

# The Effects of Internal Marketing and Organizational Culture on Knowledge Management in the Information Technology Industry

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*Although the successful experiences of the Scientific Industry Park has helped develop Taiwan's industries, technology, and economy, the high-tech industries were always working on behalf of other nation's industries, which in actuality, were not competitive. Therefore, in order to increase the competitive capacity of domestic high-tech industries, and to add to the short life spans of high-tech industries themselves, innovation must be emphasized, and the high-tech industries must give serious consideration to the issues of internal marketing and knowledge management. Through the methods of comprehensive interviews and questionnaire surveys, the current study established the key factors and structural aspects (i.e. market research, market segmentations, communications, perspectives, development, and rewards) of internal marketing, and found that internal marketing and organizational culture has a significant effect on the knowledge management. This was then used to supply a draft to scholars doing research and high-tech companies for internal marketing and knowledge management strategies.*

## Introduction

In 1996 the output from high-tech industries not only increased to 37.5% of the entire manufacturing industry's output, its exports also occupied 45% of Taiwan's total value. Most outstanding among them were electronics and information and communication products (occupied approximately 25% of Taiwan's exports). Taiwan has become the world's 3rd largest nation in information and 4th largest nation in semiconductor manufacturing (only lower than the United States, Japan, and Korea). From this it can be seen that high-tech industries are the major industries, which drive Taiwan's economic lifeline.

Internal marketing (IM) is emerging as a central theme of increasing importance in both academic and practitioner discourse. Foreman & Money (1995) suggested that the need for management to view the organization as a market, where there exists an internal supply chain consisting of internal suppliers and customers. This would suggest that by satisfying the needs of internal customers, an organization should be in a better position to deliver the service quality desired to satisfy external customers (Barnes & Morris, 2000). Internal marketing views employees as customers in the interior of companies, and jobs are viewed as internal products. Serious attention is given to the needs of employees and an attempt to go through employees' satisfaction was established in order to increase customer satisfaction and maintain relationships with clients.

Thurrow (2000) stated that the era of the 3rd wave of the industrial revolution had arrived, and its scope included microelectronics, computers, information, specially manufactured materials, robots, and biotechnology. In this era the main force of competitions between companies and people has shifted from land, finance, and equipment etc. to the innovation, master, management, and application of knowledge. The era of the knowledge economy has arrived, and this has encouraged the business world and academic circles to give serious attention to the issue of knowledge management. Knowledge management is a kind of operational strategy, and it assists companies in obtaining technology and competitive knowledge and information that is related to the market. It also assists companies in innovating, circulating, transforming, applying, storing, and maintaining or increasing the long-term competitive abilities of companies.

Although the successful experience of the science and technology park brought about the development of Taiwan's companies, technology, and economy, the high-tech industries were always working for companies from other nations, which in actuality, was not competitive. Consequently, in order to increase the competitive capacity of Taiwan's high-tech industries, increase the short lifespan of its high-tech industries, and emphasize innovative characteristics, high-tech companies must pay serious attention to the issue of knowledge management. Internationally, there are many nations, which currently see information technology and biochemical technology as cutting edge technological structures for leading human progress and development. Therefore, this study used the information technology industry in Hsinchu Science-based Industrial Park as its research subject, and it investigated the relationship between internal marketing and knowledge management.

The first major purpose of the study is to establish the significant factors and structural aspects of internal marketing; second is to investigate the emerging condition of internal marketing and knowledge management in high-tech industries; third is to discuss the relationship between internal marketing and knowledge management as well as latent factors (such as organizational culture). Results of this study will help the development of effective Internal marketing and knowledge management strategies.

The article is organized as follows. In the next section we provide the theoretical background and development for hypotheses. Next, we discuss the sample, data, and statistical procedures. The article concludes with a discussion of the results of our hypotheses testing, implications of this study for practitioners and scholars, limitations of the study, and avenues for future research.

## Literature Review

### Internal Marketing

Gronroos (1981) was the first scholar to define the concept of internal marketing. He believed that internal marketing was a way of taking employees and looking upon them as internal clients. It took jobs and viewed them as management concepts and activities of internal products. The objective is enable employees to produce higher feelings of satisfaction, and then develop into leading companies in attracting clients and markets.

Dennis (1995) took the position that internal marketing was a kind of strategic management philosophy, which attracts, develops, motivates, and maintains outstanding employees by providing the needed satisfied employees and work quality. Therefore, internal marketing mutually integrates marketing concepts and human resource management functions. With the needs of employees as its foundation, it properly makes use of management concepts as well as effective skills for obtaining, developing, encouraging, and maintaining employees with client awareness and autonomous initiative. Through the creation of employee satisfaction, a relationship between long-term clients and satisfaction can be reached.

According to the definition of internal marketing and from the perspective of promoting service culture, Gronroos (1990) addressed seven kinds of models for internal marketing activities, including: training, management support and mutual internal communication, support for great quantities of internal communications and information, personnel administration tools and human resources management, large quantities of external communication, market research, market dividers. In the service marketing management model addressed by Tansuhaj et al. (1988), internal marketing was divided into five structural aspects: recruitment, training, incentives, communication, and keeping employees. Collins & Payne (1991) took this position further and integrated compositional factors of marketing (including quality and service, approach, and advertising and cost) with human resource management functions. Human resource management should be used for products and services to make personnel services, curriculums, and programs.

Although in accordance with marketing channels development, the structural aspects of internal marketing are less complete, the development of questions for the applications and measurements of services produce overlapping easily. The questions can be vague and difficult to differentiate. Furthermore, in accordance with the definitions and connotations of internal marketing, other scholars have continually brought up other structural aspects of internal marketing. For example, George & Gronroos (1989) addressed management support, training, internal communications, personnel management, and external activities etc.; however, it was not as comprehensive as Gronroos (1990). This study consulted the seven structural aspects of internal marketing from Gronroos (1990) and the measurement instrument of three types of internal marketing activities, including development, perspective, and reward, addressed by Foreman & Money (1995). This study also addressed its own six structural aspects of internal marketing, which included market research, market segmentation, communications, perspective, development, and reward. In recent years, internal marketing research primary concerned medical treatment, finance, and travel services. This indicates that there is a lack of internal marketing research in high-tech industries.

### **Organizational Culture**

The opinions of scholars on the definition and categories of organizational culture are highly divided. Schein (1985) suggests that organizational culture is a commonly

embraced system of meaning in an organization. It is a social learning process for organizations to externally handle integrating internally, and it is also a method, which is produced when a group is trying to overcome the problems handling the external world or its interior. Therefore, organizational culture is the performance of an organization employees common assumptions, values, beliefs, attitudes, and behavior. It establishes the boundaries of the scope of each role in the organization, and it causes variations between organizations and their distinctive characteristics.

According to the definition of organizational culture, a number of scholars have addressed different types of organizational cultures. According to the environment feature and management style, Wallach (1983) divided organizational culture into bureaucratic culture, creative culture, and supportive culture. Utilizing bureaucratic culture as an example, is a type of organization with clearly divided definitions of structures and roles, and a culture, which emphasizes control and authority. Utilizing two structural aspects, introverted/extroverted and flexible/controlling, Cameron (1985) divided organizational culture into four categories: introverted control bureaucratic culture, introverted flexible supportive culture, extroverted flexible innovative culture, and extroverted controlled efficient culture, and considered them conscientiously and carefully. As a result, subsequent scholars have used them extensively. Thus, this study also addressed its own four structural aspects of organizational culture, which included bureaucratic, supportive, innovative, and efficient culture.

Internal marketing mutually integrates marketing concepts and human resources management functions. With the needs of employees as its foundation, it properly makes use of management concepts as well as effective skills for obtaining, developing, encouraging, and maintaining employees with client awareness and autonomous initiative. Gronroos(1990) suggests that internal marketing can change employees' attitude and behaviors, and establish the corporate culture with customer service and satisfaction. Thus, consistent with earlier research, it is expected that H1: Internal Marketing has a significant influence on organizational culture.

### **Knowledge Management**

Sarvary (1999) was of the opinion that knowledge management is a kind of business channel, and it is a kind of process whereby companies innovate, utilize, disseminate, and accumulate organizational knowledge. This process includes the organizational learning phase, when companies obtain knowledge and information, the production of knowledge phase, when companies take information for the handling of future operations and transform it into knowledge to solve the companies' operational problems. Finally, there is the knowledge proliferation phase, which allows company employees to obtain and apply organizational knowledge. The primary objective of knowledge management is taking information and transforming it into value as well as knowledge and wisdom, which can solve problems. Moreover, through the process of dissemination and storage, repeatedly obtaining and creating the necessary time and resources can be economized.

Many scholars have investigated the key factors of knowledge management and their

relationships with other research variables using the procedures of knowledge management as their foundation. Spek & Spijkervet (1996) addressed the basic activities of knowledge management. The first process, organizational innovation, is included activities of organizational innovation, revision, extraction, and annotation. The second process, preserving and integrating knowledge, is included knowledge evaluations, retrieval, storage, and transformation. The final process, knowledge retrieval, is included retrieval, interconnection, and display. Zack (1999) addressed the similarity of classification methods of knowledge management procedures with other previous scholars. This included obtaining, improving, storing and retrieving, and displaying knowledge etc. Therefore, many subsequent scholars took knowledge management channels as their foundation and adopted the method of classifying obtaining, innovating, proliferation, and storage of knowledge. They then proceeded to research the relationships between the processes and other variables of knowledge management and then develop related management models.

A number of scholars believe that when developing knowledge management systems, because of different organizational cultures, there will be variations in planning the processes of obtaining, innovating, storing, and proliferation of knowledge. Rogers (1983) took the position that organizations hope to increase their competitive abilities and operational performance, and they must establish an open culture with incentives for innovation and courage to shoulder reasonable risks. Only by doing this can they encourage high-quality employees to carry out valuable information and knowledge communications and exchanges. Davenport & Prusak (1998) addressed that there are factors in organizational cultures, which will suppress the effective development of knowledge management. These few factors will make it impossible to smoothly conduct knowledge management procedures. Consequently, companies must establish a culture, which is beneficial for the implementation of organizational knowledge management. This viewpoint also signifies that different organizational cultures will produce different influences on knowledge management.

Sarvary (1999) took consulting companies as research samples and investigated the relationships between organizational cultures and knowledge management. It was discovered that organizations consider variations in culture when implementing knowledge management. This signifies that culture will influence the procedures and performance of knowledge management. Cultures, which place importance on employee communication and interactions, are suitable for creating bottom to top distributed knowledge management systems. On the other hand, cultures, which emphasize authority and utilize information systems as the primary communication channel are suitable for establishing top to bottom centralized knowledge management systems. Thus, consistent with earlier research, it is expected that H2: Organizational culture has a significant influence on knowledge management.

### Methodology

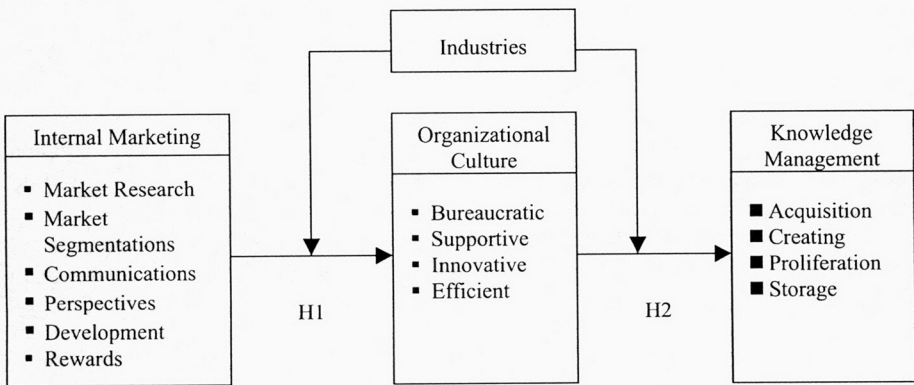
Internal marketing promotes the establishment of outstanding relations between management and employees, and its goal is to increase employee satisfaction as well as

innovative customers' satisfaction. For high-tech companies, which have short lifespan and stress the importance of innovation and research and development, it can give employees incentives to produce services for customers. For internal marketing with a consciousness of organizational commitment and identity, it can also encourage employees to make effective innovations, dissemination, and applications of knowledge and also to take their internally stable knowledge and transform it into effective wisdom about knowledge management, which is favorable to organizations. It increasingly has received the attention and been looked upon as important by scholars and professionals. In accordance with the arrangement and investigations of related literature, this study established a conceptual framework to interpret the relationships between the key factors of internal marketing and factors that were hypothesized to be influential, organizational culture, and knowledge management. (Figure 1)

The information technology industries in Hsinchu Science-based Industrial Park are collectively divided into integrated circuits, opto-electronics, computer peripheries, and information etc. According to the data indications on the roster of the scientific industry's website, up until the beginning of 2003 there were 283 companies in the information technology industry at Hsinchu Science-based Industrial Park. After eliminating companies, which currently have no products or formal operations, this study had a total specimen of 274 companies.

In order to increase the retrieval rate of the questionnaires, in accordance with the name roster of companies published by the Scientific Industry Park's management office and in accordance with the names and telephone numbers of the chairmen of boards, general managers, vice-general managers, public relations managers, and marketing managers of the companies listed on the roster, this study first contacted the high level management of the companies by telephone and explained the goals and contents of this study to

Figure 1. Conceptual Model



them. Their opinions and willingness to participate in the interviews was requested. Then the companies, which expressed willingness to cooperate, were personally given questionnaires by the interviewers, and the time limitations to return the questionnaires by mail were enclosed in the leather envelopes. Gifts were personally presented to the marketing executives and secretaries of the companies, and they were requested to return the questionnaires by mail or in person to the interviewers after the questionnaires were completely filled out.

### Analysis of Results

In actuality there were 105 companies, which expressed willingness, and each administered 10 questionnaires for personnel, so there were 105 questionnaires for managers, and 1050 for employees. In April 2003 the questionnaires for this study were sent out, and they had been completely retrieved by August 2003. The questionnaire survey took at total of five months to be carried out. After undergoing two telephone calls and having additional questionnaires sent out 102 management questionnaires were retrieved and 735 employee questionnaires were retrieved. Data from questionnaires, which were not filled out or filled out incompletely was discarded. A total of 102 valid management questionnaires were retrieved and 720 valid employee questionnaires were retrieved, and there were retrieval rates of 97.1% and 68.6% respectively.

As for industry, management questionnaires were retrieval 39(38.2%), 16(15.7%), 21(20.6%) and 26(25.5%) respectively for Integrated Circuits, Opto-Electronic, Information, and Computer Peripheries. Employee questionnaires were retrieval 285(39.6%), 95(13.2%), 145(20.1%) and 195(27.1%) respectively for Integrated Circuits, Opto-Electronic, Information, and Computer Peripheries.

As for the management who were interviewed, 58.4% were between 36 and 45 years old, and 53% of them had been in the service of the companies for 2 to 4 years. The employees who received the questionnaires were both male and female, and 51.2% of them were between the ages of 21 and 30, and 28.4% were between the ages of 31 and 35. Their education levels were predominately vocational school and university (31.6% and 37% respectively), and over 20% were at the level of graduate school. This indicates a high standard of education in the companies at the Hsinchu Science-based Industrial Park. Over half of the employees, who received the questionnaires have currently served in their companies between 1 to 5 years, which indicates an understanding of the administrative affairs at the companies. On average the employees receive a salary of NT\$30,000 to NT\$45,000 a month at most (49.3%), and about half of the employees who received questionnaires served management posts and half served technology posts.

Table 1 shows the description of variables and the result of reliability analysis. This study's variables were categorized in accordance with different subjects, who were interviewed. Regarding the management, they all universally agreed that the companies were carrying out internal management tasks, and the companies especially urgently hoped to understand the employees' thoughts and opinions (4.12). Moreover, in putting

different methods of management into effect for different employees, the aspect of market segmentation had the smallest amounts (3.85). The planning aspect for employee management and benefits for industrial circles in Taiwan is lower than that, which was directed at individuals. Moreover, management placed the greatest emphasis on planning for employees' abilities and futures (3.95). There were four types of organizational culture in the companies, which were interviewed, including bureaucratic, supportive, innovative, and efficient did not have significant variations (3.77-3.75). As for knowledge management, the general identification was 4.15 and respect for the company was 4.04 by managers, and they would obtain information about clients and markets through

**Table 1. Description of Variables**

Interviewees Facets	Mean		S.D.		Cronbach's $\alpha$	
	Agree	Importance	Agree	Importance	Agree	Importance
Managers						
• Internal Marketing					.88	.88
1. Market Research	4.12	3.76	.54	.81	.77	.79
2. Market Segmentation	3.85	3.68	.79	.80	.80	.80
3. Communication	4.06	3.88	.83	.87	.80	.80
4. Perceptive	4.01	3.79	.89	.90	.82	.87
5. Development	4.09	3.95	.91	.90	.80	.80
6. Reward	3.96	3.81	.87	.85	.79	.79
• Organizational Culture						.91
1. Bureaucratic	3.77		.79			.78
2. Supportive	3.76		.81			.78
3. Innovative	3.75		.82			.78
4. Efficient	3.76		.78			.78
	Agree	Importance	Agree	Importance	Agree	Importance
• Knowledge Management					.87	.87
1. Acquisition	4.15	4.04	.62	.56	.78	.77
2. Creating	3.79	3.67	.83	.79	.81	.81
3. Proliferation	3.70	3.61	.68	.64	.78	.78
4. Storage	3.60	3.57	.89	.84	.81	.81
Employees	Agree	Satisfaction	Agree	Satisfaction	Agree	Satisfaction
• Internal Marketing					.88	.88
1. Market Research	3.63	2.95	.80	.78	.79	.79
2. Market Segmentation	3.66	3.04	.82	.76	.80	.79
3. Communication	3.78	3.24	.69	.71	.79	.78
4. Perceptive	3.60	2.95	.88	.86	.87	.86
5. Development	3.74	3.10	.81	.80	.80	.80
6. Reward	3.63	3.06	.90	.82	.79	.79
• Knowledge Management					.87	.86
1. Acquisition	3.82	3.38	.66	.67	.78	.78
2. Creating	3.54	3.14	.66	.64	.82	.82
3. Proliferation	3.53	3.08	.62	.56	.78	.77
4. Storage	3.56	3.10	.68	.63	.80	.79



each kind of channel and method. However, in the aspect of establishing mechanisms for the storage of market information and knowledge, the amounts for identification (3.60) and attaching importance to (3.57) are the lowest.

In the descriptive aspect of the research variables, to employees the highest consent (3.78) and feelings of satisfaction (3.24) came when communication tasks were carried out between companies and employees. However, in the aspects of companies understanding employees' opinions or allowing employees to understand the company's perspectives on development, the feelings of satisfaction were lowest (2.95). As managers, employees also fell the highest consent (3.82) and satisfaction (3.38) is through any channel and methods to obtain customers' and market's information.

In the aspect of reliability, this study utilized the  $\alpha$  coefficient developed by Cronbach, and according to the determination norms addressed by Cronbach (1951). This conforms to the Cronbach (1951) determination norms, and this indicates that the questionnaire in this study reached considerable internal consistency.

Table2 shows the result of industry on internal marketing and knowledge management. In another aspect, the high-tech industries in this study included four major industries, integrated circuits, optical electronics, information, computers, and peripheries. Therefore, it is necessary to go through systems examinations of whether or not the management and employees, who were interviewed, will recognize internal marketing and knowledge management tasks in their companies and have variations due to their being in different industries. The results indicate that aside from communications and perspectives in internal marketing and creating in knowledge management, there were significant variations ( $p < 0.1$ ) produced for both management and employees due to the differences in industries.

**Table 2. ANOVA: Industry and Internal Marketing, Knowledge Management**

	Manager		Employee	
	F	P	F	P
Market Research	67.50	.00***	9.74	.00***
Market Segmentation	57.11	.00***	5.10	.00***
Communication	64.35	.00***	.13	.94
Perceptive	21.92	.00***	1.67	.17
Development	26.15	.00***	2.99	.03**
Reward	39.49	.00***	5.94	.00***
Internal Marketing	47.03	.00***	4.15	.01***
Acquisition	31.37	.00***	15.35	.00***
Creating	44.97	.00***	.06	.98
Proliferation	44.24	.00***	2.45	.06*
Storage	60.49	.00***	4.90	.00***
Knowledge Management	48.48	.00***	3.44	.02**

\* $p < .1$  \*\* $p < .05$  \*\*\* $p < .01$

Posteriori analysis found that to managers in each structural aspect, regardless of whether they were in internal marketing or knowledge management, the management in the optical electronics industries had significantly higher degrees of recognition than in the other three industries ( $p < .01$ ). The levels of recognition are lowest in the computer and periphery industries. For employees, the variations in the four industries for internal marketing and other structural aspects were not obvious. The employee recognition was only significantly higher in the information industry than in the computer and periphery industries ( $p < .05$ ). However, the variations between knowledge management and the other structural aspects were also not significant. Only the employees in the computer periphery industries had significantly higher recognition than in the optical electronics industry ( $p < .05$ ).

Through correlation analysis, it was found that internal marketing and each structural aspect, as well as organizational culture and each structural aspect both had positive relationships ( $p < .01$ ). Moreover, as employee's degree of identification with internal marketing at organizations was higher, this was more helpful for employees to identify with business organizational culture. There were significant positive relationships ( $p < .01$ ) between organizational culture and each structural aspect, as well as between knowledge management and each structural aspect. Furthermore, as the identification with organizational culture is higher on the part of employees, the inclination and degree of exerting effort into activities related to knowledge management tasks is higher. The results above provide support with H1 and H2 of the study, which says that Internal Marketing has a significant influence on organizational culture; and organizational culture has a significant influence on knowledge management.

It is found via regression analysis that bureaucratic takes significant proportional effect on acquisition ( $p < .05$ ), creating ( $p < .05$ ), and storage ( $p < .05$ ), and remarkable effect on correlation between internal marketing and acquisition ( $p < .1$ ), creating ( $p < .1$ ). Innovative takes significant proportional effect on acquisition ( $p < .05$ ), proliferation ( $p < .01$ ), and storage ( $p < .05$ ), and remarkable effect on correlation between internal marketing and acquisition ( $p < .1$ ), proliferation ( $p < .05$ ), and storage ( $p < .05$ ). And effects of other culture on correlation between internal marketing and knowledge management have not reached significant level of 10%.

It is known in further analysis that higher the degree of bureaucratic culture followed by corporate is, higher the degree of innovative culture followed by corporate is, higher its knowledge management is. The result above provides part support with H2 of the study, which says that only bureaucratic and innovative culture perform significant influence on internal marketing and knowledge management.

### Conclusion

This study took the information technology industry in Hsinchu Science-based Industrial Park as its research subject. A questionnaire survey was carried out and the relationship between internal marketing and knowledge management was investigated. The findings are stated in the points below.

The management, who were interviewed, generally agreed that their companies had implemented internal marketing, organizational learning, and innovation functions. In addition, the managers interviewed identified with the method of going through each kind of channel to obtain information about clients and markets, and they considered it to be important as well. However, the amounts for identification and considering important were both lowest in the aspects of companies establishing mechanisms for the storage of market information and knowledge.

To employees, the highest consent and satisfaction is at companies, which do actions to communicate with employees; however, they felt most unsatisfied with companies, that seek to understand employees opinions or allow employees to understand the companies' development perspectives. Similar to the opinions of the management, who were interviewed, the employees all believed that they would feel the highest identification and satisfaction with companies, which obtain client and market information through each type of channel and method.

At the managerial and supervisory levels, acquisition information and communication with employees is necessary. Leaders who can clearly express the organizational development vision and perspectives may be more effective in achieving employees' commitment and satisfaction. Communication of the opinions and perspectives can take the form of meeting or a few words to inspire employees. When employees are familiar with managers' opinions, commitment and effort to serve customers may increase.

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