Develop the Strategic Outsourcing with Consideration of Core Competency Criteria Independence

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***Abstract*—One of the crucial decisions of organization managers is deciding to outsource an activity and making the right decision will increase productivity. There are various quantitative and qualitative criteria for outsourcing an activity, but the core competency is very important and managers should separate it from other criteria. Meanwhile, for outsourcing decision making, not only the cost analyzing is not sufficient, but also it is very important to take into account some key factors such as quality and time duration when an activity or project is outsourced. In this model, if an activity is considered a high core competency (HC), is kept in house and no further analysis is needed. Medium and low competency activities are marginal and require more analysis by multiple attribute decision making with consideration of other criteria and compare the inside and outside values such as time, risk and quality.**

***Index Terms*—outsourcing, core competency, decision making**

I. Introduction

"Ref. [1]" The review of the published literature on outsourcing shows that in spite of consideration to suitable factors, some researches focus on economic evaluation and other outsourcing strategy criteria such as risk, quality and time inside and outside the organization and comparison of them have neglected. "Ref. [2]" Other researches have used the simple weighting model with no taking into account consideration the importance of core competency criteria independence.

"Ref. [3]" There are ten common traps about outsourcing and the risk of outsourcing is one of them. "Ref. [4]" In spite of the importance of the risk criteria, it is neglected in some researches. This research attempts to develop the comprehensive model by using multiple attribute decision making with consideration of core competency criteria independence. This model has tree steps:

1) Core competency check

2) Determine the cost, quality, time and risk for two strategy (keep in house and outsource)

3) Using MADM model for decision making

II. Methods

As it is shown in Fig. 1, there are many factors that affect the outsourcing strategy model. With consideration of core competency criteria importance, it should be analyzed separately. If an activity considered a high core competency (HC), it should not be outsourced and should be kept in house. Medium and low competencies are marginal activity and require more analysis. In this method, to determine the technology outsourcing risk, with consideration of tree factors such as maturity of technology, significance of technology and process technology relative to competitors, process significance matrix is used and it is shown in Fig. 3.

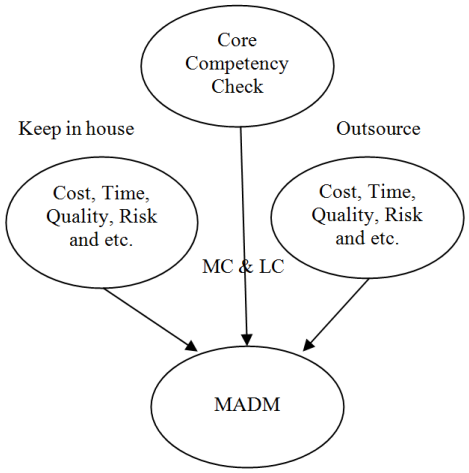

Figure 1. Conceptual model

The outsourcing flow chart of Fig. 2, displays the sequence of analysis for the model.

This strategy has tree steps such as below:

A. Core Competency Check

"Ref. [5]" The core competency check asks four questions that are essential to defining a core competency: (see Fig. 3)

1) Does activity need highly specialized design and manufacturing skills?

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2) Does activity have a high impact on what customers perceive as the most important product attributes?

3) Does activity provide potential access to a wide variety of possible future markets?

4) Is activity difficult for competitors to imitate?

With consideration the answers, an activity is considered a high core competency (HC) if there are at least three "yes" answers to the questions asked and if there are two or one "yes" answers, an activity is considered a medium or low core competency (MC or LC).

HC activities are kept in house and no further analysis is needed because if we outsource them, we will miss competitive advantage and future market.

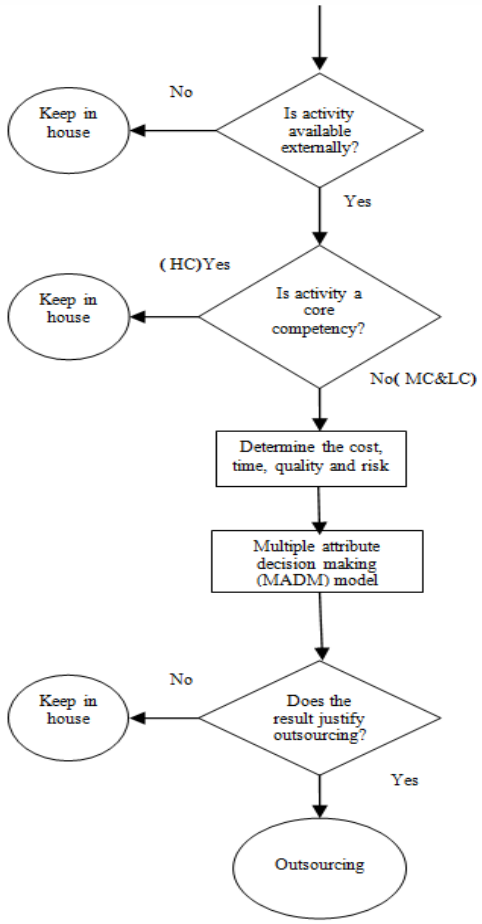

Figure 2. Outsourcing decision model

B. Determine the Cost, Quality, Time, Risk

In this step, we compare the some important criteria such as cost, quality, time, risk in two strategy (keep in house and outsource).

To analyze the risk of technology outsourcing, the technology importance matrix is used. This matrix is adapted from the strategic sourcing model (SSM) by (Welch and Nayak, 1992).

"Ref. [5]" As it is shown in Fig. 4, the three important elements in this matrix are maturity of technology, significance of technology now and in the future and process technology relative to competitors. Region 1 has minimum of risk and region 5 and 6 have maximum of risk.

C. Multiple Attribute Decision Making

Decision have made by using multiple attribute decision making (MADM) model with consideration of all quantitative and qualitative criteria. In this step, after normalization the matrix, the weights of criteria are determined. At last, decision maker select the best strategy.

III. An Illustrative Example

For example, outsourcing the "quality management system audit" process in national Iranian south oil company is analyzed.

A. Phase 1: core competency check

1. Does activity need highly specialized design and manufacturing skills? No

2. Does activity have a high impact on what customers perceive as the most important product attributes? Yes

3. Does activity provide potential access to a wide variety of possible future markets? No

4. Is activity difficult for competitors to imitate? No

With consideration the answers, the activity is considered LC.

B. Phase 2: Determine the cost, time quality and risk

Cost:

Keep in house cost: (Labor+ Capital+ Material+ Overhead) cost = 3000$

Outsourcing cost: (Labor+ Capital+ Material+ Overhead) cost = 2100$

Time:

Keep in house: 3 months

Outsourcing: 2 months

Quality:

Keep in house: good

Outsourcing: very good

Technology outsourcing risk:

Maturity of technology: growing

Significance of technology: comparable

Competitive advantage: low

Region 1

C. Phase 3: MADM Model

"Ref. [6]" At first, the qualitative criteria change to quantitative by using bipolar-scale:

Information security:

Very low: 1 low: 3 medium: 5 much: 7 so much: 9

Quality:

Very poor: 1 poor: 3 medium: 5 good:7 very good: 9

Outsourcing risk:

Region 1: 1 region 2: 3 region 3: 5 region 4: 7 region 5 and 6: 9

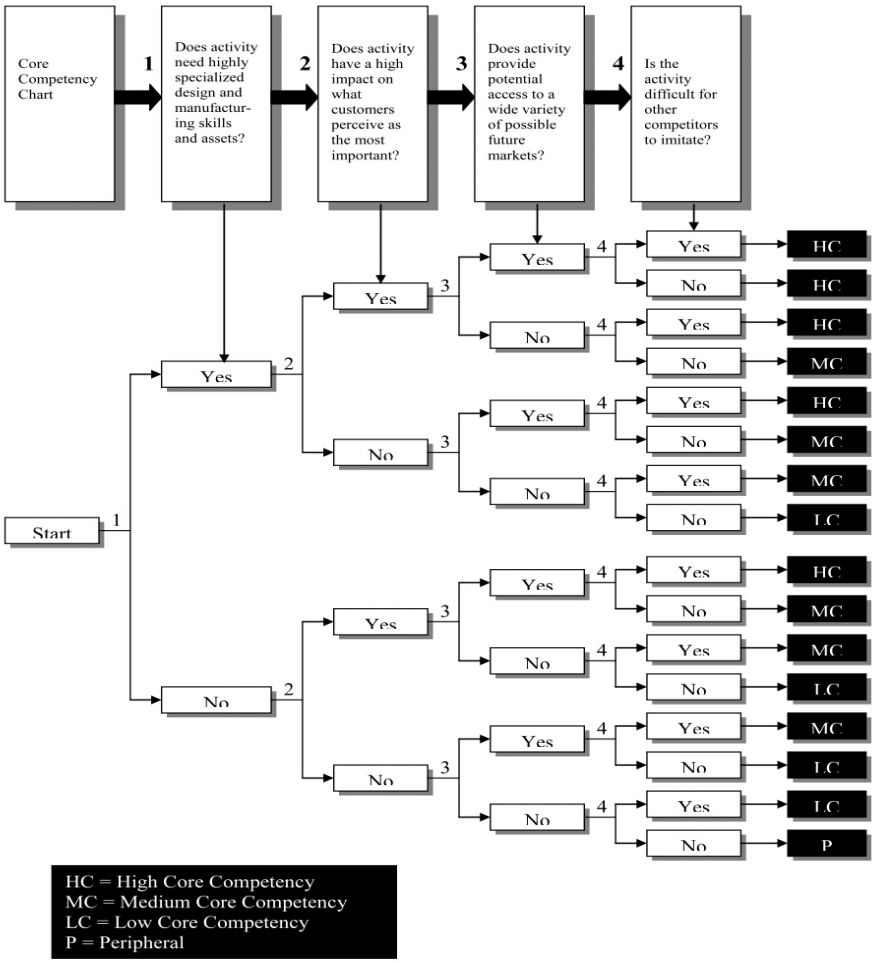

Figure 3. Core competency chart

FIGURE 3
PROCESS SIGNIFICANCE MATRIX

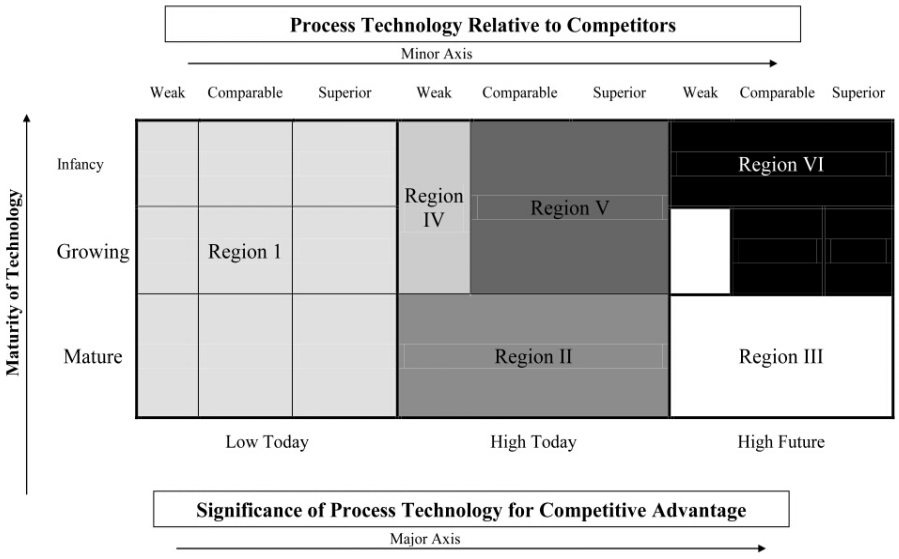

Figure 4. Process significance matrix

The decision making matrix is shown in Table I.

TABLE I. DECISION MAKING MATRIX

Attribute	Cost	Quality	Time	Risk	Information Security
Attribute Weight	O.2	0.2	0.2	0.1	0.3
Keep in house	10	7	2	1	9
Outsource	7	9	3	1	3

Matrix Normalization:

In the next step, the decision making matrix should be normalized. The normalized matrix is shown in Table II.

TABLE II. MATRIX NORMALIZATION

Attribute	Cost	Quality	Time	Risk	Information Security
Attribute Weight	0.2	0.2	0.2	0.1	0.3
Keep in house	0.59	0.44	0.4	.0.5	0.75
Outsource	0.41	0.56	0.6	0.5	0.25

Determine the Weight of Attribute:

"Ref. [7]" Some equations that are used in this phase are as below:

$$p_{ij} = r_{ij} / \sum r_{ij} \quad (1)$$

$$E_j = -k\sum[p_{ij} \ln p_{ij}] \ , \ k = 1 \ / \ \text{Ln m} \quad (2)$$

$$d_j = 1 - E_j \quad (3)$$

$$w_j = d_j \ / \sum dj \quad (4)$$

$$w'j = \lambda_j w_j / \sum \lambda_j w_j \quad (5)$$

r_{ij} : Attribute Value

λ_j : Attribute Weight (decision maker idea)

After determine the weight of attributes, the both strategies value are calculated. The result is shown in Table III.

TABLE III. FINAL MATRIX

	Cost	Quality	Time	Risk	Security
Ej	0.975	0.989	0.969	1	0.81
dj	0.025	0.011	0.031	0	0.19
wj	0.097	0.043	0.12	0	0.739
w' j	0.07	0.031	0.088	o.1	0.811
Keep in house	0.441				
Outsource	0.089				

With consideration of MADM model result, the keep in house strategy is preferred.

IV. CONCLUSION

To make a right decision about an activity outsourcing, not only the core competency criteria should be analyzed separately, but also the cost analyzing is not sufficient for outsourcing decision making and it is very important to take into account some key factors such as product or service quality and time duration when an activity or project is outsourced. In this model, if an activity is considered a high core competency (HC), is kept in house and no further analysis is needed. Medium and low competency activities are marginal and require more analysis by multiple attribute decision making with consideration of other criteria and compare the inside and outside values such as time, risk and quality.

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