect, Quality Aspect, and Differentiation Aspect).

H_{1.1} : The Organizational Creative Climate (i.e.: Risk Taking & Idea Time, Playfulness/Humour & Dynamism/Liveliness, Absence of Conflicts, Trust/Openness, Debates, Challenge, Idea Support, Freedom) will be positively related to the Financial Aspect of Product Innovation.

H_{1.1a}: Risk Taking and Idea Time will be positively related to the Financial Aspect of Product Innovation.

H_{1.1b}: Playfulness/Humour and Dynamism/Liveliness will be positively related to the Financial Aspect of Product Innovation.

H_{1.1c}: Absence of Conflicts will be positively related to the Financial Aspect of Product Innovation.

H_{1.1d}: Trust/Openness will be positively related to the Financial Aspect of Product Innovation.

The Influence of Organizational Creative Climate on Product Innovation

- H_{1.1e}: Debates will be positively related to the Financial Aspect of Product Innovation.*
- H_{1.1f}: Challenge will be positively related to the Financial Aspect of Product Innovation.*
- H_{1.1g}: Idea Support will be positively related to the Financial Aspect of Product Innovation.*
- H_{1.1h}: Freedom will be positively related to the Financial Aspect of Product Innovation.*
- H_{1.2}: The Organizational Creative Climate (i.e.: Risk Taking & Idea Time, Playfulness/Humour & Dynamism/Liveliness, Absence of Conflicts, Trust/Openness, Debates, Challenge, Idea Support, Freedom) will be positively related to the Quality Aspect of Product Innovation.*
- H_{1.2a}: Risk Taking and Idea Time will be positively related to the Quality Aspect of Product Innovation.*
- H_{1.2b}: Playfulness/Humour and Dynamism/Liveliness will be positively related to the Quality Aspect of Product Innovation.*
- H_{1.2c}: Absence of Conflicts will be positively related to the Quality Aspect of Product Innovation.*
- H_{1.2d}: Trust/Openness will be positively related to the Quality Aspect of Product Innovation.*
- H_{1.2e}: Debates will be positively related to the Quality Aspect of Product Innovation.*
- H_{1.2f}: Challenge will be positively related to the Quality Aspect of Product Innovation.*
- H_{1.2g}: Idea Support will be positively related to the Quality Aspect of Product Innovation.*
- H_{1.2h}: Freedom will be positively related to the Quality Aspect of Product Innovation.*

- H_{1.3} : The Organizational Creative Climate (i.e.: Risk Taking & Idea Time, Playfulness/Humour & Dynamism/Liveliness, Absence of Conflicts, Trust/Openness, Debates, Challenge, Idea Support, Freedom) will be positively related to the Differentiation Aspect of Product Innovation.*
- H_{1.3a}: Risk Taking and Idea Time will be positively related to the Differentiation Aspect of Product Innovation.*
- H_{1.3b}: Playfulness/Humour and Dynamism/Liveliness will be positively related to the Differentiation Aspect of Product Innovation.*
- H_{1.3c}: Absence of Conflicts will be positively related to the Differentiation Aspect of Product Innovation.*
- H_{1.3d}: Trust/Openness will be positively related to the Differentiation Aspect of Product Innovation.*
- H_{1.3e}: Debates will be positively related to the Differentiation Aspect of Product Innovation.*
- H_{1.3f}: Challenge will be positively related to the Differentiation Aspect of Product Innovation.*
- H_{1.3g}: Idea Support will be positively related to the Differentiation Aspect of Product Innovation.*
- H_{1.3h}: Freedom will be positively related to the Differentiation Aspect of Product Innovation.*

Mean, Standard Deviations, and Correlations of the Study Variables

Descriptive statistics such as mean scores, standard deviations, reliabilities, and intercorrelations of the study variables are shown in Table 3.

Table 3 Descriptive statistics, correlations, and reliabilities of the study variables

Variables	Mean	S.D.	PDI_F	PDI_Q	PDI_D	PT_IT	CF	TO	DB	CM	IS	FD	PH_DL
PDI_F	5.88	0.81	(0.85)										
PDI_Q	5.90	1.29	.531**	(0.73)									
PDI_D	5.60	1.16	.467**	.498**	(0.64)								
PT_IT	4.87	0.90	.293**	.303**	.277**	(0.91)							
CF	3.78	0.61	-.109	-.052	-.003	-.124	(0.93)						
TO	4.81	0.89	.108	.213**	.207**	.504**	-.280**	(0.93)					
DB	4.98	0.77	.332**	.311**	.281**	.659**	-.066	.530**	(0.90)				
CM	5.45	0.90	.316**	.451**	.334**	.500**	-.203**	.520**	.421**	(0.87)			
IS	5.32	0.58	.212**	.316**	.290**	.689**	-.288**	.579**	.675**	.602**	(0.93)		
FD	5.16	0.71	.241**	.305**	.429**	.551**	-.035	.321**	.371**	.467**	.516**	(0.81)	
PH_DL	5.01	0.59	.223**	.317**	.333**	.624**	-.271**	.638**	.653**	.532**	.667**	.393**	(0.93)

Note: Values in parentheses indicate Cronbach's alpha; CM denotes Challenge, FD denotes Freedom, IS denotes Idea Support, TO denotes Trust/Openness, PH_DL denotes Playfulness/Humor and Dynamism/Liveliness, DB denotes Debate, CF denotes Conflicts, RT_IT denotes Risk Taking and Idea Time, PDI_F denotes Finance aspect of Product Innovation, PDI_Q denotes Quality aspect of Product Innovation, and PDI_D denotes Differentiation of Product Innovation.

** p < 0.01, * p < 0.05.

With reference to Table 3, the participating companies judged their level of quality aspect of product innovation ($M = 5.90$, $S.D. = 1.29$) to be relatively high, followed by financial aspect of product innovation ($M = 5.88$, $S.D. = 0.81$), and differentiation aspect of product innovation ($M = 5.60$, $S.D. = 1.16$). The level of challenge ($M = 5.45$, $S.D. = 0.90$) was found to be higher than idea support ($M = 5.32$, $S.D. = 0.58$), followed by freedom ($M = 5.16$, $S.D. = 0.71$), playfulness/humor_dynamism/liveliness ($M = 5.01$, $S.D. = 0.59$), debate ($M = 4.98$, $S.D. = 0.77$), risk taking_idea time ($M = 4.87$, $S.D. = 0.90$), trust/openness ($M = 4.81$, $S.D. = 0.89$) and conflicts ($M = 3.78$, $S.D. = 0.61$). Forty-three out of 50 inter-correlations were statistically significant. All correlations among product innovation were statistically significant, with r ranging from 0.467 ($p < 0.01$) to 0.531 ($p < 0.01$). Most of the correlations among organizational creative climate dimensions were significant, ranging from -0.203 ($p < 0.01$) to 0.675 ($p < 0.01$). Likewise, the correlations between conflicts and product innovation, as well as freedom and product innovation were found to be insignificant. The reliabilities of the study ranged from 0.64 to 0.93. According to Sekaran (2003), a coefficient that exceeded 0.60 is acceptable.

Hypotheses Testing

In this study, product innovation (finance aspect, quality aspect, and differentiation aspect) was regressed against the eight dimensions of organizational creative climate (Risk Taking & Idea Time, Playfulness/Humour & Dynamism/Liveliness, Absence of Conflicts, Trust/Openness, Debates, Challenge, Idea Support, Freedom) in a two-step manner. In the first step, the two control variables were entered into the equation. In the second step, the eight dimensions of organizational creative climate were entered. The results of the regression analysis are depicted in Table 4, Table 5 and Table 6.

The Influence of Organizational Creative Climate on Product Innovation

Table 4 Results of regression analysis: Impact of OCC on finance aspect of product innovation

Predictors	Model 1	Model 2
	Std β	Std β
Step 1: Control Variables		
Size of company	0.11	0.05
Years of company in operations	-0.02	0.01
Step 2: Organizational Creative Climate		
Risk Taking and Idea Time		0.13
Conflicts		-0.15
Trust		-0.19
Debates		0.39**
Challenge		0.30*
Idea Support		0.27*
Freedom		0.10
Playfulness/Humour and Dynamism/Liveliness		-0.05
R ²	0.01	0.22
Adjusted R ²	0	0.17
Δ R ²	0.01	0.21
F Value	0.94	4.27**
Δ F Value	0.94	5.05**

Note: * $P < 0.05$, ** $P < 0.01$

Control variables (size of company and years of company in operation) explained 1.0% of the variation in finance aspect of product innovation. On adding the eight model variables, the R² increased to 0.22 indicating that the eight dimensions of organizational creative climate contributed an additional 21.0% to the variance in finance aspect of product innovation. The F-change (5.05) was also significant ($p < 0.01$). Of the eight dimensions of organizational creative climate, only debate ($\beta = 0.39$, $p < 0.01$), challenge ($\beta = 0.30$, $p < 0.05$), and idea support ($\beta = 0.27$, $p < 0.05$) were found to be positively and significantly related to the financial aspect of product innovation. The rest had no relationship with finance aspect of product innovation. The results provided support for our three sub-hypotheses (H_{1.1e}, H_{1.1f}, and H_{1.1g}). Thus, hypothesis H_{1.1} was partially supported.

Table 5 Regression results of the relationship between organizational creative climate and quality aspects of product innovation

Predictors	Model 1	Model 2
	Std β	Std β
Step 1: Control Variables		
Size of company	0.13	0.08
Years of company in operations	0.06	0.12
Step 2: Organizational Creative Climate		
Risk Taking and Idea Time		0.02
Conflicts		0.01
Trust		-0.08
Debates		0.13
Challenge		0.39**
Idea Support		-0.05
Freedom		0.08
Playfulness/Humour and Dynamism/Liveliness		0.08
R ²	0.02	0.26
Adjusted R ²	0.01	0.21
Δ R ²	0.02	0.24
F Value	1.87	5.38**
Δ F Value	1.87	6.13**

Note: * $P < 0.05$, ** $P < 0.01$

Control variables (size of company and years of company in operation) explained 2.0% of the variation in quality aspect of product innovation. On adding the eight model variables, the R² increased to 0.26 indicating that the eight dimensions of organizational creative climate contributed an additional 24.0% to the variance in quality aspect of product innovation. The F-change (6.13) was also significant ($p < 0.01$). Challenge ($\beta = 0.39$, $p < 0.01$) was the only organizational creative climate dimension that was found to be significantly and positively related to the quality aspect of product innovation. The other organizational creative climate dimensions were not significant in predicting the quality aspects of product innovation. Since our results provide support to only one sub-hypothesis (H1.2g), we concluded that hypothesis H1.2 was weakly supported.

The Influence of Organizational Creative Climate on Product Innovation

Table 6 Regression results of the relationship between organizational creative climate and differentiation aspects of product innovation

Predictors	Model 1	Model 2
	Std β	Std β
Step1: Control Variables		
Size of company	0.10	0.05
Years of company in operations	0.01	0.05
Step 2: Organizational Creative Climate		
Risk Taking and Idea Time		-0.09
Conflicts		0.05
Trust		-0.04
Debates		0.09
Challenge		0.15
Idea Support		-0.06
Freedom		0.34**
Playfulness/Humour and Dynamism/Liveliness		0.21
R ²	0.01	0.25
Adjusted R ²	0	0.20
Δ R ²	0.01	0.24
F Value	0.86	4.94**
Δ F Value	0.86	5.90**

Note: * P < 0.05, ** P < 0.01

Control variables (size of company and years of company in operation) explained 1.0% of the variation in differentiation aspect of product innovation. On adding the eight model variables, the R² increased to 0.25 indicating that the eight dimensions of organizational creative climate contributed an additional 24.0% to the variance in differentiation aspect of product innovation. The F-change (5.90) was also significant (p < 0.01). However, only one dimension relating to freedom ($\beta = 0.34$, p < 0.01) was found to be significantly and positively related to the differentiation aspect of product innovation. The other remaining climate dimensions were not significant in predicting the differentiation aspect of product innovation. Our results provided support to only one sub-hypothesis (H_{1.3h}) suggesting that hypothesis H_{1.3} was weakly supported.

DISCUSSION, IMPLICATIONS AND LIMITATIONS

The objective of the current study is to examine the effect of organizational creative climate (comprising of eight dimensions after factor analysis: Risk Taking & Idea Time, Playfulness/Humour & Dynamism/Liveliness, Absence of Conflicts, Trust/Openness, Debates, Challenge, Idea Support, Freedom) on product innovation (financial aspect, quality aspect, and differentiation aspect) among firms within the Malaysian manufacturing industry. The statistical results revealed that of the twenty four sub-hypotheses, only five sub-hypothesis ($H_{1.1e}$, $H_{1.1f}$, $H_{1.1g}$, $H_{1.2g}$, and $H_{1.3h}$) were supported. Our findings provided partial support for the main hypothesis. The finding is consistent with past studies (Ekvall, 1996; Lauer, 1994).

Our results indicate that organizations which have an organizational climate characterized by debates whereby employees are encouraged to actively put forward different ideas, viewpoints, experiences for considerations, as well as are supportive of new ideas put forth by employees, are bound to result in greater returns for the organization in terms of profitability, market share, and customer satisfaction (financial aspects of product innovation). Likewise, a workplace that has an exciting atmosphere where people are energized to work will foster employees' motivational level and creativity in performing their jobs, which ultimately results in greater financial gains returns for the organizations. Besides, organizations that are supportive of new ideas put forth by employees are bound to enhance their employees' satisfaction level. Satisfied workers tend to become more committed and innovative, which lead to higher financial returns for organizations. Similarly, our results indicate that in organizations that are receptive of new ideas and suggestions, employees tend to become creative. In such situations, they are likely to provide greater inputs to their superiors on product improvements, all of which will lead to higher quality products. Our results also suggest that organizations characterized by high freedom whereby employees actively make contacts, continuously give and receive information, discuss problem-solving and alternatives in their daily tasks and decision-making activities, will spur creativity among employees. Creative employees are bound to give greater attention to the differentiation aspects of product innovation by generating new and unique products. Generally, our findings are consistent with findings of previous studies (Lauer, 1994; Ekvall, 1996; Patterson, West, Shackleton, Dawson, Lawthom, Maitlis, Robinson, & Wallace, 2005; Ismail, 2005; Abdullah *et al.*, 2006).

On the other hand, most of the creative climate dimensions had no relationships with product innovation. One possible reason for this non-relationship may be

due to the fact that like any business entity, one of the fundamental priorities of manufacturing firms in Malaysia resides in its cost reduction ability especially with regards to timely delivery of products to customers (Santhapparaj *et al.*, 2006). As such, low priority is devoted in cultivating a creative work environment.

The findings offer both theoretical and practical implications. In terms of theory, our results demonstrate the applicability of the resource-based view in a Malaysian setting. The resource-based view recognizes that organizational resources are key elements in the creation and application of knowledge (Barney, 1991; Mumford, 2000). In particular, a creative climate creates a context that facilitates employees to obtain and share valuable and unique knowledge, which in turn, leads to superior product innovation performance. Variations in product innovation are due to the organization's capabilities in developing and deploying resource. From the practical perspective, our results suggest that organizations should encourage a high degree of challenge, provide greater freedom, be more attentive and receptive to employees' ideas and suggestions, and foster open communication to allow employees to express their views and debate issues openly. By doing so, an environment that fosters creativity will be established that will encourage employees to feel motivated and committed to make contributions in developing new products or improving existing ones.

One major limitation of this study is the use of a single informant from each of the participating companies. Each participating manager from the respective firms held various job designations such as: R&D manager / Product manager / Program manager / Operations manager / General manager / Managing Director. Since the informants had to be familiar with the organization's practices in the areas of organizational creative climate and product innovation, it is unlikely that they would be able to provide accurate account of these constructs. Thus, we recommend the use of multiple informants to provide information on specific areas. For instance, creative climate questionnaire be answered by the HR manager whereas information on product innovation be answered by the R&D manager.

CONCLUSION

In conclusion, organizational creative climate has been found to contribute significantly in the prediction of product innovation among manufacturing firms in Malaysia. Our findings concur with Isaksen, *et al.* (1998) who argued that organizational creative climate is crucial in encouraging new ideas that are pivotal in the development of new products or in the improvements of existing ones.

REFERENCES

- Abdullah, H. S., Chik, R. and Deen, R. (2006). Influence of culture orientation on perceived organizational creativity climate: An exploratory study of two steel plants in Malaysia. *Asian Academy of Management Journal*, 11(2), pp. 51-72.
- Amabile, T. M. (1988). A model of creativity and innovation in organizations. In *Research in Organizational Behaviour* (Vol. 10 pp. 169-211). Edited by Barry M. Staw and L. L. Cummings. Greenwich, Conn. J.A.I. Press.
- Amabile, T. M. (1991). Perspectives on research classics: Motivations to study motivation. *Contemporary Social Psychology*, 15 (1991), pp. 57-59.
- Amabile, T. M. (1996). *Creativity and Innovation in Organizations*. Harvard Business School.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), pp. 99-120.
- Chen, C. J., and Huang, J. W. (2009). Strategic human resource practices and innovation performance: The mediating role of knowledge management capacity. *Journal of Business Research*, 62(1), pp. 104-114.
- Chuang, L. M. (2005). An empirical study of the construction of measuring model for organisational innovation in Taiwanese high-tech enterprises. *The Journal of American Academy of Business*, 9(2), pp. 299-304.
- Cokpekin, Özge and Knudsen, Mette Præst (2011). Effects of the firm's creative climate and creativity for product and process innovation, *Paper to be presented at the DIME-DRUID ACADEMY Winter Conference 2011*, Comwell Rebild Bakker, Aalborg, Denmark, January 20 - 22, 2011.
- Cottam, A., Ensor, J., and Band, C. (2001), A benchmark study of strategic commitment to innovation, *European Journal of Innovation Management*, 4(2), pp. 88 - 94.
- Cummings, A. and Oldham, G. R. (1997). Enhancing creativity: Managing work contexts for the high potential employee. *California Management Review*, 40(1), pp. 22-38.
- Damanpour, F. (1991). Organizational innovation: A meta-analysis of effects of determinations and moderators. *Academy of Management Journal*, 34(3), pp. 555-590.
- Damanpour, F. (1992). Organizational Size and Innovation. *Organization Studies*, 13(3), pp. 375-402.
- Damanpour, F., Szabat, K.A. and Evan, W.M. (1989). The Relationship between Types of Innovation and Organizational Performance, *Journal of Management Studies*, 26(6), pp. 587-601.
- Ekvall, G. (1988). Förnyelse och friktion. Om organisation, kreativitet och innovation, Natur och kultur, Borås (first ed., second printing, 1991). In Swedish.
- Ekvall, G. (1991). The Organizational Culture of Idea-Management: A Creative Climate for the Management of Ideas, in Henry, J. and Walker, D. (Editors), *Managing Innovation*, Sage, London, pp. 73-79.

The Influence of Organizational Creative Climate on Product Innovation

- Ekvall, G. (1996). Organizational Climate for Creativity and Innovation, *European Journal of Work and Organizational Psychology*, 5(1), pp. 105-123.
- Ekvall, G., Arvonen, J., and Waldenstrom-Lindblad, I. (1983). *Creative Organizational Climate: Construction and Validation of A Measuring Instrument*. Stockholm: Swedish Council for Management and Work Life Issues.
- Federation of Malaysian Manufacturers Directory (2010). *Malaysian Industries (41st ed.)*. Malaysia: Federation of Malaysian Manufacturers.
- Ferris, G. R., Arthur, M. M., Berkson, H. M., Kaplan, D. M., Harrell-Cook, G., and Frink, D. D. (1998). Toward a social context theory of the human resource management organization effectiveness relationship. *Human Resource Management Review*, 8(3), pp. 235–264.
- Glick, W. H. (1985). Conceptualizing and measuring organizational and psychological climate: Pitfall in multilevel research. *Academy of Management Review*, 10(3), pp. 601–616.
- Gopalakrishnan, S., and Damanpour, F. (1997). A review economics of innovation research in sociology and technology management. *Omega*, 25(1), pp. 15-28.
- Hair, J. F., Anderson, R. E., Tatham, R. L., and Black, W. C. (1998). *Multivariate Data Analysis*, fifth ed. Englewood Cliffs, New Jersey: Prentice Hall.
- Invest Penang Directory (2010). Retrieved November 30, 2011 at http://www.investpenang.gov.my/portal/directory/results.php?criteria=sme_comp_name&search=&AC_loc=&loc=
- Isaksen, S. G., Lauer, K. J. and Ekvall, G. (1998). *Perception of the Best and Worst Climates for Creativity: Preliminary Validation Evidence for the Situational Outlook Questionnaire*. Monograph #305. Buffalo: Creative Problem Solving Group.
- Ismail. (2005). Creative climate and learning organization factors: their contribution towards innovation. *Leadership & Organization Development Journal*, 26(8), pp. 639-654.
- Jimenez-Jimenez, D. and Sanz-Valle, R. (2005). Innovation and human resource management fit: An empirical study. *International Journal of Manpower*, 26(4), pp. 364-381.
- Johannessen, J. A., Olsen, B., and Lumpkin, G. T. (2001). Innovation as newness: what is new, how new and new to whom? *European Journal of Innovation Management*, 4(1), pp. 20-31.
- Kimberly, J. R. and Evanisko, M. J. (1981). Organizational innovation: The influence of individual, organizational, and contextual factors on hospital adoption of technological and administrative innovation. *Academy of Management Journal*, 24(4), pp. 689-713.
- Knight, K. E. (1967). A description model of the intra-firm innovation process, *The Journal of Business*, 40(4), pp. 478-496.
- Langerak, F., Hultink, E. J., and Robben, H. S. J. (2004). The impact of market orientation, product advantage, and launch proficiency on new product performance and organizational performance. *Journal of Product Innovation and Management*, 21(2), pp. 79-94.
- Lauer, K. J. (1994). The assessment of creative climate: An investigation of Ekvall's creative climate questionnaire. Unpublished master's thesis. NY: State University College, Buffalo.

- Martin, J. (2002). *Organizational Culture: Mapping the Terrain*. Thousand Oaks, CA: Sage Publications.
- Mavondo, F., Chimhanzi, J., and Stewart, J. (2005). Learning orientation and market orientation: relationship with innovation, human resource practices and performance. *Journal of European Marketing*, 39(11/12), pp. 1235-1263.
- Ministry of Science, Technology and Innovation, Malaysia (MOSTI) (2006). *National Survey of Innovation 2002-2004*. Putrajaya: Malaysian Science and Technology Information Centre.
- Ministry of Science, Technology and Innovation, Malaysia (MOSTI) (2012). *National Survey of Research and Development 2008*. Putrajaya: Malaysian Science and Technology Information Centre.
- Mumford, M. D. (2000). Managing creative people: Strategies and tactics for innovation. *Human Resource Management Review*, 10(3), pp. 313- 351.
- National Innovation Council (2007). National Innovation Model: Market and Technology Driven Innovation for Wealth Creation and Societal Wellbeing. Retrieved November 30, 2011, from <http://www.iranscap.com/wp-content/uploads/2011/09/innovation-model-jtpin.pdf>.
- O'Sullivan, D. and Dooley, L. (2009). *Applying Innovation*. Thousand Oaks, CA: Sage.
- Pawanchik, A. and Sulaiman, S. (2010). The Malaysian Innovation Climate Report.
- Patterson, M. G., West, M. A., Shackleton, V. J., Dawson, J. F., Lawthom, R., Maitlis, S., Robinson, D. L., and Wallace, A. M. (2005). Validating the organizational climate measure: links to managerial practices, productivity and innovation. *Journal of Organizational Behaviour*, 26(4), pp. 379–408.
- Porter, M. E. (1998). *The Competitive Advantage of Nations*. New York: The Free Press.
- Radas, S. and Bozic, L. (2009). The antecedents of SME innovativeness in an emerging transition economy. *Technovation*, 29 (9), pp. 438-450.
- Santhapparaj, A. S., Sreenivasan, J., Loong, J. C. K., (2006). Competitive factors of semiconductor industry in Malaysia: The managers' perspectives. *Competitiveness Review*, 16(3/4), pp. 197-211.
- Schneider, B., Ed. (1990). *Organizational Climate and Culture*. San Francisco: Jossey-Bass.
- Schneider, B. and A. Reichers (1983). On the etiology of climate. *Personnel Psychol*, 36(1), pp. 19-39.
- Sekaran, U. (2003). *Research Methods for Business: A skill building approach (4th edition)*: New York: John Wiley & Sons.
- Shipton, H., Fay, D., West, M. A., Patterson and Birdi. (2005). Managing people to promote innovation. *Creativity & Innovation Management*, 14(2), pp. 118-128.
- Snell, S. A., and Dean, J. W., Jr. (1992). Integrated manufacturing and human resources management: A human capital perspective. *Academy of Management Journal*, 35(2), pp. 467–504.

The Influence of Organizational Creative Climate on Product Innovation

- Toner, P. (2011). *Workforce Skills and Innovation: An Overview of Major Themes in the Literature*. OECD Science, Technology and Industry Working Papers, 2011/01, OECD Publishing.
- Tung, J. (2012). A study of product innovation on firm performance. *The International Journal of Organizational Innovation*, 4(3), pp. 84-97.
- Utterback, J. M. (1994). *Mastering the Dynamics of Innovation: How Companies can Seize Opportunities in the Face of Technological Change*. Harvard Business School Press, Boston, Massachusetts.
- Yusuf, S. and Nabeshima, K. (2009). Tiger Economies Under Threat: A Comparative Analysis of Malaysia's Industrial Prospects and Policy Options. Retrieved November 30, 2011 at <http://hdl.handle.net/10986/2680>
- Zhang, J. (2006). Knowledge management and product innovation performance: An exploratory study on MNC subsidiaries in China. *Published Doctor of Philosophy Dissertation*. Temple University, China.