Analysis on VSC' Efficient Operation

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Abstract: VSC is a league made up of some software firms of different advantages and resources aiming at common software developing tasks or relative services. the result of cooperation is based on it's cooperative efficiency. This article tries to find out the embodiment of VSC's efficient operation and those primary influence factors of VSC' operation.

Keywords: VSC, Efficient operation, Analysis, Suggestion

1 VSC' s connotation

VSC is abreviation for Virtual Software Corporation which is one kind of Virtual Enterprise. With the development of information technique, the hardware which software system relies on has changed much, at the same time, the scale, complexity and development cost of software system are increasing evidently. It's hard for one software firm to meet all these needs only depends its own resources and knowledge. As a creative organization form, VSC provides a fresh drain of thought to solve those problems mentioned above.

This paper considers that VSC is a league made up of several software firms of different advantages and resources aiming at a better job in common software development tasks or relative services.

2 VSC's efficient operation

During the process of cooperation, problems of sorts come forth because of the difference of destination, management's thought, organization mode and enterprises' culture of partners in VSC. The methods and attitudes been taken will definitely have direct influence on the cooperation efficiency. Communication, share and creation are of great importance so collision is unavoidable. Easily to understand, efficent cooperation relies on regular communication and connections among the partners in a VSC.

2.1 The meaning of VSC's efficient operation

To sum up, this article regards that efficient operation of VSC means favorable and smooth cooperation status present among partners in VSC by devising and establishing reasonable operation conditions or mechanism, each can solve kinds of problems in positive and serious attitude during cooperative process in order to promote and facilitate their software developing efficiency and effectiveness.

2.2 The embodiment of VSC's efficient operation

In VSC, to gain profit not only depends on separate firm but all, the cooperative efficiency has obvious importance on the quality, cost and market competition power of the software. According to the analysis made above. This paper holds the opinion that the cooperative efficiency is embodied as follows:

2.2.1 Partner firms are approbated and satisfied with the operation

Partner firms approbate with the aims of the collaboration and be pleased with the devised operation mechanism, respect each enterprise's culture etc, which are the foundation.

2.2.2 Customers' reasonable requirements can be converted into clear development demand

The pivotal job in software developing is to ascertain customers' reqirements, the significance of demand analysis is try to gain an exact and plain conception of functions and performance of the software system to be developed. In many software engineering books, all think that an excellent demand analysis should be integrated, correct, feasible, verifiable, but in fact, the analysis like

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this is impossible. Actually, requirements of customers may need some changes during the developing process. So to keep close connections with customers is essential in developing a software system for some adjustments may be present, that these adjustments can be responded quickly is also one aspect of the representation of cooperation efficiency.

2.2.3 To keep close connections and to deal with kinds of problems or collision in time

As we know, software modules' developing, integration and testing need close communication among partners in VSC, problems and collision are inevitable, negative attitude may result in confct or failure of the project, obviously, to deal with kinds of problems or collision in time is indispensable.

2.2.4 Information resources sharing

To improve the efficiency of information resources sharing which helps to resopond rapidly to market and customers, it's good to improve efficiency that some effective measures are taken such as enrich communication ways etc.

2.2.5 VSC's competition power enhanced and software developing ability and efficency strengthened obviously

VSC is a new and powerful organization mode for it is a cooperative league based on complementary ability of partner' enterprises so its competition power is much greater than each one. By this kind of way, developing ablity and efficiency of each are improved.

3 Therotical analysis on influence factors of VSC's operation

As a new organization mode, VSC certainly receives many internal and external factors in restriction. External factors include economy, policy, market factors. Considering that these external factors can't be controlled by enterprises themselves and can't be changed in a comparatively short period, so they are left out of account in this article.

Combined with characteristics of software developing and VSC operation, this article tries to investigate those factors from 6 aspects as follows:

Characteristics of task includes knowledge of customers' demand, technique, task risk; firms strength includes culture of partners firms, organization structure, learning mechanism, cooperating skill, management, relative

experience, technical ability, employee' responsibility; relativity quality includes communication, familiarity among partner firms; profit allocation includes profit allocation among partner firms, profit allocation among employees; developing process includes adjustment of demand, the quality of developing documents, information sharing effect, stabilization of cooperation.

3.1 Truth analysis on influence factors of VSC's operation

To make a thorouth study on influence factors of VSC operation, 3 different analytic methods are adopted, i.e., to gather data by questionnaire survey, factor analysis method is taken to find out those influence factors and RST is used to compute those factors' relative importance.

9 factors were extracted in principal component analysis, totle variance explained reach 78.504%. After a rotation converged in 7 iterations, 7 factors were found out:, As is shown in the figure 1:
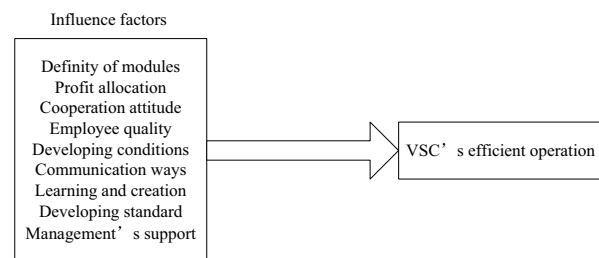

Figure 1: the primary influence factors of VSC' efficient operation

3.2 Further analysis to results

（1）It's easily to recognize that the most pivotal one among all these factors is definity of modules. In the beginning of the cooperative process, the analysis of customers' demand, the defintion to interface of software modules are of great significance. Construction of VSC is better completion of certain software developing tasks,that some uncertainty such as unreasonable disintegration occurs will directly influence the quality and efficiency of software, it would be a disaster if these problems are revealed later.

⑵Both partner firms' satisfaction to profit allocation and adherence to software development standards are essential. Easily to understand, partner firms are willing to join a VSC for they want to gain some profit. It's no doubt that cooperative efficiency would be suspicious if profit allocation isn't satisfying for these enterprises. So reasonable profit allocation mechanism should be devised in terms of characteristics of software developing.

Software developing should abide by thought of software engineering. Actually, so-called standard of software developing is a series of rules to improve the quality of software development, shorten the developing cycle, enhance software codes readability and useability. Partner firms must insist on these standards for which would guarantee software developing quality.

4 Suggestions to improve VSCs' operation efficiency

4.1 To attach importance to modules' decomposition and standards of modules' interface

Analysis to customers' demand is the base of software modules' decomposition architecture, in this phase, software systematic models are established after study on software's functions, performance which customers need. In order to make software architecture more reasonable, one of the most important things for software developing is to set down standards of every module's interface, by which can not only stability but efficiency of software developing can be improved greatly.

The cooperation of partners in a VSC is based on software decomposition layer modular architecture, so it's required that those stated standards and requirement be strictly complied with.

4.2 To establish communication mechanism among partners in a VSC

As far as VSC is concerned, different module's developing task is taken by different firms, discriminative communication strategy is required in terms of corresponding modules' characteristics and connections. Firms' credits and modules' relative importance should be considerd when module tasks' allocation.

4.3 To establish reasonable profit allocation mechanism

After field sampling research, in this article a creative viewpoint is put forward on profit allocation among firms in a VSC that 3 principles should be complied with: profit sharing principle, software modules' importance principle and firms' performance principle.

(1) Profit sharing principle

Profit a VSC gained should be shared by all partner firms, the sum of income of all firms in a VSC should be equal to the whole profit.

(2) Software module's importance principle

The income one firm earned must adapt to the importance of module the firm taken, that is, if the module is of greater importance, the corresponding firms should gain more.

(3) Firms' performance principle

By proper and approbatory appraisal, better performance means the firm's better earning. The performance evaluation should be done from 2 aspects, both developing effect and cooperative process.

5 Conclusion

The motive of forming VSC is pursing a better completion of software developing task than any single software enterprise, for VSC can make use of all advantages of partners' firms. During cooperation process, lack of cooperative efficency may lead to failure of the task which isn't the original intention of VSC. This paper strives to find out the influence factors of VSCs' operation, so, necessary studies have been done by adopting factor analysis method and RST based on gathered data through questionnaire survey. At the end of this paper, some effective suggestions are put forth according to the analytic results.

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