



Represent a Pattern for Extract and Prioritize Core Competence and Factors of Competitive Advantage using Multi-criteria Decision Methods

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ABSTRACT

Core capabilities and competencies are considered as competitive advantage factors that should be identified and utilized. To this end, current research aims to presents extraction pattern and prioritize core competencies and competitive advantage factors by using multi criteria decision methods, through case study of Foolad technique Co in 1391. Then, a new model had represented for first time and named" competitive advantage diamond" to describe a way to identifying, ranking and improving the competitive advantage factors in organization.

In current research, by selecting 90 capabilities and competencies among core assets in Esfahan Foolad Technique Co, components are entered into the first questionnaire for identifying core competencies and are scored by managers and supervisors through two indicators: relative power in organization and strategic importance by using Saati spectrum. The capabilities which are assigned higher than score 5 in all two indicators, considered as 42 extracted components called "core competency" and form second questionnaire's entries to identify and extracting competitive advantage. These 42 components are measured and scored by five indicators: sustainability, controllability, Non-copy and irreplaceable, according to Saati spectrum via 45 members of experts. Then the indicators which have higher than score5 in all 5 indicators, are extracted as" competitive advantage factors". Weight among 5-fold indicators of second questionnaire is computed by numeral mean of 10 experts' opinion, 12 competitive advantage factors of Foolad technique Co. are ranked via simple weighting mean method, TOPSIS and adaptive method.

Final results are computed by compiling total rank and Capland method: customer relation management and creativity and ideal designing, high level of emotional power in organization, high technology and R&D activity, strategic thinking, fast response to environment, identifying competitors and numbers of experts, continuous quality control, flexibility and attract/maintain costumer, and competency-based training are ranked Ito8, respectively. Finally, a new model represent for first time and named" competitive advantage diamond" to describe a way to identifying, ranking and improving the competitive advantage factors in organization.

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1. Introduction

In 21 century perspective, today's businesses are faced to a situation consist of a very complex and competitive environment that is affected of different factors as technology development, propagation speed of new technologies and globalization. In other hand, the main concerns of today's organizations are ever changing customers taste and satisfying their needs, learning customer needs and market change prediction, flexibility and agility according those changes. Because the short term productivity can't be known as a resource of organization survival and achieving the factors that differentiate organization from its competitive have special importance: competitive factors. While in today's competitive world, identifying aspects of abilities and competences, that are un-imitable by competitors and make organizations differentiable and may be unique, is the success key for organizations. The requirement of investment and result is right recognition of those factors and their priority. So we should find a proper pattern based on assets, abilities and core competences of organization. So, in current study we search for an answer for this question:

"What is the proper pattern for extract and prioritize core competences of organization?"

Research Importance and necessity

Organizations have many resources and abilities that many of them are un-sensible and managers and programmers are not able to fully apply them to develop strategies because loss of proper tools for identify and prioritize them.

So, we can use innovative aspect of current research to present a pattern for identify and prioritize core competences.

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Background

Ja-Shen Chen, et al. (2012) in a research titled “Functional effects of information technology abilities, innovation of services processes, and role of customer-service intermediaries” in study on 174 Taiwan companies deviated from industry of information technology, show that management innovations should serve to developing abilities and innovation of service processes to facilitate costumers-service toward achieve better and higher function.[24]

Le Chen, et al.(2012) in a research titled “ Manifesting function dissimilarity through evaluating knowledge management maturity: capability-based approach” states that measuring knowledge management capability is a dynamic and proportionate capability to company goals. He presents maturity model to develop evolutionary phase along with knowledge management deviated indicator for measuring and self-evaluation in this area.[31]

Aron O’Cass, et al. (2012) in a research titled “ establish superior customer value for company through abilities of supplier companies” say that market-orientation is not sufficient for create value and raising market advantage by itself but is effective in establishing competitive advantage, market orientation, innovation and marketing abilities and express that capability of marketing innovation for intermediation is creating relation between market orientation and value creation.[16]

Eunju Suh, et al. (2012) in a research titled “Important competencies needed for managers in reception service industry” refer to existence of managerial, leadership, communicational, personal and supervisory skills.[18]

Awie Vlok (2012) in a research titled “ Representing specifications of leadership for innovative leaders in organization of research based on science and innovation in South Africa” provide competence profile by creating a list of leader features that cause to innovation and invention.[14]

Elena García-Barricóanal, et al (2012) in a research titled “ organizational model of capacity beside competence computation”, by presenting a cognitive and extendable model of job status and analysis method for competence gap, also personnel knowledge, states that flexibility belongs to organizational assets that effect on competence and capacities of organization.[28]

Ana Lisboa, et al. (2010) in a research titled “ Innovation abilities: stimulus and their effects on current and future performance” by study on records and results of innovative capability, introduce it as a factor of increasing performance, current and future export.[13]

Ram Mudambi, et al (2011) in a research titled “ knowledge leverage through total area: new boundary in international business” state that reaching innovation systems are effective for sharing knowledge and merging them to create new competencies. Managers in functional levels should consider merging knowledge from different Geographical places, technology and private networks.[29]

Ahmadi et al(2011) in a research titled ”Management of Organizational intelligence knowledge and keeping competitive advantage of organization” states : knowledge can create competitive advantage for organization and thereby, it can make better resolve and capture new opportunities.[4]

Rossitza Rousseva (2010) in a research titled “ need to scrutinize software development activities and technical abilities” believe that software development activities are company windows toward opportunities and analyzing needs computable technical abilities. Then, they describe details in order to understand complexities in software industry.[30]

Andreas Größler (2010) in a research titled “ mobility model of heuristic model from strategic abilities in manufacturing”, investigate processes full of strategic abilities such as costs, quality, fast delivery and flexibility, with design, identification method and heuristic approach of a dynamic model based on hierarchical way of accumulated abilities to test resource assigning strategy to strategic abilities.[22]

Jose et al(2010) in a research titled “ Regulator role of technology abilities: competitive strategies and company performance”, regarding to 253 Spain Information technology companies, regulate relation between competitive strategies and technology abilities and performance, and believe that technologic abilities are effective on high performance quality and achieving competitive advantage.[26]

Zabihi et al (2010) in a research titled “ Processes and mechanisms to create and keep stable competitive advantage”, investigates three theories: industrial organization theory, resource based theory and Schumpeter theory, about competitive advantage says that because today’s environment is complex and fast changing, we should combine theories to achieve stable competitive advantage and consider impressive internal/external factors for organization, simultaneously.[8]

Geramian (2010) in a research titled “ processes of create and keep stable competitive advantage for financial service institutes: case mining(case study) electronic concentrated banking” says that initiating any new plan or innovation requires deep insight and enter to high/new technology, more that other technologies, depends on this foresight.[32]

Hajakbari et al(2010) in a research titled “ The role of commercial intelligence to achieve competitive advantage and productivity in insurance industry ” says that today’s organizations cannot just rely on productivity but consider stable competitive advantage as a target, thus mastering new technologies include commercial intelligence in businesses is an inevitable necessity.[6]

Namdarian et al(2010) in a research titled “ present a model for obtain stable competitive advantage from information systems with resource-based approach” states: today, by introducing knowledge-based economy and considering critical importance of keeping competitive status in such area, organizations engaged in stable competitive advantage through investment on information systems.

Consequently, information systems flexibility, relation between information technology and business units, and alignment process of business-information technology are among importance resources that raise capability of firms to obtain stable competitive advantage from information system also this capability is affected by transparency and applicability of information systems resources of competitors.[10]

Hashemi et al(2010) in a research titled “ Obtaining(reaching or achieving) competitive advantage by create learner organization and knowledge management” says that knowledge management provide proper conditions to create knowledge management and organizational learning through providing relevant environment, and reinforce ability of creativity and idea creation.[11]

Akgun et al(2009) in a research titled “ experimental analysis: organizational sentiment, abilities, product and innovation process and company performance”, through study on 163 Turkey company show that encouraging company and enhancing sentiment abilities can result to product innovation ability and thereby, increasing financial power.[12]

Simab et al ,(2005) in a research titled “ model of identify core competences in developing countries” companies under multiple pressure to identify, establish and reinforce their competencies toward adopt and complete their knowledge and skills to survive in external turbulent environment, and exist of a structured and goal-oriented study about identify :core competences” and thereby, develop proper strategies based on this approach for Iranian companies to attend in this turbulent area in near future, is inevitable.[9]

2. Theoretical foundations of research

2.1 Resources

Resources: production factors that a business used them for produce valuable goods and services for their customers(Wheelen & Hunger2000.)[34]

Business resources are tangible and intangible assets that dispose to company for short term. Tangible resources are include physical resources such as land, building, material, ..., that addressed in balance sheet and can easily computed; intangible assets are include knowledge, commercial name, business reputation, (human and organizational capital and ...) that are not addressed in balance sheet.

According to Barney et al, business resources are include assets, capacities, organizational processes, business features, information, knowledge, human and organizational capital that among them, human and organizational capital are emphatic because they are non-imitative(non-duplicable) and hard-achieving(Calcagno,1996). [19]

2.2 capability,core capability, competency,core competency

2.2.1Capability

business skills toward resources coordination and productive use of them and organization ability to change and accept financial, technologic and strategic changes.

Capability is the needed skill to achieve perfect advantage from available resources. According to Ulrich (1987) capability is skill of resource coordination and productive use and ability for change and accepts financial, technologic and strategic changes. There is any consistency from viewpoint of this definition about capabilities and competencies and differentiate them is not a simple task (Teece et al , 1997).[33]

If put together business's assets and capabilities then we can achieve business competencies (Wheelen & Hunger2000 ,).[34]

2.2.2Core competencies

A class of competencies that solely belongs to organization and could not be imitated (ahmadi et al,2001).[5]

Firm can meet basic business competencies and when it done better than competitors, called differentiate (core) competencies that we can divide it into two groups. Implicit competencies that include mental learning during task, explicit competencies that encompass organizational laws, behavioral codes and written knowledge resources.

Parahalad & Hamel(1990) , [27]state that businesses convert their resources and skills to core competency and make sustainable competitive advantage in unique environments(Hoffman2000).[23]

Armestrungt(2000) ,duo to ambiguous exist in competency definitions between personal abilities to do task and requirements of a effective performance, proposed “capability” instead of “competency” that is : what people should know and be able to do it and how to behave in right roles.[25]

2.2.3Core capabilities

Yet, various methods are proposed to develop core capabilities among which we can refer to adoption method (e.g. 5 mark), native method(e.g. job analysis), synthetic method(e.g. questionnaire, selective list and experts group). The most weakness in these methods is lack of tangible and serious attention to strategy, perspective and values of organization. To remove this weakness, a new method “Methodology for determining core competencies based on processes and value-making activities” is proposed in developing core competencies of organization(Shojaee et al ,.2006)[7]

Capabilities grouping:

- 1- Basic capabilities: a set of features and behaviors that make possible to do a task with minimum expectations and standard
- 2- Distinguishing capabilities: a set of capabilities that lead to superior performance against typical and medium performance.
- 3- Key capabilities (core): capabilities that are hard to foster or complete. These capabilities occur gradually and during many years in personal or organizational level and are hard to imitate (Abolalaei et al., 2006). [1]

Core competencies

Core competencies are resources and capabilities that provide organization with competitive advantage. Relative stable circumstances of market that are due to innovation, competitors variety, and revolutionary changes of technology, cause to core capabilities and competencies considered as a base for strategic plans of organization. In other words, if combination of resources and valuable capabilities in organization was costly to mimic and they are without substitute, then we can determine them as core competency.

By increasing core competency of an organization, it would be possible to exploits from more opportunities for that environment. The success factor of an organization is the balance between capabilities and competencies.

Challenges against achieve to competitive advantage

Today, organizations are faced to some challenges in order to achieve competitive advantage:

- 1- Loss of awareness about core competencies
- 2- Loss of appropriate tools to identify capabilities
- 3- Low productivity due to inconsistency between decisions and competencies of organization
- 4- Emphasis on non-competitive cores in organization
- 5- Spending cost and time for non-competitive areas
- 6- Loss of tools to recognize capabilities that leads to core competency
- 7- Loss of alignment of strategies and capabilities and competitive advantage factors
- 8- Loss of focus on capabilities and competencies that leads to achieving competitive advantage and

2.3 Research pattern

Given the challenges against achieving competitive advantage, present research tries to design a pattern for extract and prioritize core competencies and competitive advantage factors (Simab et al., 2005) [9] that can lead to sustainable competitive advantage to organization and ways to overcome those challenges.

Given following model, we try to identify capabilities through recognize and categorizing basic assets and prioritizing the most important of them by using multi-criteria decision method and repeat the same technique to reach highest level, i.e. extracting competitive advantage factors from lower levels of pyramid, and finally, present a extracted and prioritized model of competitive advantage factors and organizational competencies, in general and specifically in Esfahan Foolad Technique Company.

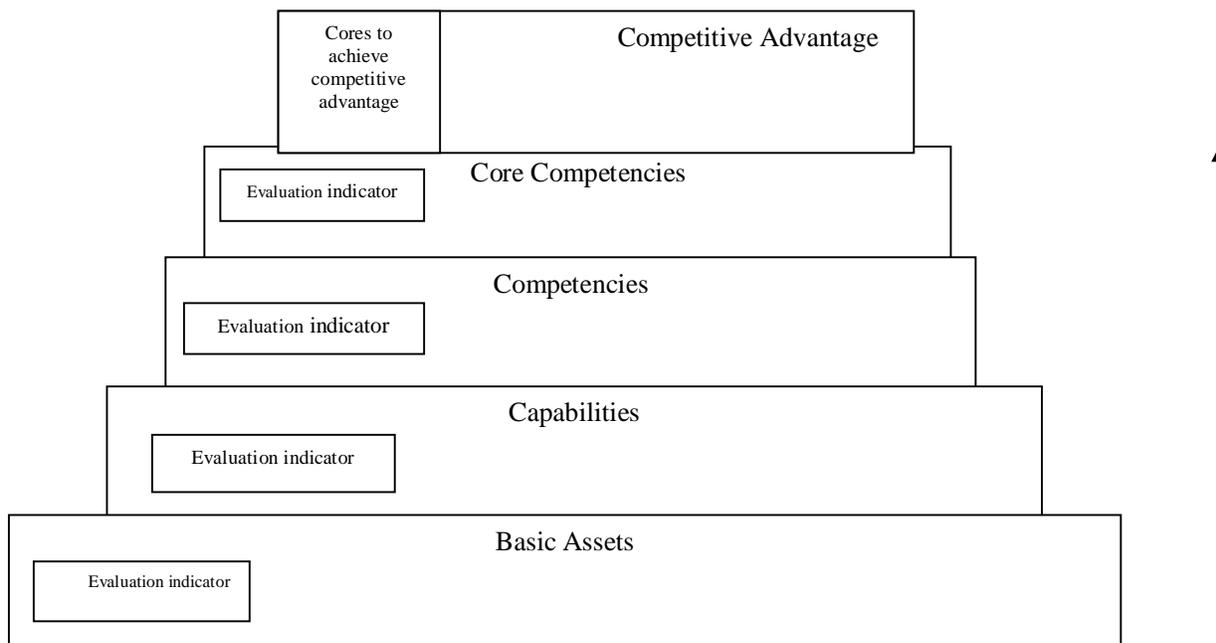


Figure 2.1. Proposed research pattern.

We define evaluation indicators in each level of pyramid from bottom to top, and then in highest level, i.e. competitive advantage factors, we will categorize and present auxiliary cores for reaching competitive advantage beside sub-trees that foster the those factors.

2.4 multi-indicator decision making

Multi-criteria decision making: a set of techniques that wants to evaluate possible solutions based on more than one criterion to choose the best one . (Azar,2010)[2]

Simple weighted average method: a method of offset multi-criteria decision techniques that given weight of each criterion and constructing decision matrix and quantifying qualification indicators, rating(ranking) alternatives in descending order (Azar, . 2010).[2]

Topsis method: one of the offset multi-criteria decision methods that rates alternatives as descending by specifying distance from best option (ideal) and worst option (anti-ideal)(Asgharpour,2008).[3]

Adaptive method: in this multi-criteria decision method by choosing “ideal” and “anti-ideal” and “P” according formula, we measure the distance of each option to ideal option, then assign the highest rate to shortest distance, i.e. rate descending based on distance from “ideal”(Asghar pour, 2008)[3]

3. Methodology of research

This research is applicable from development view-point, also given the time of data collection, is survey-type and cross-sectional, and regarding data-nature is quantitative-qualitative.

In this research, organizational basic assets are identified and collected based on scripts and valid papers, and then, by using opinions of industrial experts and establishing meetings, key factors are specified.

After categorizing checklist of basic asset, summarize it according to experts and combine the assets include same content, then provide a questionnaire of 90 capability components that are evaluated and scored by 108 among 150 people who are selected according to Morgan table.

These organizational capability components, in some questionnaires according two indicators: relative power in organization and strategic importance rate of component, to score based on Saati range(1-3-5-7-9) , are assessed based on importance-power matrix and components which obtain more than 5 score in two indicators and established core competencies, are extracted.

Relative component power in organization 10 5 1	Basic asset	\\ \\ \\ // // // \\ competencies
	Basic asset	Basic asset
	Strategic importance 1 5 10 10 1	

Figure3.1. Model of strategic importance-power matrix (adapted from Hill & Jones .)[20]

From 90 component of previous questionnaire, we extract components that take greater than score 5 in two indicators as core competencies and insert into current questionnaire to evaluate by 45 persons based on 5 indicators: rareness, permanency, organization controllability, non-copy, non-replaceable. Then, components that take above score 5, extract as competitive advantage of organization and provided to experts for prioritization.

In other hand, it must be noted that competitive advantages can persist for long period of time. Resources include potential of creating persistent competitive advantage, should be rare, controllable, non-copy, non-replaceable and permanent. Barney1991 .).[15]these five indicators considered as scoring base for components in second questionnaire of this research(according to Parahalad & Hamel,1990 . model).[27]

5-fold indicators of evaluating competitive advantage factors provided for 10 experts to score importance weight. Then, we compute total importance for each indicator based on geometric mean of weight results. Extracted competitive advantage factors were rated separately through second questionnaire by using simple weighted average technique, Topsis and adaptive method given $p=1$ and then merging results by using Capland method.

Research scope

In this research, we tried to select one of the major organizations that have an extended bank of tangible and intangible assets toward classifying assets to tangible and intangible, also organize and prioritize them in managerial, strategic capability, structural, procedural and human group through utilizing of experts' opinions.

Accordingly, Esfahan Foolad Technique Company considered as case study for research whose assets include tangible and intangible, capabilities, core competencies are identified and prioritized.

4. Finding

The following categorized matrix obtained from a questionnaire where 90 critical assets of organization are evaluated based on two indicators: strategic importance and relative power of component according to Saati range (1: very poor, 3: poor, 5: medium, 7: strong, 9: very strong). Relative power-strategic importance Matrix outputs are inserted to second questionnaire from 2-2 cell where includes all two indicators with above 5 score. Then evaluated by 45 persons based on 5 indicators: rareness, permanency, organization controllability, non-copy, non-replaceable according to Saati range. All components with 5 higher score indicators are extracted as competitive advantage factors of organization.

Table 4.1. average scores in each indicator for each component

non-copy	sustainable	controllable	non-replaceable	rareness	component
4.2272	3.8636	3.8181	3.9090	4.2727	Genius management
3.9090	3.8636	3.7727	3.8636	4.8181	Managerial skills
4.5454	3.6363	3.5	3.4090	4.1363	Providence
6.0909	6.1363	6.3181	6.3181	6.7727	flexibility
6.1818	6.1363	6.0909	6.3636	6.8181	fast reaction to environment and indentifying competitors
3.9090	4.04545	3.8181	3.5909	4.3636	risky
3.9545	3.8181	4.0909	4.1363	4.3636	safety
3.8636	3.1818	3.6363	3.3636	4.3636	mentoring
6.1818	6.0909	6.3181	6.04545	6.5909	Strategic thought
4	3.7272	3.2727	3.9090	4.3636	Crisis management
3.8181	4	3.2727	3.3636	4.2272	Business process alignment
6.4090	6.5909	6.3181	6.3181	6.4545	Customer relation management
4.3181	3.6818	3.6818	4.04545	3.7727	Six-sigma method
5.9090	6.4545	6.2272	6.2272	6.6363	Total quality control
3.9545	3.8636	3.5909	3.6818	4.5	Job circulation
3.6818	3.7727	3.5909	3.5454	3.8636	productivity
3.5454	3.8636	4	4.04545	4.1363	Production diversity
4.0909	3.9090	3.8181	3.9545	4.2272	On-time manufacturing
3.5	3.9090	4	3.6363	3.4545	Offers system
3.5909	3.6363	3.7272	3.8181	3.9545	Standard existence
3.9090	3.7272	4.04545	4.1363	4.3181	Information system flexibility
3.9545	4.9090	3.9090	4.3181	4.3181	Information integrity
6.6363	6.9545	6.1363	5.7727	6.8636	Superior and new technology
6.8636	6.5	5.9545	6.2272	6.7727	Research and development activity
3.6818	3.8636	3.8636	3.7272	3.7727	Information production
3.8181	3.5	4	3.7727	4.1363	Fixing system
3.7727	3.8181	3.9545	4.0909	4.02727	Invention monopoly
3.9545	3.8181	3.7727	3.6818	4.0909	Trained personnel
6.5	6.4545	6.1363	6.3181	6.1363	Competency-based training
6.2272	6.5454	6.6818	6.0909	6.7727	organization high sensation power
6.4545	6.5909	6.4090	6.6363	6.1363	Experts number
5.8181	6.8181	6.2727	6.0909	7.4090	Thinking and creativity
3.7272	3.4090	3.7727	3.7272	3.2272	Sense of Organizational dependency
3.5	3.6818	3.8181	3.6363	4.2272	Personnel loyalty
3.5	3.7727	3.9090	3.7727	4.1363	personnel Technical knowledge
3.7272	4	3.7727	3.1818	4.1818	Organizational intelligence
6.1818	6.2272	6.2272	6.2272	6.5454	Absorb and sustain customers
3.4545	3.6363	3.9090	3.6818	3.8181	Favorable market share
3.8636	3.7272	3.9545	3.9090	4.0454	Value chain management
3.6818	3.5	3.6818	3.5454	4.1818	Financial power
4.2272	4.1818	4	4.1363	3.1818	Strategy development
4.04545	3.8181	3.7272	3.7727	4.0909	investments

These competitive advantage factors are combined by using importance weight of indicators which rated by experts according to table 4.2 and then, simple weighted average, Topsis and adaptive methods are combined and ranked by Copland method.

Table 4.2. Table of indicator importance weights after geometrical averaging of experts' opinions

importance weight based on geometrical average of expert's opinion	Indicator
0.347	rareness
0.232	Non-replaceable
0.173	controllable
0.217	Sustainable
0.031	Non-imitateable

Table 4.3. Ranking based on adaptive, Topsis, SAW and combining through Copland method

Component	Weight SAW	Ranking SAW	Weight TOPSIS	Rank TOPSIS	Weight in adaptive method	Rank in adaptive method	Total rank Cope land
Flexibility	1.166	9	0.115	10	0.492	5	7
Fast reaction	1.169	8	0.25	8	0.486	4	5
Strategic thinking	1.231	1	0.272	7	0.654	12	4
Customer-relation management	1.178	7	0.4	3	0.471	3	1
Continues quality control	1.115	12	0.303	4	0.535	8	6
New and superior technology	1.198	3	0.288	5	0.522	7	3
Research and Development activity	1.2	2	.036	11	0.518	6	3
Learning based on competency	1.163	10	0.25	8	0.639	11	8
Organization's sensation ability	1.187	5	0.204	9	0.414	2	2
Experts number	1.183	6	0.286	6	0.597	9	5
Idea and creativity	1.196	4	0.428	2	0.279	1	1
Absorb and keep customer	1.156	11	0.981	1	0.6	10	7

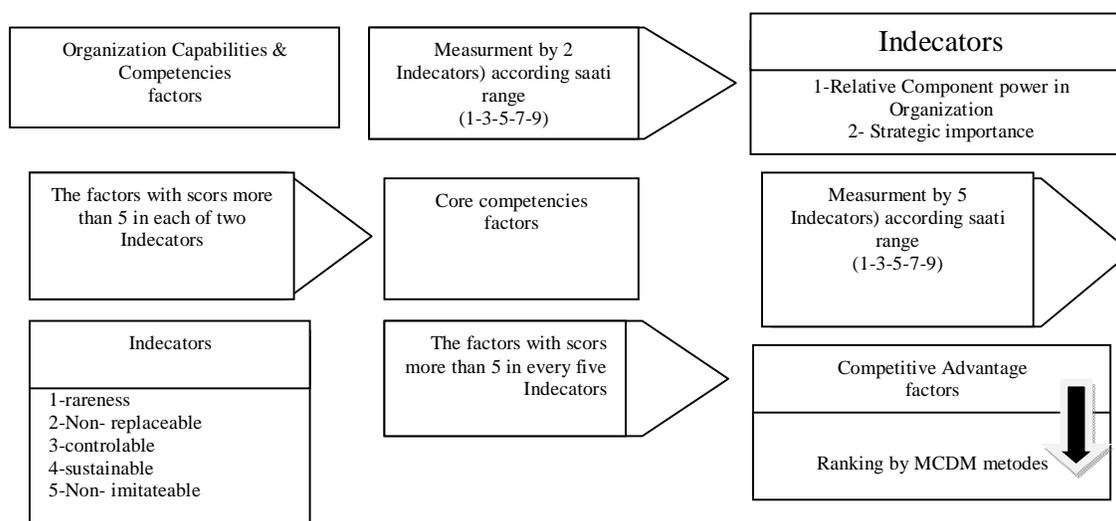


Figure4.1. Proposed Pattern For Finding the Competitive advantage Factors in Organization :(Represent for First time by Sonya Sadeghian Esfahani)

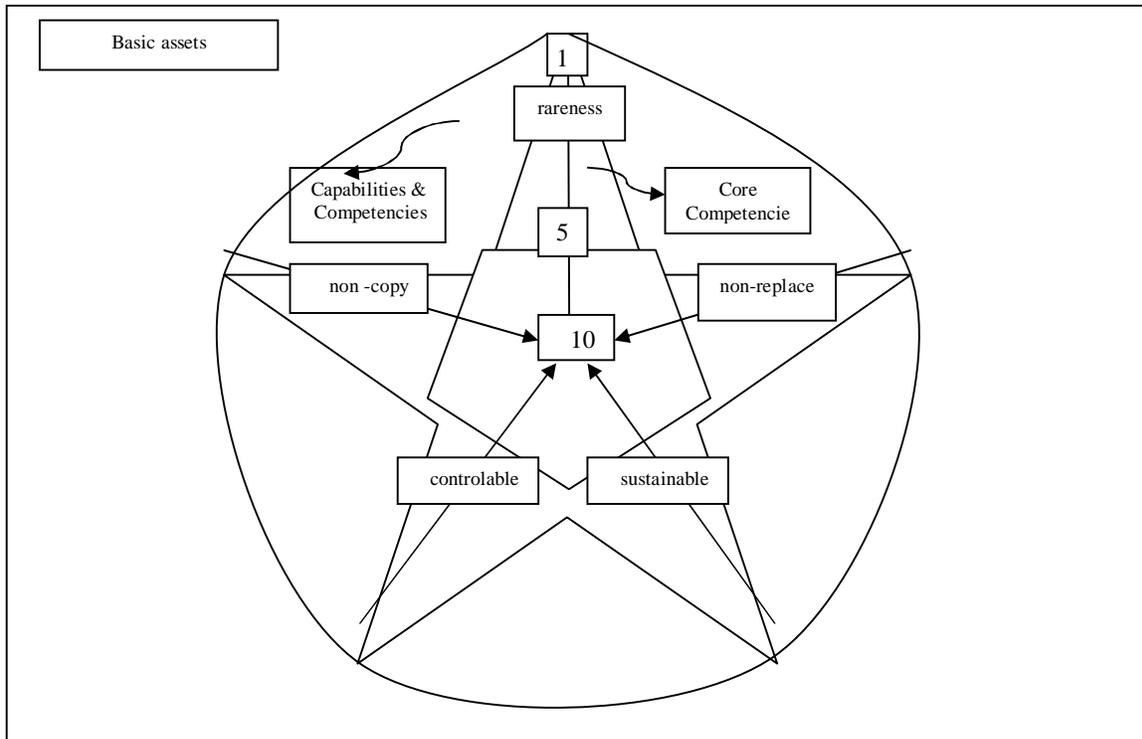


Figure 4.2. Competitive Advantage Diamond Model (represent for first time by Sonya Sadeghian Esfahani but based on Barney - Hill & Jones)

In this Model, foursquare include the basic assets in organization and circle shows the capabilities and competencies in organization. Then we resieve to the Star place that include the some of competencies that give the score more than 5(according Saati Range) in both of 1- Relative Component power in Organization and 2- Strategic importance (Based on Hill & Jones) and named Core Competencies . According to the Model, in Star location, each vertex of triangle is a competitive advantage indicator such as rareness, Non- replaceable, controllabile, sustainable and Non- imitateable. (Based on barney, 1991) . If we move to the center of Diamond, we see increasing in scores in each indicator of competitive advantage. The core competency factors can gain scores more than 5 in each of all indicators, can sit in diamond places and named competitive advantage factors. Our diamond is the same as a siblel. If each factors be stronger than other with scores more than other in each of 5 indicators can move to the center of Diamond.

Others of organization capabilities and competencies can improve and gain more scores and then, move to the center of diamond.

5. Conclusion

In present research, at first we provide a checklist of critical resources and assets that results in extracting 90 critical assets in Esfahan Foolad Technique, based on experts opinion and interview about merging co-group components. Then we score these components according to importance matrix of relevant strategic-power in organization by using 108 sample interviewees from a 150 members' community based on Saati range where after averaging of scores, we identified 42 components that have 5 score or above for two indicators: relative power in organization and strategic importance and these 42 extracted components appeared in another questionnaire under title "organization core competencies". Then evaluated by 45 persons based on 5 indicators: rareness, permanency, organization controllability, non-copy, non-replaceable and extract factors which have score above 5 in all indicators with name "competitive advantage factors"(Table 1-4). The importance weights of 5-fold indicators for second questionnaire were scored by 5 experts according to Saati range and identified after geometric averaging of total weight of each indicator according to Table 4-2. Then, separately ranked by using simple weighted average, Topsis and adaptive methods, and finally determined assimilation results and total rate of each indicator through Copland method. According Table 4-3 and based on importance rate are:

- Rank1- customer relation management and creativity and idea creation
- Rank2- high sentimental power in organization
- Rank3- higher/new technology and research and development (R&D) activity
- Rank4- strategic thought
- Rank5- fast reaction to environment and identifying competitors and the number of experts in organization
- Rank6- continuous quality control
- Rank7- flexibility, absorb and maintain customer
- Rank8- competence-base training

Finally, a new model represent for first time and named" competitive advantage diamond" to describe a way to identifying, ranking and improving the competitive advantage factors in organization

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