A Study of Knowledge Alliance Performance Methodology Through Alliance Capabilities

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Abstract: Firms can enjoy competitive advantage by developing a capability to manage alliances more successfully than others. In this paper, we understand enterprise alliance, motivation for knowledge-based alliances and knowledge-based alliance capabilities. A proposed operational performance of knowledge alliances is discussed. The empirical study, investigates a sample of Taiwan textile partner firms. Using these data, we evaluate the efforts of in general management on alliance performance. Finally, an evaluated model of Taiwan textile partner firms is creation.

Keyword: Alliance capability, knowledge-based alliances, Enterprise Alliance, alliance performance

1. Introduction

The challenges of accelerating competition regulatory barriers and raising customer expectations have lead many companies to improve their competitiveness by combining resources with other firms (Dunning, 1997). Partnerships and alliances rather than formally structured equity-based organizations provided the flexibility require responding to changes in the technological environment by short-circuiting the process of internal skill acquisition (Hamel, 1991). The environment of an alliance has added complexity, as the alliance partners are likely to be balancing protecting and sharing their knowledge to maintain their competitive position (Hamel et al., 1989). The competitive advantage of a firm would reside on having a capability to manage alliances better than peers or competitors. Spender (1996) described the firm as an activity system driven by knowledge while others argue that the main role of the firm, and the heart of its competitive capability, is the integration of knowledge (Grant, 1996). Zollo and Winter (2002) replies on these three theories to explain competitive heterogeneity and investigate how alliance capability evolves and what the impact of intra-firm learning mechanisms is at different capability levels. Mentzas (2004) argue that the management of organizational knowledge can be a key lever for improving performance, boosting productivity and creativity and facilitating innovation in corporate settings. The commonly used approaches for management knowledge follow one of two perspectives; the process-centric (a primarily people-based approach that treats knowledge management as a social communication process) and a product-centric approach (mostly content based and focuses on knowledge-related artifacts). We argue that firms can build an alliance capability and enjoy greater an alliance success by implementing organizational process that facilitate the accumulation and sharing of alliance management known- how embedded in prior and on-going alliance experience.

As access to an alliance partner's knowledge is a key driver for forming the alliance, it is important to understand how alliance are using knowledge management and what influences the knowledge management choices in an alliance. Therefore, the paper starts with an enterprise alliance capability and organizational learning in the area of alliances. Then we discussed alliance capabilities as a firm's ability with knowledge management. The empirical study, investigates a sample of Taiwan textile partner firms. Using these data, we evaluate the efforts of in general management on alliance performance. An evaluated model of Taiwan textile partner firms is creation.

2. Enterprise Alliance

Alliances make possible the conduct of cooperative between firms and create opportunities for participating benefits from their involvement in an alliance. Strategic alliances and business network can provide organizations with the capability and flexibility to compete with the world (Killen et al., 2002). Hiroshi and Junichi (2004) argue that strategic alliances are classified according to the relationships between the resources exchanged (Symmetrical versus asymmetrical) and between the alliance partners who exchange such resources (horizontal versus vertical). This form of collaboration has been defined as a partnership amongst firms that work together to achieve some strategic objective (Harrigan, 1988, Killing, 1983). Alliances are generally thought to include two or more firms united to pursue at set of agree-upon goals (Yoshino and Rangan, 1995); contributing complementary, firm-specific capabilities; involved in a range of interdependent activities in which limited control is exercised by parties who remain independent subsequent to the formation of the alliance and share in its risks and benefits (Yoshino and Rangan, 1995).

Russ and Camp (1997) suggest a variety of governance structure for strategic alliances: equity, technology alliances, R & D alliances, joint ventures, licensing agreements, distribution and supply agreements, and technical exchanges. Hoffmann and Schlosser (2001) propose the formation of flexible alliances with complementary resources and some need for control. The dynamics of competitive advantage in strategic alliances cause firms to harness alliance capabilities, routines and procedures to facilitate knowledge-based innovation and expertise by transferring intangible assets, and erecting barriers to prevent imitation (Moore and Birkinshaw, 1998).

Alliances also offer participating firm's three distinct types' benefits. The appropriation and application of knowledge through collaborative relationships positively influences all three. First, additional economic rents can be made possible through increased market power (Glaister and Buckley, 1996; Gomes-Casseres, 1994), additional sales, and more rapid growth. Allies can collude against common rival or reduce competition by co-opting competitors as allies (Buckley and Casson, 1988). Additional revenues can also by generated by alliance activity. Second, alliances make it possible for a firm to reduce or control its costs. One source of cost reductions is the achievement of the economies or scale or scope, realized through shared production, marketing or research (Oliver, 1990). Alliances can reduce risks when firms need to spread the costs of innovation or other capital-intensive activities (Glaister and Buckley, 1996). Third, most importance to knowledge-based enterprises, alliances permit organizations to improve their odds of survival. Through participation in an alliance, an organization can appropriate institutional linkages (Galaskiewicz, 1985) or partner-held technological assets, or acquire legitimacy or status (Stuart, 2000) that mitigates organizational mortality. Firms can achieve added control over critical interdependencies in uncertain environments by environment (Nohria and Garcia-point, 1991) by coordinating their use of accessible resource to improve their competitiveness through the enhancement of products, improve access to markets, and increased sales.

2.1 Knowledge-based alliance capabilities

Our examination of the literature suggests there are five capabilities that matter most: the ability to develop and sustain valuable resources; absorptive capability; combinative capability; experience with alliances; and appropriate design for knowledge exchange.

(1) Resource: Firms must be endowed with assets that partners value and are fit for use (Das and Teng, 2000). Firms lacking assests will not be desirable alliance partners, as linkage-formation opportunities are known to be related to the procession of resources (Ahuja, 2000). All firms have assets of some type. Those assets which are valued most by partners will be those that are hard to trade in markets, are rooted in developmental processes that are causally ambiguous, and have the potential either on their own or in combination to yield competitive advantage.

(2) Absorptive capability: Absorptive capability was defined as a firm's ability to recognize the value of external knowledge, assimilate it, and apply it to commercial ends (Cohen and Levinthal, 1990). The absorptive capacity of firm can be augmented through activity. Absorptive capacity also affects the ability of the partnered firms to learn. The ability of a firm to learn from another firm is jointly determined by the relative characteristics of the two firms. Absorptive capacity affects the ability of a firm to internalize knowledge obtained from its partner or generated in concert with the partner. Grant (1996) identified three factors that an affected knowledge absorption capability: the efficiency of integration, scope of integration and flexibility of integration.

(3) Combinative capability: Kogut and Zander (1992) define combinative capability as the ability of a firm to synthesize and apply current and acquired knowledge to generate new applications from an extension of the exiting knowledge base. The concept of combinative capability by partitioning extended it into three constituent elements. One element was called systems capabilities, and comprised the firm's conceptual infrastructure for integrating explicit knowledge. It was asserted that the existence of a well-defined infrastructure aided knowledge absorption. The second element was called coordination capabilities, and was proposed to enhance knowledge absorption through the structuring of relations between members of a group. The final element was called socialization capabilities. It was a ability of the firms to produce a shared ideology.

(4) Experience: alliance experience is known to enlarge the value that firms derive from subsequent alliance engagements. Anand and Khanna (2000) concluded that this type of experience was evidence of the organizational learning, and appeared to be associated most with ventures formed for the purpose of research and development, and production. But experience along was not sufficient for a firm to realize the largest benefits arising from collaboration (Simonin, 1997).

(5) Firm design: The design of a firm will contribute to its performance in a knowledge-sharing context. Teece (2000) held that successful firms that were dependent on knowledge exchange and management reflected several characteristics that unsuccessful firms did not. Successful firms had an entrepreneurial orientation,

with a strong bias to action; they exhibited dynamic capabilities especially in the areas of flexibility and responsiveness to market opportunities (Teece, 1998).

2.2. Motivation for knowledge-based alliances

Knowledge assets are the knowledge of markets, products, technologies and organizations, that a business owns or needs to own and which enable its business process to generate profits, and value, etc. Knowledge management is not only managing these knowledge assets, but managing the processes that act upon the assets. These processes include: developing knowledge, preserving knowledge, using knowledge, and sharing knowledge. There are six motivations for knowledge-based alliances:

(1) Knowledge as a resource: A dominant motivation behind the formulation of inter-organizational exchange is to gain access to valuable partner-held resources. Cook (1977) argues that resource as any valuable activity, service or commodity. Knowledge is one such resource (Westney, 1988; Kogut, 1988; Grant, 1996, Inkpen and Dinur, 1998). For example, if a firm is deficient in a particular knowledge domain, and procession of that knowledge is deemed essential to competitive advantage, the resource dependency theory holds that firm will take purposive action to acquire that needed knowledge.

(2) Knowledge uses: Inkpen and Dinur (1998) stated that knowledge of use to a firm involved in one of the inter-firm relationships, a strategic alliance, could be one of three types. First, firms were motivated to secure knowledge that could be used to design and manage future interorganizational relationship (Lyles, 1988). Second, a collaborative relation may generate knowledge that pertains to a focal partner's strategy, operations, and core product line. Third, firms may seek partner knowledge without wishing to internalize it.

(3) Generate new knowledge: Firms are also motivated to collaborate to generate new knowledge. Such knowledge will contribute to the competitive advantage of each partner. Firms are known to be knowledge-integrating institutions (Grant, 1996). Conner and Prahalad (1996) proposed that the essence of the resource-based view was the conceptualization of the firm in terms of its knowledge assets. The generation of knowledge through the pooling of joint assets, know-how and expertise that can be seen as a race by allied partners against their rivals as well as against time (Teece, 1992). Thus, actions taken by firms in certain settings can be interpreted as a combinative action intended to improve the competitive standings of both partners based on the accelerated development and repatriation of knowledge. Other scholars have noted that inter-organizational relationships served to share the costs with others of exploration and exploitation (March, 1991), not only to increase the productivity of existing capabilities, but also to discover new wealth creation modes (Power, et al., 1996).

(4) Protecting assets: Nelson and Winter (1982) stated that firms to prevent the deterioration of their stock of knowledge by exploring new avenues for its use. Das and Teng (2000) indicated that while in a collaborative relationship, a firm relationships only temporarily the resources under its control, meaning they remain available for future internal deployment.

(5) Blocking rivals: It has also been suggested that a focal firm may be motivated to engage in an interfirm relationship to prevent the partner firm from forming an alliance with the focal firm's rival. By taking action to prevent a potentially harmful combination of value assets held by a prospective partner with those held by a rival, the focal firm neutralizes a competitive threat (Barringer and Harrision, 2000).

(6) Access to networks: Firms are likely to form alliances to gain access to networks. Networks are formed when member firms are linked through mutually recognized direct ties that signify the presence of an exchange relationship, and through indirect ties that may allow for the floe of resources which are know to create options for firms on future alliances partners (Gulati, 1995). Knowledge networks or teams such as groups of colleagues are brought together to work on project or to solve problems (Apostolu and Mentzas, 1999).

3. Using alliance capabilities as a firm's ability with Knowledge Management

Alliance capabilities as a firm's ability to capture, share, disseminate and apply alliance management knowledge (Eisenhardt amd Martin, 20000; Kale et al., 2002). Knowledge assets are the knowledge of markets, products, technologies and organizations, that a business owns or needs to own and which enable its business process to generate profits, and value, etc. Knowledge management is not only managing these knowledge assets, but managing the processes that act upon the assets. These processes include: developing knowledge, preserving knowledge, using knowledge, and sharing knowledge. From an organizational point of view, Barclay and Murray (1997) consider knowledge management as a business activity with two primary aspects. (1) Treating the knowledge component of business activities as explicit concern of business reflected in strategy, policy, and practice at all levels of the organization. (2) Making a direct connection between an organization's intellectual assets – both explicit and tacit – and positive business results.

The key elements of knowledge management are collaboration, content management and information

sharing (Duffy, 2001). Collaboration refers to colleagues exchanging ideas and generating new knowledge. Common terms used to describe collaboration include knowledge creation, generation, production, development, use and organizational learning (Duffy, 2001). Content management refers to the management of an organization's internal and external knowledge using information skills and information technology tools. Terms associated with content management include information classification, codification, storage and access, organization and coordination (Apostolou and Mentzas, 1999; Davenport and Prusak, 1998, Denning, 1999). Information sharing refers to ways and means to distribute information and encourage colleagues to share and reuse knowledge in the firm. These activities mat be described as knowledge distribution, transfer or sharing (Apostolou and Mentzas, 1999; Davenport and Prusak, 1998, Duffy, 2001, Hauschild, Licht and Stein, 2001).

Common knowledge management practices include: (1) Creating and improving explicit knowledge artifacts and repositories (developing better databases, representations, and visualizations, improving the real-time access to data, information, and knowledge; delivering the right knowledge to the right persons at the right time). (2) Capturing and structuring tacit knowledge as explicit knowledge (creating knowledge communities and networks with electronic tools to capture knowledge and convert tacit knowledge to explicit knowledge). (3) Improving knowledge creation and knowledge flows (developing and improving organizational learning mechanisms; facilitating innovation strategies and processes; facilitating and enhancing knowledge creating conversations/dialogues). (4) Enhancing knowledge management culture and infrastructure (improving participation, motivation, recognition, and rewards to promote knowledge sharing and idea generation; developing knowledge management enabling tools and technologies). (5) Managing knowledge as an asset (identifying, documenting, measuring and assessing intellectual assets; identifying, prioritizing, and evaluating knowledge development and knowledge management efforts; document and more effectively levering intellectual property). (6) Improving competitive intelligence and data mining strategies and technologies.

4. Theoretical framework

4.1 In general management performance

By above alliance capabilities (combinative, absorptive, knowledge resource), and adopted Venkatraman and Ramanujam's (1986) conceptualization of market share, sale growth, market development, and product development. In general management was measure by 14 items: (1) In general managerial capacity, (2) Increased enterprise technique capability, (3) Enhanced enterprise negotiations capability with your alliance partners, (4) Strength of your relationships with key alliance partners, (5) Your organization reputation in market as "a partner of choice", (6)Increased alliance capital scope, (7) To invested R & D funds, (8) Enjoy operation and market resources, (9) Strength of Supply and market (salability), (10)The competitive strength of your alliance network,(11)To raise market fixed price capability, (12)Ability to manage crisis and conflicts with your alliance partners, (13)Enjoy operation and market resources with your partners. (14) Alliance size.

4.2 Environment dynamism

Considerable research indicates that environmental uncertainty, or the degree of unpredictability in future environmental states. As Lumpkin and Dess (1996) explain, proactive firm size new opportunities through (1) scanning the environment to seek opportunities (Venkatraman, 1989) and (2) taking preemptive action in response to perceived opportunity. Alliance also provides the opportunity to leverage external resources, transfer knowledge, and enhances organizational learning (Kogut, 1988). Since the rant-creating ability of most resources tends to dissipate over time, alliance proactive firms may have a greater ability to sustain a dynamic process of asset and capability accumulation. For the environmental dynamism variables, we adapted items from Jaworski and Kohli (1993) and Dickson and Weaver (1997) to develop 5 item scales for technological and competitive dynamism…

Dynamic environment was measure by 8 items:(1) The rate of product/service obsolescence inn this industry is very high, (2) Our production and service technologies change often and in major ways, (3) We operate in an environment where technology is changing rapidly, (4) In our industry, customers' product performances change rapidly, (5) We are witnessing demand from totally new groups of customers who earlier never bought our products/services, (6) Employee are given educational opportunities are built improve adaptability to new task.,(7) professional knowledge such as customer knowledge and demand forecasting is managed systematically, (8)University-administered education is offered to enhance employees' ability to perform task.

4.3 Experiential learning

As alliances increasingly become a fact of life in the business environment, exploiting the learning potential of alliances will become more important. Knowledge acquisition has been linked with operational performance as well as with the performance of specific

organizational tasks (Doz, 1996). In bringing together firms with different skills and knowledge bases, alliances create unique learning opportunities for the partner firms. Simonin (1997) empirically found support for the emergence of a distinct from collaborative known-how, which emerges from post experience, and which helps achieve greater benefits in subsequent alliances. Collaborating across national borders magnifies the complexity of alliance management due to increased uncertainty about market-and partner information.

Experiential learning was measure by 8 items: (1) Through periodic benchmarking, (2)we incorporate industry best practices into our organizational processes, (3) We use credible third-party benchmarking to assess our alliance and related practices, (4) We periodically talk to manages from other firms to learn about their alliance experiences, (5) We modify our alliance rela6ted procedures as we learn from experience, (6) We periodically collect and analyze field experiences from our alliances, (7) We conduct reviews of our alliances to understand what we are doing right and where we are going wrong, (8) Our managers are encouraged to attend seminars on alliances, (9) Organization-wide knowledge and information are update regularly and maintained well, (10) Organization-wide standards for information resource are built, (11) We can learn what is necessary for new tasks, (12)We can refer to best practices and apply then to our tasks, (13)We can use Internet to obtain knowledge for the partners.

5. Performance methodology

5.1 Performance

A firm that has just exited an unsatisfactory alliance may be reluctant to enter another one even if the characteristics of the new prospective partner are substantially different. Instability is thereby associated with poor performance. Lee et al.(2005) use KMPI (Knowledge management performance index) for assessing the performance of a firm in its knowledge management at appoint in time. Firms are assumed to have always been oriented toward accumulating and applying knowledge to create economic value and competitive advantage. Mjoen and Tallman (1997) used structural equation modeling with latent variables to analyze the relationships among our variables. It examines the meaning of control in international joint ventures and relationships of potential means of control in such organizations to the performance satisfaction of the foreign partner. Ahn and Chang (2004) developed KP^3methodology assesses the contribution to businesses performance by employing product and process as intermediaries between two. Using business performance data, which is the result of applying knowledge to business operations, the methodology developed enables to assess the contribution of each knowledge entity to business performance. Specifically, knowledge contribution to the business performance was estimated using the Data Envelopment analysis (DEA) approach to find the ideal composition of knowledge entities for the most efficient production of business performance. Stuart (2000) investigates the relationship between intercorporate technology alliances and firm performance. It argues that alliance are access relationships, and therefore that the advantages which a focal firm derives from a portfolio of strategic condition s depend upon the resource profiles of its alliance partners. Edvinsson (1997) showed that the intellectual capital of a firm can be measured, documented, and monitored. Sveiby (1998) detailed how to use and measure intangible assets and how to monitor them for financial success. Kaplan and Norton (1992) developed a balanced Score Card (BSC) using a combination of measures in four categories (financial performance, customer knowledge, internal business processes, and learning and growth) to align individual, organizational, and cross-department initiatives. The objective of our study was to introduce a new measurement in assessing alliance performance. A proposed knowledge alliance performance methodology is defined as below.

5.2 Proposed alliance performance methodology

Business knowledge alliance tests were performed and then analysis, which can be determined in six steps:

1. Determine business knowledge alliance measure items.
2. Used Confirmatory factor Analysis to test convergent validity and factor loading。
   2.1 Used correlation matrix R using principal component analysis and find Eigenvalue and Eigenvector of correlation matrix R.
   2.2 Exploratory factor analysis was adopted using the orthogonal rotation method (Kaiser Normalized Varimax Rotation) converge to get final rotated component matrix. Determined
2.3 Calculated Component Score Coefficient Matrix.
3. From Component Score Coefficient Matrix, in according with variance explained simplify factors express form
4. Calculated optimal value of factors express.
5. Performed factor score normalized value.
6. In according with variance explained, calculated the performance score index.

5.3 Survey instrument development

Design of the survey was influenced by Churchill (1979) recommendations for developing reliable and

valid measures. A survey questionnaire was send to 175 Vice-Presidents and alliance managers of Taiwan textile partner firms. These firms are guidance and assistance alliance by Taiwan Textile Research Institute. 135 usable responses were received, providing a response rate of 77.14%. A 5-point Likert scales anchored by strongly agree – strongly disagree. In order to convenient for normalization, we let 5, 4, 3, 2, and 1 corresponding to value 1.0, 0.8, 0.6, 0.4, and 0.2. A preliminary factor analysis validated the measures used in this model. Exploratory factor and analysis was adopted using the orthogonal rotation method.

5.4 Sample description and data analysis

The factor structure of variables, where convergent validity were significant because Cronbach's alpha was greater than or equal 0.70, and all convergent validity was greater than 0.60.

Table 1 Variance Explained

Component	Initial Eigenvalues			Extraction Sums of squared loading			Rotation Sums of squared loading		
	E	% of variance	% of cumulative valiance	E	% of variance	% of cumulative valiance	E	% of variance	% of Cumulative Valiance
1	4.987	27.326	27.326	4.987	27.326	27.326	4.885	26.891	26.891
2	3.526	19.321	46.647	3.526	19.321	46.647	3.518	19.366	46.257
3	2.825	15.479	62.126	2.825	15.479	62.126	2.945	16.212	62.468
4	1.985	10.877	73.003	1.985	10.877	73.003	1.980	10.899	73.368
5	0.824	4.515	77.518						
6	0.789	4.323	81.841						
7	0.623	3.414	85.255						
8	0.608	3.323	88.586						
9	0.505	2.767	91.353						
10	0.465	2.548	93.901						
11	0.384	2.104	96.005						
12	0.309	1.693	97.699						
13	0.288	1.578	99.277						
14	0.132	0.723	100.00						

E: eigenvalues

Table 2 Rotated Component matrix

Item	Component			
	1	2	3	4
(X8) Enjoy operation and market resources	0.889	-0.0097	0.0241	0.0766
(X9) Strength of Supply and market (salability)	0.783	-0.459	0.0213	0.199
(X11) To raise market fixed price capability	0.776	1.985	-0.221	-0.140
(X10) The competitive strength of your alliance network	0.711	-0.0053	0.245	0.0977
(X13) Enjoy operation and market resources with your partners	0.695	0.254	0.126	0.0346
(X6) Increased alliance capital scope	0.098	0.580	-.0.187	0.452
(X3) Enhanced enterprise negotiations capability with your alliance partners	0.219	0.902	0.112	0.308
(X4) Strength of your relationships with key alliance partners	-0.068	0.486	0.214	-0.0189
(X5) Your organization reputation in market as "a partner of choice"	0.215	0.483	0.189	-.0064
(X7) To invested R & D funds	0.235	0.251	0.621	0.164
(X1) In general managerial capacity	-0.157	-0.12	0.884	-0.456
(X14) Alliance size	-0.085	-0.342	0.556	-0.048
(X2)Increased enterprise technique capability	0.389	0.210	0.342	0.858
(X12) Ability to manage crisis and conflicts with your alliance partners	-0.0358	0.345	-0.059	0.620

Table 3 Component Score Coefficient Matrix

Items	Component			
	Y1	Y2	Y3	Y4
(X1) In general managerial capacity	-0.1363	-0.1035	0.2896	0.0823
(X2)Increased enterprise technique capability	0.1120	0.2338	0.1564	0.5302
(X3) Enhanced enterprise negotiations capability with your alliance partners	-0.3902	0.2764	-0.2124	0.1965
(X4) Strength of your relationships with key alliance partners	-0.1847	0.4348	0.2335	-0.3214
(X5) Your organization reputation in market as "a partner of choice"	-0.0223	0.2787	0.1189	-0.2186
(X6) Increased alliance capital scope	-0.0481	0.5083	-0.2224	0.1983
(X7) To invested R & D funds	0.0627	-0.2998	0.4436	0.0982
(X8) Enjoy operation and market resources	0.5516	0.1022	0.0794	0.2286
(X9) Strength of Supply and market (salability)	0.2997	0.2589	0.2465	0.1154
(X10) The competitive strength of your alliance network	0.2704	0.0896	0.0658	-0.1654
(X11) To raise market fixed price capability	0.4384	-0.2254	-0.4634	0.0896
(X12) Ability to manage crisis and conflicts with your alliance partners	0.0258	0.0857	-0.2583	0.3656
(X13) Enjoy operation and market resources with your partners	0.3565	-0.2135	0.0853	0.1143
(X14) Alliance size	-0.7524	0.0115	0.2643	-0.2698

5.5 Calculate in general management performance index using proposed alliance performance methodology

Step 1. Used Confirmatory factor Analysis to test convergent validity and factor loading. Extract the components with eigenvalues greater than 1. Table 1 is shown as variance explained (initial eigenvalues, % of variance, and % of cumulative valiance).

From table1, we set four components in this data testing, since the first to four components (factors) approach 73% of cumulative variance.

Step 2: Exploratory factor analysis was adopted using the orthogonal rotation method (Kaiser Normalized Varimax Rotation) to get final rotated component matrix and to determine the components (factors). Table 2 is shown as Rotated Component matrix.

From table 2, X8, X9, X11, X10 and X13 trend operation and market resources capabilities, this called operation and market factor. X6, X3, X4 and X5 trend operation and market resources capabilities, this called transaction factor. X7, X1 and X14 trend general management capabilities, this called general management factor. X2 and X12 trend technique and risk capabilities, this called technique and risk factor. We denoted four as Y1, Y2, Y3 and Y4.

Step 3: Calculated Component Score Coefficient Matrix

We calculate weight of each item on each component. For example, the weight of X1 in Y1 is -0.1363. We obtained Component Score Coefficient Matrix is shown Table 3.

Step 4: From Component Score Coefficient Matrix, in according with variance explained simplifies factors express form.

From Component Score Coefficient Matrix, factors Y1, Y2, Y3, and Y4 express form:

Y1 = -0.1363 X1 + 0.1120 X2 -0.3902 X3 - 0.1847 X4 -0.0223 X5 -0.0481X6 + 0.0627 X7 +0.5516 X8 +0.2997 X9 +0.2704 X10 + 0.4384 X11 +0.0258 X12 +0.3565 X13 -0.7524 X14

Y2 = -0.1035 X1 + 0.2338 X2 +0.2764X3 + 0.4348 X4 +0.2787 X5 +0.5083X6 - 0.2998 X7 +0.1022 X8 +0.2589 X9 +0.0896 X10 - 0.2254 X11 +0.0857 X12 -0.2135 X13

Y3 = 0.2896 X1 + 0.1564 X2 -0.2124 X3 + 0.2335 X4 +0.1189 X5 -0.22241X6 + 0.4436X7 +0.0794 X8 +0.2465 X9 +0.0658 X10 - 0.4634 X11 -0.2583 X12 +0.0853 X13 +0.2643 X14

Y4 = 0.0823 X1 + 0.5302 X2 +0.1965 X3 - 0.3214 X4 -0.2186X5 +0.1983X6 + 0.0982 X7 +0.2286 X8 +0.1154 X9 -0.1654 X10 + 0.0896 X11 +0.3656 X12 +0.1143 X13-0.2698X14

In according with variance explained, we simplify factors express form.

Y1 = 0.5516 X8 +0.2997 X9 +0.2704 X10 + 0.4384 X11 +0.3565 X13

Y2 = 0.2764X3 + 0.4348 X4 +0.2787 X5 +0.5083X6 +0.2589 X9

Y3 = 0.2896 X1 + 0.2335 X4 + 0.4436X7 +0.2465 X9 +0.2643 X14

Y4 = 0.5302 X2 +0.1965 X3 + 0.1983X6 +0.2286 X8 +0.3656 X12

Step 4: Calculated optimal value of factors express

Y1opt = 0.5516 + 0.5302 +0.2704 +0.4384 + 0.3565 = 1.7087

Y2opt = 0.2764 + 0.4348 +0.2787 +0.5083+ 0.2589 =1.7571

Y3opt = 0.2896 + 0.2335 +.4436 +0.2465 + 0.2643=1.4775

Y4opt = 0.5302 +0.1965 + 0.1983+0.2286 +0.3656 =1.5192

Step 5: Performed factor score normalized value.

Score Y1 = Y1 / Y1opt = 0.3234X8 + 0.1754X9+ 0.1582X10+ 0.2566X11 + 0.2086 X13

Score Y2 = Y2 / Y2opt = 0.1573 X3 + 0.2475 X4 + 0.1586 X5 + 0.2893 X6 +0.1473 X9

Score Y3 = Y3 / Y3opt = 0.1960 X1 +0.1580 X4 +0.3002 X7 +0.1668 X9 + 0.1789 X14

Score Y4 = Y4/ Y4opt = 0.3490 X2 + 0.1293 X3 + 0.1305 X6+0.1505 X8 + 0.2407 X12

Step 6: Calculated the performance score index by combined with variance explained

Performance score index = 0.2689 Score Y1+ 0.1937 Score Y2+ 0.1621 Score Y3+0.1090 Score Y4/ (0.7337)

= 0.3665 Score Y1 + 0.2640 Score Y2 + 0.2209 Score Y3 + 0.1486 Score Y4

6. Conclusion

This paper starts with an enterprise alliance capability and organizational learning in the area of alliances. We discussed alliance capabilities as a firm's ability with knowledge management, and proposed alliance performance methodology is build. The empirical study, investigates a sample of Taiwan textile partner firms. Using these data, we have alliance performance index to evaluate the efforts of in general management on Taiwan textile partner. We can use this methodology to perform alliance perform index on other property.

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