

# **POLICY-DRIVEN COLLABORATIVE ARRANGEMENTS AND COMPETENCY DEVELOPMENT – A PRELIMINARY SURVEY IN ORGANISATIONS PARTICIPATING IN MALAYSIA’S MSC FLAGSHIP NETWORKS**

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This paper presents the results of a survey done among organisations participating in flagship networks in Malaysia’s Multimedia Super Corridor (MSC Malaysia) project. MSC Malaysia is a policy-driven information and communications technology (ICT) cluster-oriented initiative by the Government of Malaysia aimed at jumpstarting its transition to a knowledge based economy. The MSC flagships are an integral part of MSC Malaysia and are inter-organisational networks, built through policy-driven collaborative arrangements, to help participating organisations develop innovative applications and achieve sustainable competitive advantage. These directed networks of exchange relationships are intended to create value in that the creativity and talent derived out of such an environment is perceived to result in certain competencies. A survey method is adopted to conduct the study. Perceptions of executives are elicited to gain an understanding of the issues involved when an organisation partakes in a network and the competencies/benefits derived by the organisation by participating in the network. The key research questions guiding the study are: 1. What are the characteristics of inter-organisational networks that are formed by policy initiatives? 2. What types of competencies do network organisations develop when participating in policy-driven inter-organisational networks? The sample for the study involves 40 executives from 15 organisations in three selected MSC flagship networks. Reputational sampling, as recommended by Human & Provan (1997), is adopted whereby key network informants are identified to assist in selecting the respondents based on their extensive participation and reputation in the networks. A specially designed questionnaire is used to collect the data for the study. The questionnaire has two parts. The first consists of questions related to network characteristics of which are derived from a study by Spink & Merrill-Sands (1999), who argue that certain elements have to be addressed in the initial stages of collaboration to ensure a strong foundation among the members is developed. The second involves questions related to competencies which are profiled in four forms viz. business, technical, cognitive and project competencies, and derived from work done by Dyer & Singh (1998), Vasconcelos et al (2002) and Ivija 360 (2000). Relevant statistical tools are used to analyse the data. In addition, the three network groups are identified as having different forms or structures. The results of the statistical analysis indicate the following – that network structure is important in facilitating results for the organisations committed to the networks, where different network forms display different combinations of network characteristics and correspondingly, the different combinations lead to differing strengths in different competencies. It is especially significant where the focus is on policy-driven inter-organisational in developing economies.

Key Words: inter-organisational networks, Competencies. Clusters, Malaysia

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## **Introduction**

Research studies on innovation, organisational learning and developing competencies seem to point towards networking among firms for innovation. Sources of innovation do not reside exclusively inside organisations and, instead, they are commonly found in interstices between firms, universities, research laboratories, suppliers and customers (Powell et al, 1996). The network form is also considered as an alternative to vertical integration for high-growth entrepreneurial firms. It is becoming increasingly one of the key goals for resource-poor (small) entrepreneurial organisations seeking to build network exchange structures with outsiders that are identified as crucial resource suppliers, and that can stabilise the new firm as a player in its targeted markets (Zeffane, 1994). The MSC flagships, which form the context of this study are part of Malaysia’s Multimedia Super Corridor (MSS) cluster project. These flagships group of firms which are viewed here as inter-organisational networks, are actually consortia built through policy-driven collaborative arrangements among invited firms, towards developing innovative applications and, more significantly, sustainable competitive advantage for the participating firms. These directed networks of exchange relationships are intended to create value in that the creativity and talent derived out of such an environment is perceived to result into competencies.

This paper is preliminary study to understand some issues related to inter-organisational collaborative relationships and the resulting competency developments among firms in a consortia - the “MSC Flagships Groups” of Malaysia’s Multimedia Super Corridor (MSC) project. The MSC project is a policy-driven cluster-oriented approach to jumpstart Malaysia’s transition to a knowledge economy. The MSC Flagships’ are inter-organisational networks of firms built through policy-driven collaborative arrangements towards developing innovative applications and, more significantly, sustainable competitive advantage. The directed networks of exchange relationships were intended to create value in that the creativity and talent derived out of such an environment is perceived to result into a combination of knowledge, skills and abilities, or definitively known as competencies. The paper aims to explore the dynamics of the formation of the network through the different aspects of interaction between the organisations in the network and how these are related to the development of competencies among them. The MSC Malaysia flagships offer a good setting to study the issue of competency development through collaborative relationships in the context of policy-driven networks of organisations in Malaysia, a newly industrialised economy (NIE). The paper is organised as follows – a brief overview of the MSC and the MSC Flagships is presented followed by a review of pertinent literature. This is followed by the study’s methodology, subsequently, the results of the study and conclusions are drawn.

## **Context Of The Study – MSC Malaysia And The MSC Flagships**

In line with the Government’s conviction that the future economic prosperity of Malaysia not only rested on the export of primary products but also on the fruits of high technology

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(Andaya and Andaya, 2001), the Multimedia Super Corridor (MSC Malaysia) cluster initiative was launched in 1996 to help achieve Vision 2020. The vision of MSC Malaysia is to create an integrated environment with elements and attributes of a global multimedia climate. An environment that encourages innovation, that helps organisations (both local and foreign) to reach new technological frontiers, partnering global information technology players, and providing the opportunities for mutual enrichment and success. MSC Malaysia extends over a massive 750-square-kilometre area, of which at both ends of the corridor are the Kuala Lumpur International Airport and the Kuala Lumpur City Centre (KLCC). It consists of both infrastructure and infostructure development activities, with a strong emphasis on forming an environment conducive for R&D efforts, and collaborations play a significant role throughout the project. Simply put, MSC Malaysia can be seen as a system of interactions. The use of the flagship-oriented approach helps create linkages among the organisations, between and among them, by providing formal communication channels.

Comprehensive policies have been developed to encourage ICT use in the various sectors of the Malaysian economy, as well as to accelerate the growth of the ICT sector. Trade and investment policies, such as financial and non-financial incentives, a fair trade system, and import and export duties, promote local and foreign investment. The Malaysian Government also defined attractive policies for foreign investment, such as streamlining the investment approval process, unrestricted employment of foreign knowledge workers, and freedom to obtain capital globally. In addition to the supporting policies and infrastructure developed for MSC Malaysia, the more directed efforts come in the form of “*flagship applications*”. The objectives of the *MSC flagships* are to jumpstart MSC Malaysia as a new engine of economic growth, make it a global test bed, increase Malaysia’s productivity and competitiveness by fast-tracking the infrastructure for electronic business, and help overcome the digital divide between the IT haves and have-nots. Between December 1996 and June 1997, government-private sector collaborative teams formulated proposals for each flagship application. These close partnerships between governmental agencies and with leading international and Malaysian multimedia companies had been formed to ensure the concepts developed were clarified and detailed implementation plans created. The implementation plans have been put into action since July 1997. Driving the development of the flagship applications are government ministries and agencies that report directly to the MSC Malaysia Implementation Council, chaired by the Prime Minister of Malaysia and his Deputy. MDeC, as a government-appointed, government-backed corporation, monitors the development.

Through the flagship applications, the Government extended an open invitation to the multimedia community in Malaysia and throughout the world to participate in MSC Malaysia. The large and Multinational companies, that take up the offer, will be able to create value for themselves and their shareholders in an environment uniquely suited to their needs, the smaller local firms are expected to develop new competencies and at the same time have the opportunity to help transform Malaysia and the region. The MSC flagship applications are divided into two distinct categories.

The *Multimedia Development Flagships* category comprises of flagship applications offering concrete business opportunities to facilitate the development of society and government. The

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four identified applications are Electronic Government, Multi-Purpose Cards, Smart Schools and Telehealth. The MSC companies involved in this cluster work with the respective ministries in charge of the flagships. Through the development of these flagships, MSC Malaysia aims to transform and endow the society with better governance and health and also provide the required education at school level to equip for a knowledge society with able citizens capable of knowledge processing. In addition to the socioeconomic development aims – these flagships are expected to create human capital in the identified fields.

The *Multimedia Environment Flagships* category consists of flagship applications with the aim of providing specific support to companies in developing multimedia products and applications. A co-ordinating unit is set up for the purpose of providing an optimal environment to support multimedia companies entering MSC Malaysia in the following areas. The applications are classified under the R&D Cluster and the E-Business Cluster. Here – in addition to creating a sector of ICT firms through the networking of local knowledge workers with foreign experts – the aim is to have a trained work force for the sustenance of the ICT sector.

### **Some Past Research Examining Competency Development**

Pralahad and Hamel published an article in 1990 which triggered awareness to the concept of competency. They define *competencies* as a bundle of skills and technologies rather than a single discrete skill or technology. According to McLagan (1997), competencies can be defined in many ways – tasks, results and outputs, knowledge, skills and attributes. Competencies are a combination of knowledge, technical skills and performance management skills - when an individual, group or organisation learns something, it develops a competency which it is able to use and continuously better (as it continuously learns) to achieve purposes (outcomes) (Dunphy et al, 1997).

The competence perspective gives greater prominence to organisation theory, where the importance of process is especially featured (Williamson, 1999). Foss (1996) observes that the competency perspective is – in its various guises – the dominant perspective on firms and firm behaviour today. It focuses more upon production, viewing the firm as a repository of productive knowledge rather than a nexus of contracts – where the importance of non-contractual relations like trust, loyalty, cooperation and the ability of individuals to learn and develop take precedence. This can pose difficulties from an analytical perspective as competencies are not really so much a matter of physical capital, as they are a matter of distinctive skills, organisations and knowledge (Wernerfelt, 1984). The tacitness of competencies indicates that they are not perfectly communicable and are path-dependent and can be exercised in a creative, entrepreneurial or procedural way (Foss, 1993).

For competency development, learning is the focus, as are the relationships, which surround and facilitate different types of learning and the dynamic processes of change, which follow (Lawson, 1997). He observes that the concept is far more concerned with a realistic conception of what a firm is and does. It relies on both internal and external factors to analyse

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competitive realities in that it explicitly stresses the need for organisations to develop a more dynamic way of management, thereby relying on idiosyncratic firm capabilities as prime determinants of fixed-firm performance differences (Hiemeriks, 2004). When learning is created and embedded around the strategic tasks of an organisation, the development of competencies follows.

Literature has always proposed that an organisation's long run economic performance is ultimately reliant on its competencies and capabilities. Under ideal conditions, competencies lead to sustained competitive advantage (Barney, 1991). Leiponen (1997) asserts that competencies represent an organisation's capacity to accumulate relevant new capabilities and knowledge, without which the organisation will not be able to adapt to changes within its environment. Oliver (1991) further demonstrates that organisations face the challenge to proactively build new competencies while maintaining and leveraging existing ones to sustain competitive advantage. Here, Claude-Gaudillat (2000) assists by identifying three main options to seek competencies: (1) developing competencies internally (within the firm), (2) buying competencies on the market and integrating them with competencies already possessed, and (3) building partnerships with other organisations.

### **An overview of inter-organisational networks**

Nooteboom (1999) defines a network as a pattern of more or less lasting linkages between nodes, where the nodes represent different organisational units – this would indicate that networks can exist within a firm, between firms and combinations of them. Sydow et al (1998) describes an inter-organisational network as an institutional arrangement among distinct but related for-profit organisations which is characterised by (1) a special kind of (network) relationship, (2) a certain degree of reflexivity, and (3) a logic of exchange that operated differently from that of markets and hierarchies. What this indicates is that the relationships among network organisations i.e. network relationships, are typically complex, reciprocal and relatively stable (Sydow, 1992) - these relationships are the medium and outcome of intensive inter-organisational interaction, provide 'thicker' information channels, demand more loyalty and trust (Ring and Van de Ven, 1994) and show a degree of social embeddedness resembling intra-organisational relations (Sydow, 1997).

Research done on inter-organisational networks (Dyer and Singh, 1998; Gulati, 1998; Gulati et al, 1999; Hagedoorn, 1993; Powell et al, 1996; Hamel, 1991, Provan, 1984; Osborn and Hagedoorn, 1997; Inkpen, 1996; De Wever et al, 2001 among others) indicate that organisations seek to establish relationships with other organisations as a way to identify, develop and deploy competencies. Inter-organisational networks play a central role in determining a firm's innovative capability by demonstrating that innovation occurs in networks of organisations across multiple contexts (Van de Ven et al, 1999). Thus, the inter-organisational network perspective augments the intra-organisational perspective by emphasising that innovation is not a sole consequence of organisations but also of networks of organisations (Granovetter, 1985).

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Inter-organisational networks consist of not only actors and relationships, but also of certain activities and resources (Britto, 2001). Organisations form inter-organisational relationships to access resources that are essential to pursuing their goals but are at least in part controlled by other organisations. Competitive interdependence arises between organisations occupying similar domains, and may motivate the formation of alliances to dampen competition between them (Pfeffer and Salancik, 1978) or to promote inter-organisational learning (Gulati, 1995; Koput and Smith-Doerr, 1996). By bringing members of organisations together for both task-oriented and social purposes, firm networks facilitate inter-organisational transfer of experience by increasing opportunity and motivation for transfer, and the ability of organisations to successfully apply experience transferred from other organisations.

### **Linking inter-organisational networks and competency development**

Networks are vital to sustain the continual act of cross-fertilisation of technologically innovative ideas among companies. Differences in partner characteristics can often negatively affect the effective functioning of networks (Inkpen, 1995). However, learning through the network may enable one partner to acquire the skills and technologies it lacked at the time of the network formation (Parkhe, 1991). The resource-based theory argues an organisation responds to, and becomes dependent upon actors or other organisations that control resources critical to operations and over which the organisation has limited control. Under these circumstances, an organisation is motivated to undertake action to minimise any potential loss in power due to the reliance on others for resources (Pfeffer and Salancik, 1978; Prahalad and Hamel, 1994). By accumulating and gaining control over the unique, or difficult to duplicate, resources it requires, an organisation can establish a competitive advantage (Barney, 1991). Thus, it can be said that through networks, organisations should be able to seek to increase their bargaining power via learning and knowledge appropriation.

Research studies on innovation, organisational learning and developing competencies seem to point toward the need for networks. Sources of innovation do not reside exclusively inside organisations and, instead, they are commonly found in interstices between firms, universities, research laboratories, suppliers and customers (Powell et al, 1996). The network form is also considered as an alternative to vertical integration for high-growth entrepreneurial firms. It is becoming increasingly one of the key goals for resource-poor (small) entrepreneurial organisations seeking to build network exchange structures with outsiders that are identified as crucial resource suppliers, and that can stabilise the new firm as a player in its targeted markets (Zeffane, 1994).

Networks are vital towards building relations between organisations in order for the perpetual act of cross-fertilisation of technologically innovative ideas among them to take place. It is unlikely that organisations can master the competencies they need. Therefore, it becomes essential that they collaborate to gain access to such competencies. Consequently, collaborative networks can be perceived to influence the development of competencies for a bigger purpose of achieving sustainable competitive advantage. With the now increasing importance of inter-organisational networks, governments, especially those of developing countries, can then play a more sophisticated role in network facilitation policies that effectively create and ensure the efficient functioning of such networks.

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Traditional theories of government intervention were not developed with network facilitation in mind. However, with the growing importance of networks increasingly recognised by governments over the recent years, different types of policy measures have been developed to facilitate the creation and efficient functioning of inter-organisational networks (Hämäläinen & Schienstock, 2002). National policies can focus on creating the right framework conditions for network facilitation activities of local/regional governments, industry parties and others concerned. It must be noted that inter-organisational networks can often significantly be inter-institutional in nature, as they involve more than just firms. Public research institutes, government agencies, academic institutions and individual researchers participate with firms to create and further knowledge and innovation (Thompson, 2004). Further, many important complementary resources of networks – such as university research infrastructure, industry contacts and internationalisation facilities etc. are already efficiently provided by national governments. At the same time, inter-organisational networks have also an added feature in that they eventually tend towards crossing borders. National policies can help internationalise such networks (Hämäläinen & Schienstock, 2002; Robertson & Langlois, 1995).

Western literature on inter-organisational networks have successfully emphasised that participation in networks result in competencies. Some have also focused on initiatives that bring together businesses, governments and other non-business organisations for the purposes of collaboration. But not much has been said about inter-organisational networks among organisations in developing economies. The initiative to develop networks is acknowledged to be weak; in most cases, the multinational corporations (MNCs) are the catalysts for such developments (Porter, 1991). Here, the Multimedia Super Corridor flagships offers a good setting to study the issue of competency development through collaborations, in the context of policy-driven inter-organisational networks in Malaysia, a newly industrialised economy.

### **The Research Framework and Objectives of the Study**

The vision of MSC Malaysia is to create an integrated environment with elements and attributes of a global multimedia climate for the development of an ICT industry and society. In an effort to realise the vision, flagship networks of firms working in identified primary areas of multimedia applications have been created towards what is hoped to result in the perpetual act of cross-fertilisation of technologically innovative ideas among the companies in MSC Malaysia. Through policy-driven collaborative arrangements, the MSC flagships become a vehicle for participating organisations to build inter-organisational relations. The MSC flagship networks of organisations, formed through the initiative of the government, work together in identified areas of multimedia applications. These directed networks of exchange relationships, in turn, create value in that the creativity and talent derived out of such an environment results in a combination of knowledge, skills and abilities, or definitively known as *competencies*.

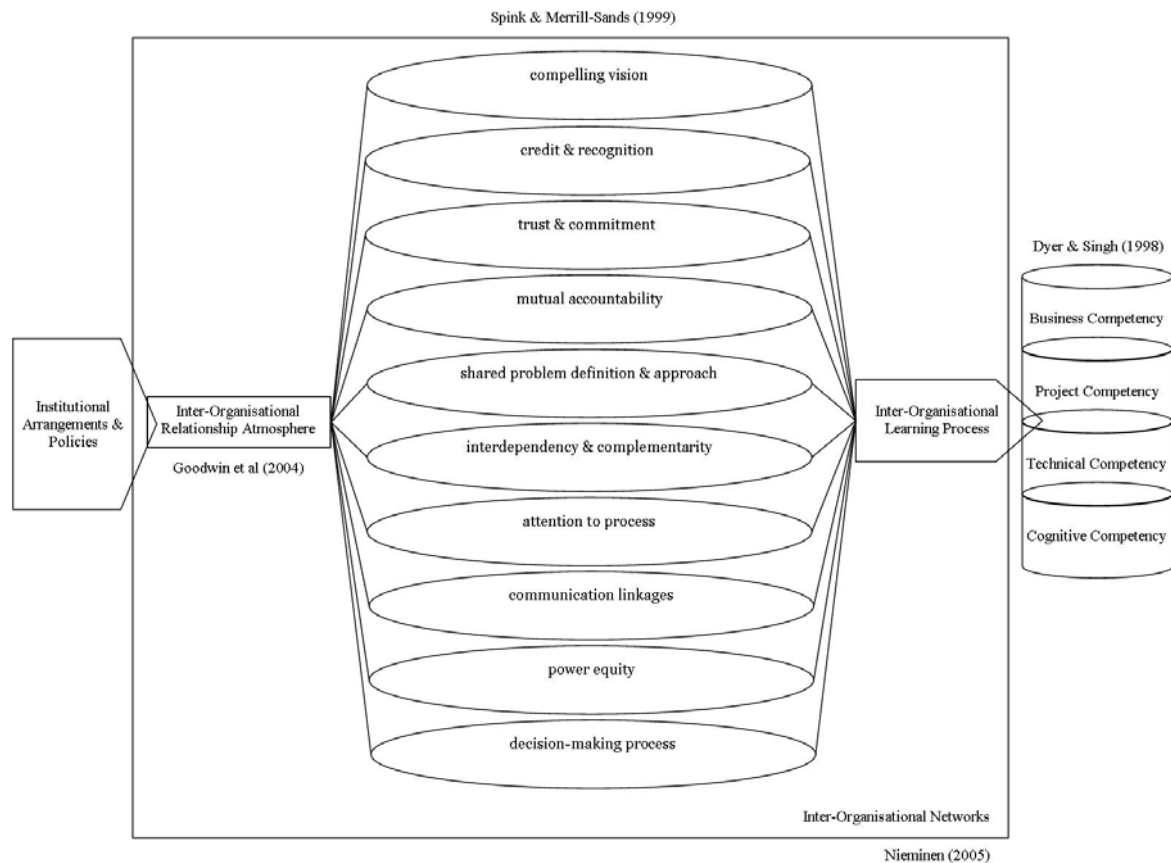
#### **Research framework**

The research framework is built upon the works of Nieminen (2005), Goodwin et al (2004), Spink & Merrill-Sands (1999) and Dyer & Singh (1998). Nieminen (2005) discusses on the

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relationship context and the reliance between partners. Spink & Merrill-Sands (1999) argue that certain elements have to be addressed to ensure a strong foundation is developed among organisations in collaboration and they are: (1) compelling vision, (2) shared problem definition and approach, (3) power equity, (4) interdependency and complementarity, (5) mutual accountability, (6) attention to process, (7) communication linkages, (8) explicit decision-making process, (9) trust and commitment, and (10) credit and recognition. Dyer & Singh (1998) identify four forms of inter-organisational competencies which cannot be generated by organisations in isolation and can only be created through the joint idiosyncratic contributions of the organisations in collaboration. They are: (1) assets specific to the relationship or technical competencies, (2) inter-organisational knowledge-sharing routines or cognitive competencies, (3) complementary resource endowments or business competencies, and (4) effective governance or project competencies. The framework is as shown in Fig. 1.

**Fig. 1 Research Framework**



Thus this study aims to understand how the MSC flagships facilitate the platform for inter-organisational networks – via national policy initiatives – to exist and explore if these directed networks of exchange relationships influence the development of competencies. The term *organisation* is used to describe formal groups of people with one or more shared goals. For all intent and purposes of this paper, the term will be used as a generic representation of all forms of formal groups i.e. firms, enterprises, institutes, governmental and non-governmental agencies, non-profit entities etc.. The consequent research objectives are:

1. To identify characteristics of the inter-organisational networks formed through policy directives.
2. To explore the types of competences developed among the firms participating in the inter-organisational networks formed through policy directives.
3. Explore if network characteristics have any relationship to the development of competencies in inter-organisational networks formed through policy directives.

### **Methodology of the study**

A survey research design was adopted and the data required for the survey was obtained from a field survey. A specially developed questionnaire was used to collect the data. The questionnaire consists of combination of open ended questions and structured questions. The questionnaires were structured in three main parts. The first part is used to collect information about organisation's demographic and profile like which MSC flagship they belong to, local or foreign firm, etc.. The second part has questions to collect the perceptions of executives on the network characteristics. The third part has question related to competencies developed. The questions in part two and three of the questionnaire were structured and close ended and were measured using a five point Likert scale, anchored with 1 as extremely disagree and 5 as agree.

Based from the information obtained from a review of literature and discussion on the various aspects of cluster and MSC development with academicians, regional development authority (MdeC) executives, relevant ministries personnel like - Ministry of Science Technology and Innovation (MOSTI); and respondents from MSC status companies, a preliminary questionnaire was administered. Pre-testing the questionnaire was done by administering it personally to executives in four MSC status organisations for the purpose of improving the quality of questionnaire by identifying and excluding potential problems. After making the adjustments the final questionnaire was mailed out to executives from the organisations involved in the MSC flagships. The executives chosen were those involved in the projects of three of the MSC flagships viz. GMPC (Smart Card), e-Porlehan (Govt. of Malaysia e-procurement project) and the Telehealth. The respondents were pre-identified by calling up the organisation's human resources division and the e-mails were collected and the questionnaire was mailed out. Follow up phone calls were made to help clarify any issue with filling the questionnaire and also to increase the response rates. A total of 39 executives from the three 'flagships' responded. The data was analysed using descriptive statistics to gain an understanding of the general patterns of the network characteristics of the three flagships and also the competencies development. Correlations were done to see if there is any association between network characteristics and competencies development.

### **Results of the Study**

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From the survey findings, on average, all the network organisations have participated in the MSC flagship projects between 5-7 years. While the Telehealth and the e-Perolehan networks mostly comprise of local organisations, the GMPC network comprises of a combination of local and international organisations. Most of the organisations have between 50-249 employees. The respondents who participated in the case questionnaire consist of 10 senior management staff (both Government and private organisations), 17 managers (both Government and private organisations), 5 executives, 5 consultants and 3 undisclosed (where  $n = 39$ ).

### Inter-organisational network characteristics of the MSC flagships

In this section the overall perceptions about characteristics of networks formed through policy directives are presented. From the Fig 2, it appears that issues like compelling vision, shared problems and interdependency / complementarities are perceived by executives in the flagship networks.

Fig. 2 Overall Perceptions Of Network Characteristics

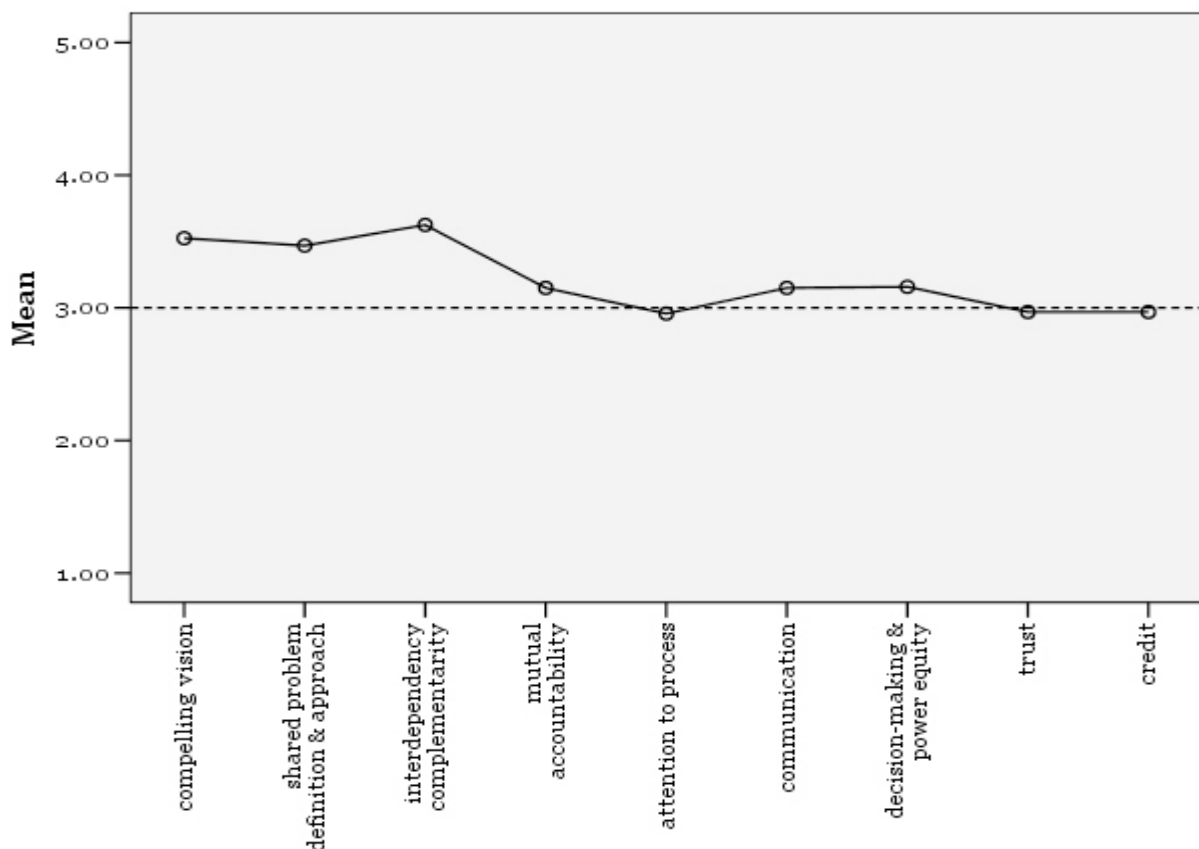
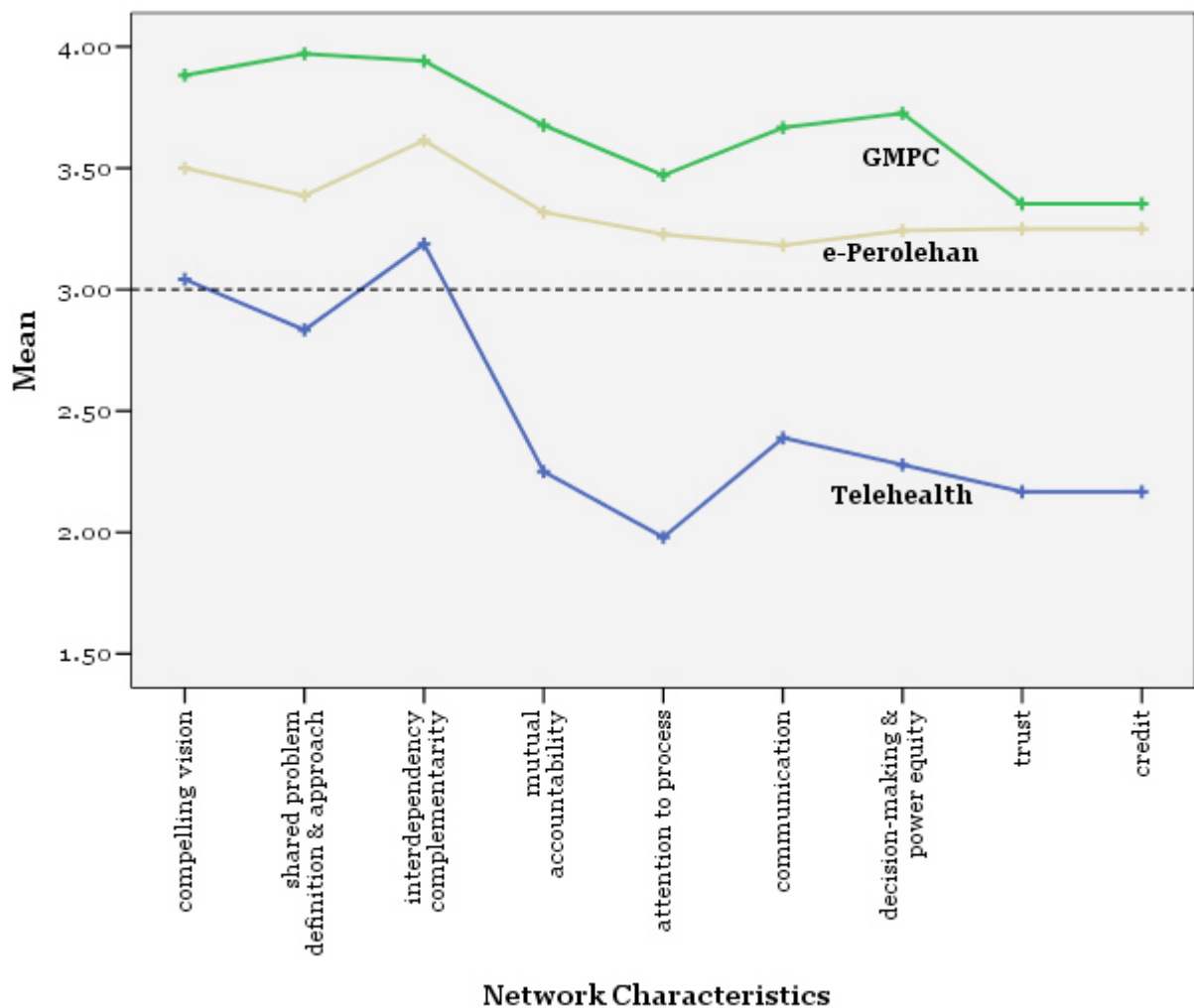


Figure 2 presents the means were also calculated by breaking the sample into responses from the three networks. It can be observed that the respondents from the three flagship networks seem to have agreed on the need to articulate network goals and ensure that each member

contributed to achieving that goal. Also, in terms of using the network vision to ensure prioritisation of activities and resources, it is noted that there is comparability amongst the three MSC networks. In certain terms of shared problem definition and approach, which include ensuring all network members participate in a common approach to addressing problems by way of regular network meetings, a significant difference is presented between the GMPC network and the Telehealth network. This could be indicative of the problems faced by the Telehealth network to find a common ground amongst its members.

The Telehealth network executives seem to perceive they face complications on the issue of using the diverse skills, knowledge and backgrounds of its network members on grounds that each network member's contribution is essential for the network's total outcome, as denoted by the significant difference between the GMPC network and the Telehealth network. In other categories of interdependency and complementarity, the organisations of all three networks are subject to comparable conditions.

**Fig. 3: Perceptions About Network Characteristics By Flagship**



Survey findings also indicate that the Telehealth network is confronted by difficulties in all categories of mutual accountability, attention to process, communication, power equity, trust

and credit. Where as, the means for the similar variables of network characteristics perceived to be higher by executives in the GMPC network and the e-Perolehan network. The executives in organisations of the Telehealth network seem not to share a sense of responsibility for network results nor is there any agreement on appropriate norms and processes towards sharing the burden of meeting deadlines.

The results indicate that the members of the GMPC network keep communication channels open and robust which enabled the members to deal with problems and conflict constructively and appropriately as opposed to the Telehealth network . The same could be said of the issue of power equity and decision making, where a significant difference is presented between the GMPC network and the Telehealth network. Trust seemed to pose a bigger problem for the Telehealth network as compared to the other two networks – a significant difference exists between the network and the GMPC network and between the network and the e-Perolehan network in matters of honouring commitments and having hidden agendas. Hence, when trust is lacking, it follows that all matters of credit and recognition are affected – albeit recognising and acknowledging contributions by other members or agreeing on issues of visibility, authorship and intellectual property – a significant difference lies between the Telehealth network and the GMPC network and also between the Telehealth network and the e-Perolehan network.

While all these are based on simple means it is recognised a test like ANOVA needs to be done to establish that these different results among the different networks is needed. But the study is exploratory one and the results are presented as such seeing to identify some patterns.

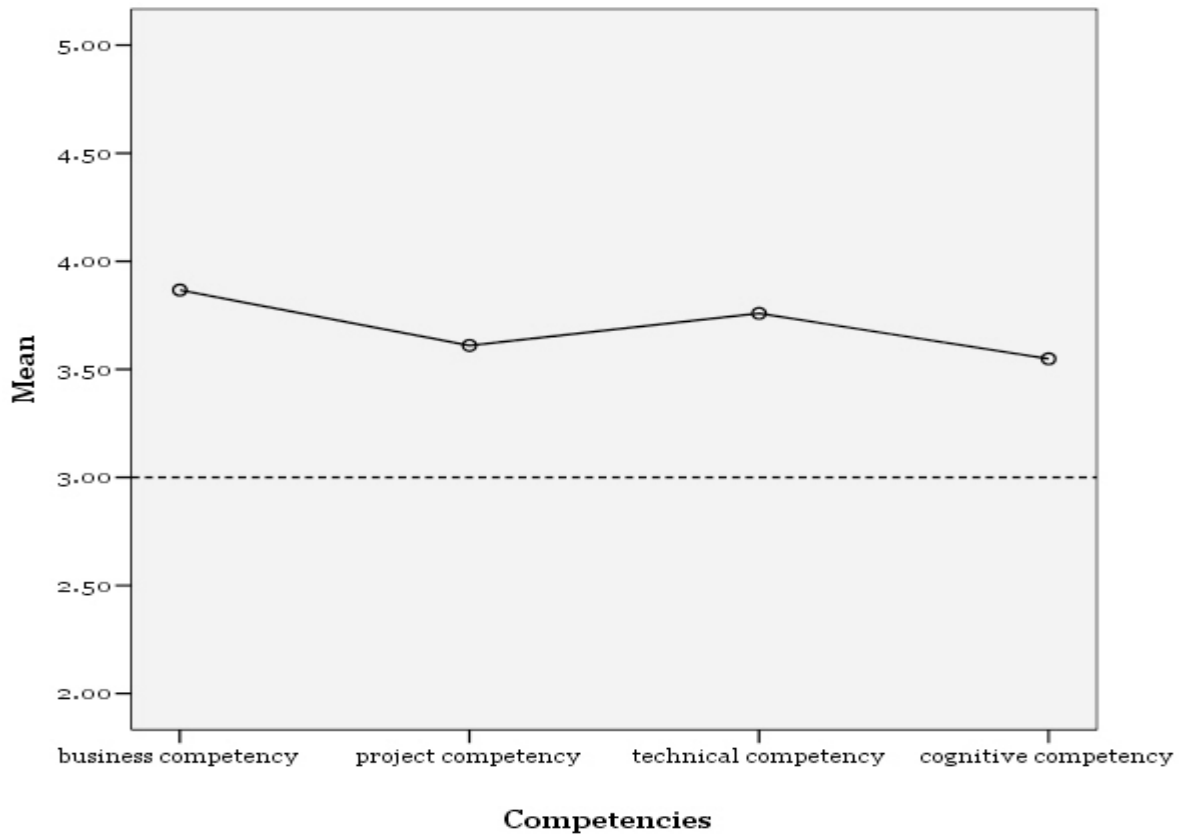
### **Types of competences perceived to have been developed in MSC Flagships**

In this section the means of the different competencies perceived to have been developed by organisations participating in the MSC flagships are presented. Fig 4. The aggregate means scores seem to indicate that respondents viz executives involved in the projects related to the MSC flagship consortia, perceive that participating in the networks has lead to some development of competencies – which are measured in four categories – business, project, technology and cognitive competencies.

The mean scores of the business competencies are perceived being higher than the others , followed by the development of technical competencies. Follow up interviews also indicated that the Malaysian firms developed new competencies in business like handling large projects, bidding for technology projects overseas etc.

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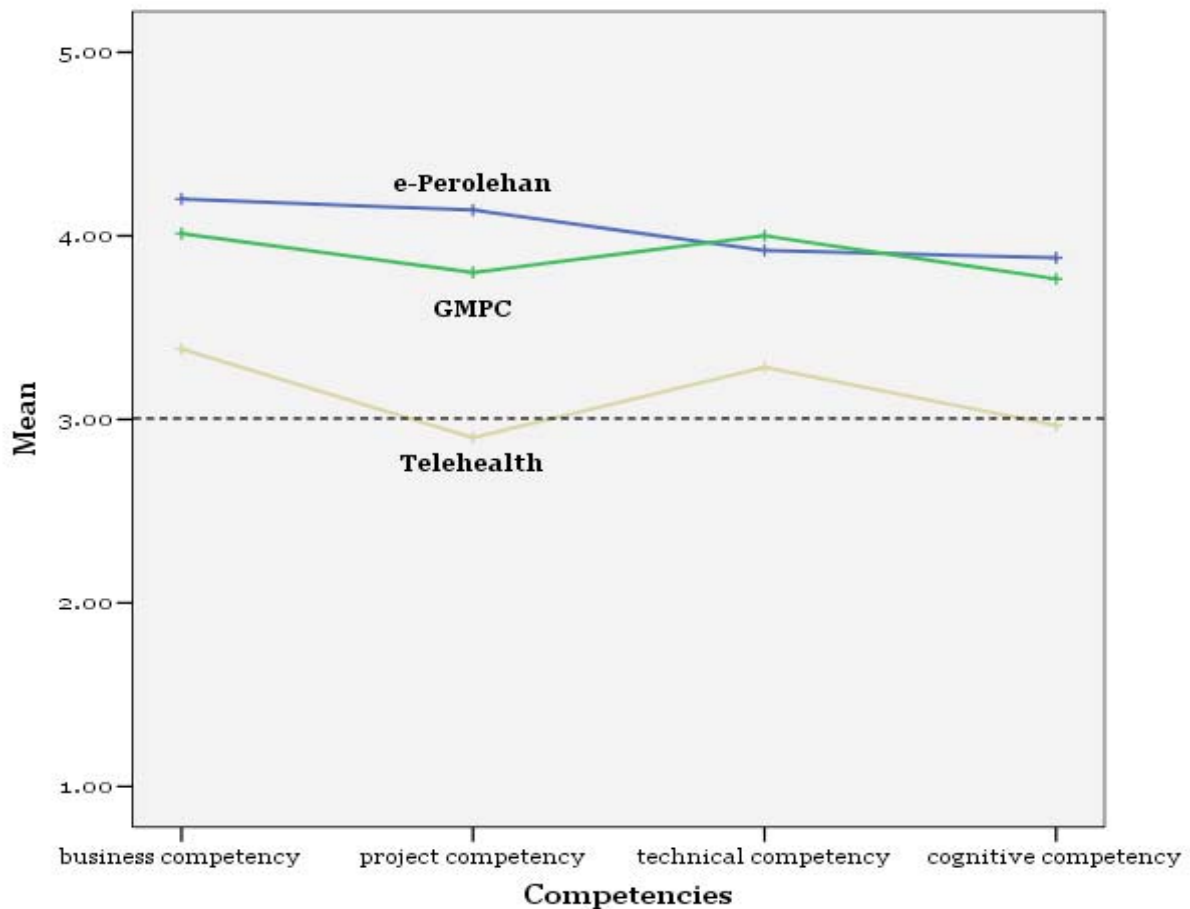
Fig. 4 Overall Means of Competencies Perceived to have developed among Firms Participating in MSC Flagships



But given the different flagships being different in their structures – means were calculated by breaking up the sample based on the responses from the different flagship networks. The results of the means are presented in Figure 5. A look at the means on competencies of the three networks seem to indicate that the respondents from e-Perolehan perceive a more positive outcome in terms of competency development than the other two networks. On the other hand, the means scores of competencies development, based on perceptions of respondents from the Telehealth network seems to be much lower than the those of the e-Perolehan network or the GMPC network, indicating that the network typified by this flagship may have had lesser opportunities to develop relevant competencies in the course of the project.

The perceptions related to project competencies, including developing the ability to establish challenging goals, create a motivating environment and develop employees by way of appropriate delegation of authority, the means from the e-Perolehan network are higher than those from the GMPC network and the Telehealth network. Overall again Telehealth executives perceive that lesser development of project competencies.

Fig. 4 : Means of Competencies Perceived to have developed among Firms in the different MSC Flagships



With regard to technical competencies, in all categories of technical competencies, the perceptions of executives in the organisations of all three networks are observed to be similar based on the means scores. In the category of cognitive competencies, which involves such ability to maintain effectiveness in varying and ambiguous situations, and to cope with the pressures of changing demands and circumstances, the means scores seem to be different for the different networks. The executives in the e-Perolehan and GMPC networks seem to perceive higher levels of cognitive competence development. The mean scores or perceptions of respondents from organisations in the Telehealth network indicate fewer opportunities to develop such cognitive competencies.

### **Network characteristics relationship to the development of competencies**

The final objective of the study was to explore if network characteristics have any relationship to the development of competencies in inter-organisational networks formed through policy directives. Correlations were done to see if there was any association between the variables related to network characteristics and four types of business competencies. The results are presented in Table 1 (in next page) and they indicate different characteristics are associated with different competency development.

From the Table 1, it can be seen that there are two network characteristics variables seem to have relatively higher level of association (correlations of > 0.5) with business competency development. They are Interdependency and Complementarity (>0.6) and Attention to process (> 0.5). These are of course based on the perceptions of executives from the participating firms in the three networks.

In the case of Project Competencies – all but one of the variables of network characteristics are highly associated with development of project competencies in inter-organisational networks (with correlations greater than 0.5). The more important ones are Interdependency & Complementarity, Attention to Process, Trust and Credit seem more important correlates with correlations greater than 0.6. The network characteristics that are association with developing technical competencies are Attention to Process (>0.5) with Mutual Accountability and Decision Making and Power Equity being fairly strongly associated (correlations of 0.497 and 0.487 respectively). From the table-1 it can be seen that five network characteristics variables are perceived to be associated with Cognitive Competencies – they are Attention to processes, Decision Making and Power Equity, Trust and Credit (with >0.6) and then are Interdependency & Complementarity and Mutual Accountability (correlations >0.5).

**Table 1 Results of Correlations of Networks Characteristics and Competencies**

	Correlations											
	Business Competency			Project Competency			Technical Competency			Cognitive Competency		
	Pearson Correlation	Sig. (2-tailed)	N	Pearson Correlation	Sig. (2-tailed)	N	Pearson Correlation	Sig. (2-tailed)	N	Pearson Correlation	Sig. (2-tailed)	N
Compelling vision	0.370	0.020	39	0.325	0.044	39	0.189	0.248	39	0.289	0.074	39
Shared problem	0.430	0.006	39	0.510	0.001	39	0.302	0.061	39	0.370	0.021	39
Interdependency & complementarity	0.641	0.000	39	0.602	0.000	39	0.497	0.001	39	0.528	0.001	39
Mutual accountability	0.431	0.006	39	0.551	0.000	39	0.416	0.008	39	0.509	0.001	39
Attention to process	0.541	0.000	39	0.676	0.000	39	0.519	0.001	39	0.662	0.000	39
Communication	0.391	0.014	39	0.544	0.000	39	0.326	0.043	39	0.487	0.002	39
Decision making & power equity	0.421	0.008	39	0.553	0.000	39	0.487	0.002	39	0.643	0.000	39
Trust	0.471	0.002	39	0.606	0.000	39	0.457	0.003	39	0.602	0.000	39
Credit	0.471	0.002	39	0.606	0.000	39	0.457	0.003	39	0.602	0.000	39

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

These exploratory results indicate some trends as perceived by the executives – in organisation that participate in networks formed by policy directives – different network characteristics are associated with development of different competencies. So depending on the type of competencies that need to be developed – managers of firms or projects involving networks of different organisations – need to develop the characteristics appropriately.

## Conclusions

Overall, although it does not occur equally among the network organisations, the survey evidence indicates that membership in policy driven inter-organisational networks does provide the organisations opportunities to engage in competency development. However, network participation could have been more beneficial for the network organisations in general had there been more emphasis given to issues of attention to process and developing constructive communication linkages. At the same time, some aspects of compromise and acknowledging members' contribution could have been further encouraged. Although all the network organisations report favourably to developing competencies in the main-stage interviews, the survey data indicate that, at least, for most categories of competencies, the e-Perolehan network benefit the most. On the other hand, in the matter of inter-organisational networks, it would seem that the GMPC network possesses the most conducive environment towards predictably enabling it to develop a sufficiently balanced array of competencies. On account of both inter-organisational networks and competency development, the Telehealth network is observed to have been disadvantaged in possessing the least conducive environment leading to the least opportunity to develop competencies.

It is also found that a network that is driven and regulated by national initiatives and policies, in this case the GMPC network – can be beneficial for organisations in terms of developing competencies. It is also found that the strength in developing competencies depends on how the network is structured and the dedication of the government as network facilitator to commit to the network. The three networks were analysed for their structure and the study's preliminary evidence shows that the type of network structure that is most suitable for favourable results depends on the level of dedication of the network facilitator, especially in policy-driven networks like the MSC flagship networks, to administer the process of network involvement of the organisations. The results also suggest that the network facilitator must live up the role to put into place the foundation elements necessary for a network to develop characteristics towards producing a conducive environment for the network organisations to learn and benefit. Thus, both the network facilitator and the network organisations must be committed to the norms of cooperation and must work toward accomplishing network and organisational goals (Human & Provan, 1997).

This study provides new contributions to the field of network policies by synthesising concepts from network theory, inter-organisational theory and competency theory to explore how network characteristics relate to the inter-organisational learning process of organisations in influencing their ability to develop competencies. According to Knight et al (2002), inter-organisational learning is learning that takes place in the inter-organisational setting. In inter-organisational learning, the degree to which organisations learn is a function of the extent of their participation in the inter-organisational networks (Lane & Lubatkin, 1998). Powell et al (1996) further this by arguing that what is learned is profoundly linked to the conditions under which it is learned. Hence, this insinuates a relationship between network theory and inter-organisational learning theory.

The results of the study provide useful implications for further theoretical development in the relationship between inter-organisational networks and competency development. More significantly, emphasis on policy-driven inter-organisational networks has been limited insofar to focus mostly on aspects of centralisation of institutional governance and coordinated exchange (Williamson, 1975; Teece, 1982, 1986; Hardy et al, 2003, Thompson, 2004) in developed countries (Hämäläinen & Schienstock, 2000). This paper's aim was to

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explore the implications of an inter-organisational network approach, driven by government policy and initiative, for the development of competencies by organisations participating in such networks where the emphasis is on emerging economies like Malaysia and their governments. The initial understanding is that the more conducive the network environment, the likelihood is that the network organisations will develop competencies. However, results also show that the role of government as network facilitator is imperative in ensuring that the network organisations benefit from participation in policy-driven inter-organisational networks.

Although evidence may indicate that the government has been passive in the e-Perolehan network and the Telehealth network, nevertheless, the evidence also imply that it has influenced the dynamics of all three networks to enable the network organisations to develop competencies, albeit at differing levels. It seems apparent that the driving force of these networks has been the national initiatives of MSC Malaysia. This reinforces the significance of policy-driven networks and implies a link between network theory and competency theory. Where networks are structured around strong objectives and accompanied by coordinated exchange and institutional governance, *“a network’s structural patterns and the positions of organisations within them have a significant impact on the degree to which the organisations are able to control their own actions and influence those of others”* (Hardy et al, 2003). Hence, organisations that are facilitated into actively partaking in policy-driven networks are likely to achieve a range of competencies as a result of their network involvement.

The survey also suggests that despite having appropriate structures and instituting rules and systems to ensure appropriate network administration, networks are not guaranteed to begin well. According to Goodwin et al (2004), change can come *“at the implementation stage when implicit changes to established practices are commonly resisted in all but the most committed cases and this reflects a structural, cultural and professional inertia that network management will need to overcome”*. Especially evident in policy-driven networks, the quest for power and prestige can present insurmountable odds in ensuring dynamic network administration. Nevertheless, this brings about the essence of competency theory where Sanchez (2004) quotes Rumelt (1994) as saying that competencies involve embracing competition to acquire the best skills and capabilities. Hence, another link between the network theory and the competency theory is observed by way of acknowledging cooperation to be the new form of competition, emphasising the need for institutional arrangements and policies towards greater mutuality of power relations between network organisations. The study also provides a possible extension of the network theory and competency theory where inter-organisational networks that are purposefully constructed by a government of a developing economy and administered by way of institutional mechanisms to enable the country, and correspondingly, the network organisations, develop competencies are explored. This is especially important for research on policies and strategies of developing countries where growth of the countries and their organisations can be daunted by high competition and uncertainty.

While the findings of this study provide some critical information regarding policy-driven inter-organisational networks and their characteristics, and how they relate to competency development, several research limitations exist and need to be brought to attention. First and most importantly, the study includes only three networks and with small sample size - thus, the findings cannot be claimed to be generalisable to other policy-driven inter-organisational

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networks, perhaps even within the context of MSC flagship networks. However, it is the belief that the lack of work in policy-driven inter-organisational networks in developing countries justifies this study's research design. By exploring the three MSC flagship networks, comparisons could be made which would otherwise have not been possible. Also to report differences about the network characteristics and competency development among the three networks – more statistical tests need to be done like ANOVA or related tests. But never the less the study intended to explore issues of characteristics of networks that did not evolve but formed by government policy directives. Also even this preliminary study has implications for managers and policy makers discussed below.

### **Implications To Managers And Policy-Makers**

Specifically, results suggest that organisations cannot develop competencies by merely becoming a participant in a policy-driven inter-organisational network. It is the quality of the inter-organisational relationships that an organisation develops that can effectively ensure that it develops the relevant competencies that it needs. In particular, three network characteristics are found to significantly influence the development of competencies by the organisations. Organisations that have network characteristics defined by a high degree of compelling vision, shared problem definition and approach, and interdependency and complementarity, are likely to be initially compelled to develop business competencies. The characteristics are seen to establish the foundation necessary for the networks to evolve further characteristics to create a more conducive network environment towards strengthening the development of the other competencies.

In addition, it is important for managers and policy-makers to learn to manage the different network relationships within a network. Managers need to exploit the relationships, including that with the mandated network facilitator, to ensure that their organisations learn from their other members to drive the development of competencies. Policy-makers need to understand that the policies they establish to drive the networks must be nurtured by effective management – equally, a responsibility of the government. Findings indicate that effective network management enables an organisation to establish strong ties with its network members faster and correspondingly, hastens its development of competencies. More time is made available for the organisation to master the competencies that they have been given the opportunity to develop. Effectively, the government will be able to save time and funds and move on towards acquiring new insights and ideas on how to establish better policies and strategies, e.g. internationalisation of networks (Hämäläinen & Schienstock, 2002), in this case, for MSC Malaysia.

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