

**DECISION SCIENCES INSTITUTE**  
**Global growth of service innovation: influence of national culture and organizational structure**

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**ABSTRACT**

International company's value creation in service related activities grow with its service innovations and its service manager's knowledge of cultures and organizational structures of target markets. This research focuses on the relationships between cultural heterogeneity of the global service market and service innovation growth at country and firm levels. The study links service innovation growth with national culture and four organizational structures – market, family, pyramid, and machine. The article presents analysis based on statistical test results from a sample of forty-three countries and suggests ways of making effective managerial decisions.

**KEYWORDS:** Service Innovation, Growth, National Culture, Statistical Model, Organizational Structure

**INTRODUCTION**

The *science of service innovation* promotes the design of new services and enhancement in service delivery systems (Smith-Daniels, 2009). Academicians (Metters & Maruchek, 2007) as well as practitioners (Chesbrough & Spohrer, 2006) call for more research on service innovations instead of focusing on shrinking portion of world economy – the manufacturing sector. In spite of that, there is a lack of emphasis on research on service innovation and growth (Peres et al. 2010).

Song and Song (2009) developed a staged service innovation model that decision makers can use to improve service quality to their customers. Paswan et al. (2009) developed a service innovation typology that helps managers responsible for service innovations. Using a large-sample customer service data set, Froehle (2006) developed a multi-group structural equation model to analyze the interactive influences of customer service representatives and technology on customer satisfaction. Kimes and Thompson (2004) developed a revenue maximizing model for an optimal table-mix in a restaurant. The restaurant implemented the model and obtained increased revenue. Pullman and Gross (2004) explored relationship between different service elements and customers' loyalty which can be strongly mediated by certain types of their emotional behavior. Looney et al. (2008) analyzed social cognitive perspective of service channel preference on online brokerage services. However, it appears that the literature on

service growth lacks empirically evident studies on modeling its spread in different countries especially taken into account the variability in their cultural attributes. That is the focus of this study.

### Spread of Service Innovation in country's service sector

Building on the works of Peres et al. (2010), diffusion of service innovation can be defined as the process of market penetration of services, which is driven by societal influence. Societal influence can include all of the interdependencies among the various actors including consumers, various decision makers, and market players. According to them a key issue in multinational diffusion is "the mutual influence of diffusion process in various countries," (Peres et al. 2010). Countries differ in their inherent culture and the culture influences decision making of the government, management of organization, and the people who consumes. However, research is scarce in building theories that connect culturally different managerial styles across the globe to improved service innovations and activities at the firm or country levels (Song et al., 2000). Globalization of service and its cross-border growth make it imperative for organizations to target the markets in other nations. The service sector of a nation's economy consists of the *soft parts* of the economy such as insurance, government, tourism, banking, retail, education, and social services, to name a few (Tertiary sector of the economy, 2009). In soft-sector employment, people use time to deploy knowledge assets, collaboration assets, and process-engagement to create productivity (effectiveness), performance improvement potential and sustainability. Typically the output of this time is content (information), service, attention, advice, experiences, and/or discussion (also known as "intangible goods"). As service sector is becoming predominant in most nations, globalization of service and its cross-border growth make it imperative for organizations to target the markets in other nations. Figure 1 shows service per capita for the year 2004 for a few nations. HongKong, Japan and the US are leaders in service per capita spending.

Figure 1: The service per capita of some nations

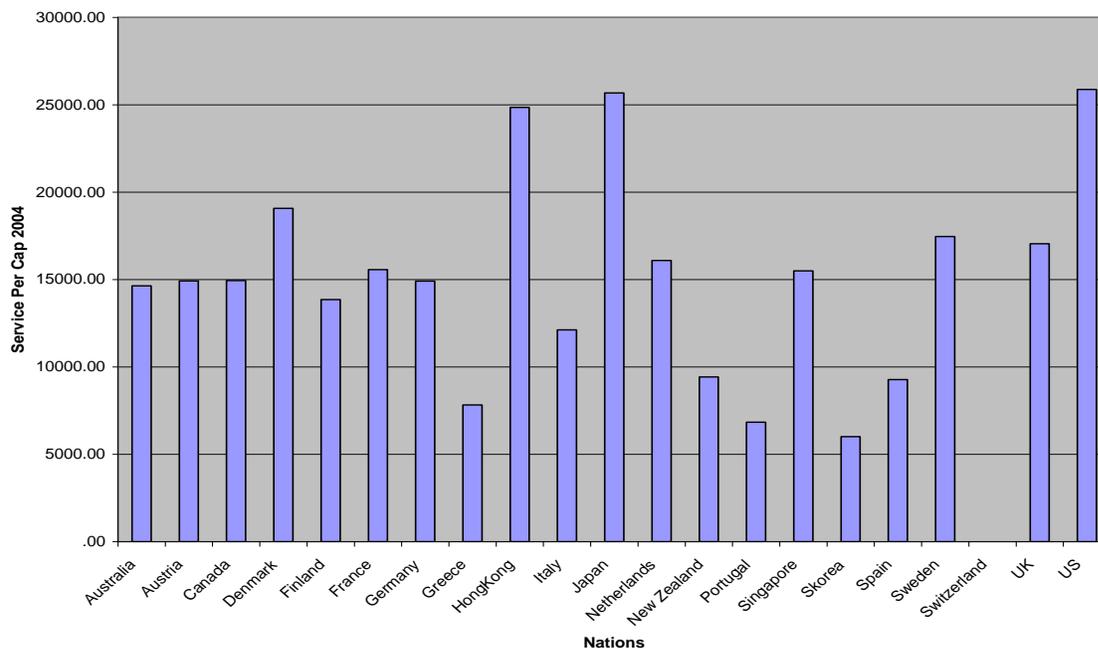
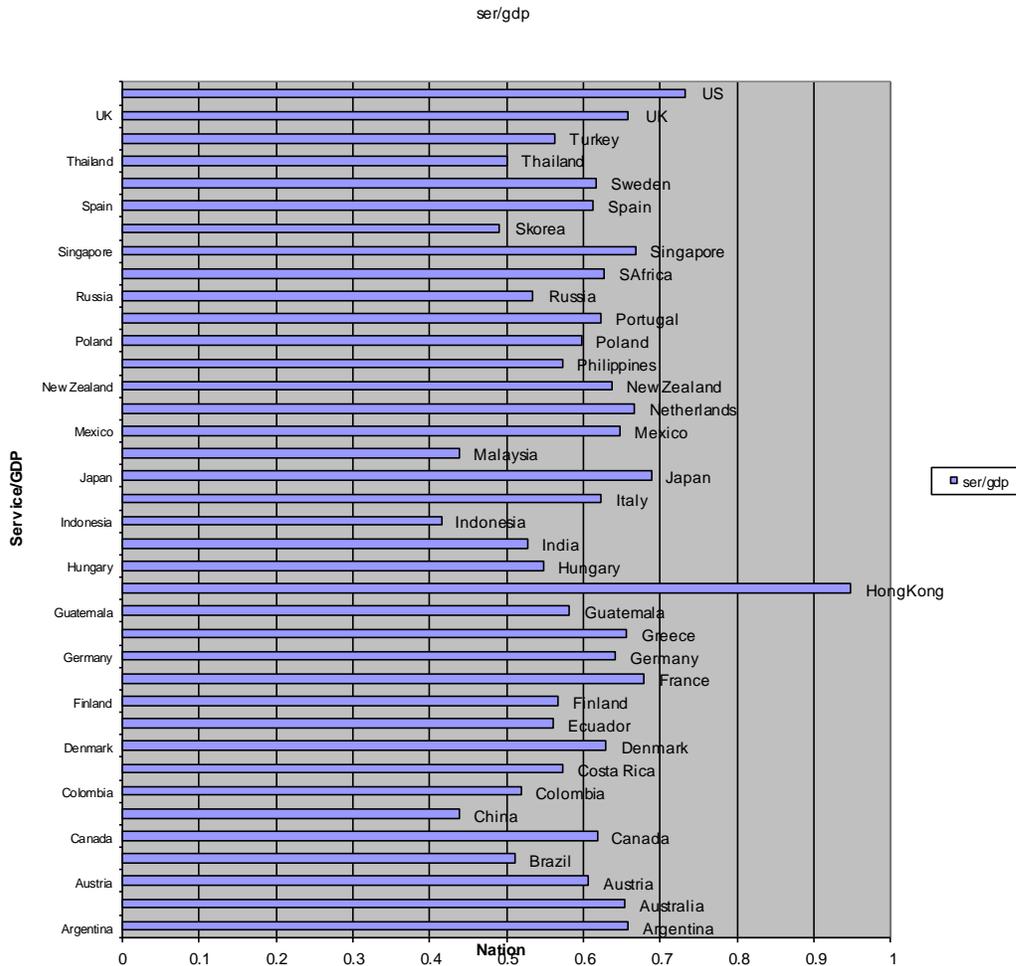


Figure 2 shows the service expenditure in \$ per gross domestic product (GDP) per capita in 2004. For most of the nations, service accounted for more than 50% of GDP. It is, therefore, important to find out what causes service growth in various nations.

Figure 2: Service as a percentage of GDP



Service growth can partly be attributed to the globalization phenomenon. Research (Stieglitz, 2007; Bhagwati, 2004; Klienschmidt and Cooper, 1988) indicates that organizations that adopt a trans-national and global market focus when developing and commercializing new products in services and technologies generate more global market share and financial gains from their investments. The economic theory of globalization (Hutton and Giddens, 2001) persuasively argues that firms are better off in targeting homogeneous international market.

In terms of service innovation acceptance and growth, the global market is arguably heterogeneous in that it can vary from one nation to the other in its capability of rent generation from innovation spreads. Difference in adoption and innovations across various countries can be one source of this variation. There are at least two theoretical explanations of this variation.

First is from the economic theory-heterogeneity of the economic wellbeing and growths of the nations. The economic wellbeing argument claims that the rich nations will be more rewarding targets than poor nations in terms of global market rent. Economic factors, however, do not provide a fuller understanding of this adoption behavior.

The second reason is that even in the age of globalization, trans-national adoption and diffusion of innovation can be influenced by extra-economic factors (Perks and Wong, 2003). National culture can be one such factor, and a source of the variation of firms' global market returns. The literature, focusing mostly on manufacturing or product innovation, argues that product innovation and growth of trans-national markets for new products can be influenced by national culture (Perks and Wong, 2003). By collecting data from 56 countries on the acceptance rates of PC, cell phones and the Internet based products and services Yeniyurt and Townsend (2003) show that cultural factors plays a significant role in influencing adoption and diffusion of new products at the micro or consumer level. Similar patterns of the influence of culture on phenomenon of trans-national innovation acceptance have started to emerge. For instance, Shivakumar and Nakata (2003) find that cultural factors can impede or facilitate initiation and implementation phases of product innovation. Their study simulated the innovation behavior at the development project levels and analyzed the effect of multicultural development teams.

Organizational and country's cultures drive quality management performance in manufacturing industry (Naor et al., 2008). The same influence is expected in the service industry too. Benedetto, Calantone and Zhang (2003) tested the technology acceptance model by collecting data from 500 firms from a single non-western country, China, and found that influence of culture moderates whether the latest and newest technology will be embraced at the firm level. These early results indicate that the cultural factors influence the spread of innovation. Dhir (2005) points out the role of language in corporate decision making and knowledge creation and innovation. Market growth itself can vary in its effect and conduct across innovation attributes (product or technology or development project) or across unit of analysis (consumer, project teams or firms). From these and other similar studies (Straub, 1994, Samaddar and Kadiyala, 2006), one common thematic pattern emerges that cultural differences can influence the trans-national innovation and its adoption and growth. The global market is heterogeneous from the view point of the potential acceptance of innovation and growth of markets – not only due to economic reasons but also due to cultural differences.

### **Research Objectives**

This research focuses on the relationships between cultural heterogeneity of the global service market and country's service innovation growth. For better economic rent firms should spread their service innovations in target countries by considering together the above economic arguments from previous section and target country's cultural heterogeneity. Managers of the aspiring firms should identify national markets expected to be culturally more receptive to innovations and suitable home for growth for innovation based products or services. Decision making process in identifying nations for potential business spread can start at target nations' cultural factors. We have found that a country's innovation is highly positively correlated with its service activity in our sample.

We used Hofstede's framework (2001) to provide the link between country's growth in service and target country's national cultures. There are other similar theoretical framework linking country's management style and national culture like GLOBE (House et al., 2004). Hofstede's research is, however, pioneer in this area and is widely referenced in the literature. Sondergaard (1994) noted that Hofstede's cultural dimensions provided both a theoretical

paradigm as well as data for other studies. Hofstede's work has been replicated and observations are validated (Adler, 1995).

A service consumer's perception of what constitutes a good service is "culture bound" (Stauss and Mang, 1999). Due to increased globalization, factors such as technological and tax-related advantages may gradually be replaced by advantages due to target nation's culture in considering potential market. Understanding the link between target country's cultures and achieving competitive advantage is essential for firms (Riddle, 1986). This research attempts to explore this link.

Specifically, the present paper has three research objectives. First, we build theoretical understanding of how national cultural factors affect the growth of business due to service innovation. To achieve this objective we designed hypotheses and tested them on real data from 43 countries. Service growth at the national level is represented by service value added (World Bank, 2008). Second, this analysis is extended to different service sectors within a nation. Third, contingent upon the results to achieve first research objective, this study offers a classification framework for nations to be targeted for service related business.

## **HOFSTEDE'S CULTURAL AND ORGANIZATIONAL MODELS AND NATION'S SERVICE**

### **GROWTH**

#### **Hofstede's Cultural Dimensions**

According to Hofstede (2001), culture is formed by the collective mental programming of a group, tribe, minority, or a nation. It can be viewed as the aggregate of individual personality traits (Bagchi, 2003). He classified countries along mainly four dimensions: power distance (PD), uncertainty avoidance (UA), individualism/collectivism (IC), and masculine/feminine (MF). These cultural dimensions are used to rate each of the 53 countries by Hofstede (Hofstede, 2001). These dimensions can be used to delineate leadership types or management practices.

#### ***Power Distance (PD)***

This measure refers to the extent to which a society accepts the unequal power distribution within or between institutions. A high PD society means that people in that culture more readily accept wider differences in power compared to low PD culture. For example, in some high PD cultures, management decisions will mostly be centralized and hierarchical. In low PD cultures, management decision will be decentralized and more participative.

#### ***Uncertainty Avoidance (UA)***

This cultural attribute describes the extent to which individuals feel threatened by uncertain and ambiguous situations, and try to avoid them. In a culture with high uncertainty avoidance, mechanisms are created to reinforce and reduce risks. Thus, managers in these nations may have more rigid rules and exhibit less tolerance for uncommon ideas and behaviors. This dimension is related to need for security, dependence on experts, and the application of information. The societal norm in countries with low UA scores includes a tolerance for uncertainty (Bagchi, 2003).

### ***Individualism - Collectivism (IC)***

Individualism refers to a loosely coupled social network where people take care of themselves. In contrast, collectivism refers to a tightly coupled social network where the group feeling is very strong. For example, in cultures where IC score is low, employee loyalty is considered more important than efficiency.

### ***Masculine-Feminine (MF)***

When the cultural values of human relationships and concern for others are high, the culture is believed to be a *feminine culture*. On the other hand, masculine cultures are believed to be more assertive and material based. A high MF score means the culture is more masculine. Compared to other cultures the US is high in individualism, low in power distance, high in uncertainty avoidance, and high in masculinity.

### **Culture and Innovation**

Technological innovation is an important strategic consideration of many firms. In order to survive in an ever changing and competitive market, firms need to continuously innovate in products and services. Many firms are also considering international research and development (R&D) offshoring in low-cost and high technology nations. We propose that Hofstede's cultural dimensions can explain such innovative service activities.

Low PD societies have more need for more modern industries and service is one of them. Shane, Venkataraman and Macmillan (1995) investigated the role of innovation and PD. They found that in high PD societies, a greater need of approval from hierarchy was needed for innovative activities. So a strict hierarchy can stifle the innovation activities of a firm. High innovative activities such as invention patents are positively associated with low PD (Shane 1992).

Calculated risk taking in innovative activities is a standard way of doing business in many nations. Implementing any innovation involves risks, especially the new ones. Hofstede notes that a weak UA score leads to more basic innovations (Hofstede, 2001, p. 443). Shane et al. (1995) found that in high UA nations, innovators felt more constrained by rules and regulations. They found that innovative activities outside existing organizational norms, rules and procedures were more common in low UA societies. They also observed an association of higher innovation in terms of trademarks granted with low UA values. Thus, a low value of UA is associated with high innovative activities.

Innovative activities in individualistic nations will be greater as individuals have more freedom in work and less need to involve other organizational members (Shane, 1993). Shane, Venkataraman, and, Macmillan (1995) also found that innovative activities outside existing organizational norms in a high IC society is more common. Steenkamp, Hofstede, and, Wedel (1999) and Shane (1992) suggest that a high IC society will exhibit high innovative activities.

Finally, a high masculine society defines success as a status symbol. Any innovation that supports such status symbol will be supported in a society which scores high on the MF dimension.

### **Innovation and Service**

The influence of culture is present not only in the design and quality of many innovative products but also in many innovative services (Hofstede, p. 448, 2001). In developed nations, more opportunities exist among consumers to select from a range of products and services. As De Mooij (2001) observed, culture influences a customer's social needs which in turn is satisfied by use and ownership of innovative products. Two cultural dimensions, UA and MF, for example, are even shown to be unaffected by the influence of personal wealth and are important in influencing many product and service demands (e.g. buying of new car or a new service created by Internet/Web). A high MF society defines success as a status symbol. Any service that can increase the status symbol of a user in a high MF society will be successful. A low UA society stresses the need for purity and expert knowledge (Hofstede, p. 449, 2001).

Innovation in service activity is often a "hidden dimension" which is playing an increasing role in stimulating change and supporting growth in the European economy (Royal Society Report, 2006). For example, the EU average for the share of services in business R&D expenditure had risen to 13% by 2001.

Howells and Tether (2004) persuasively argue that service sector firms are heavily involved with innovations. In particular, service innovation involves softer aspects of innovation such as skills and inter-organizational cooperation practices. Service sector has been a major source of innovation since 1990s. Unlike manufacturing, service firms employ technologies in a major and a creative way. Knowledge intensive business services are innovating and creating newer service products. At the other end of the spectrum routine services such as customer support through telephones are also undergoing rapid innovative structural changes due to technological improvements.

According to Howells and Tether (2004), new service-oriented approaches to innovation have emerged which center around non-technological disembodied innovations that lead to new conceptualization of service innovation. Sustainability of firm, especially in emerging countries, are crucial for investment and growth however, need to be managed carefully because of its complexity (Gunasekaran et al., 2015) Thus we propose that innovative activities and service expenditures of a nation are inextricably and strongly linked. Without any loss of generality, one may consider service expenditures of a nation are strongly related to innovative activities.

From the above discussions, we build four hypotheses:

*H1- The greater the PD present in a national culture the lower will be the nation's growth of service innovation.*

*H2- The greater the uncertainty avoidance present in a national culture the lower will be the growth of service innovation.*

*H3-The more individualistic a nation's culture is the higher will be the nation's growth of service innovation.*

*H4-The more masculine a nation's culture is the higher will be the nation's growth of service innovation.*

### **Service Growth and Type of Service Sectors**

Within the broad category of "service sector" there is a wide gamut of services. These services vary widely in terms of activities, operating and marketing conditions. For example, transport services involve physical transformation of goods. Information services, engaged in processing of information, involve transformation of information. Financial services involve transformation of financial information while travel services involve transportation of human beings. We hypothesize:

*H5-The influence of cultural dimensions on nation's growth of service innovation is not similar across different service sectors.*

### **Country's Service Growth and Hofstede's Organizational Models**

Hofstede (1991) developed several types of organizational models based on his national cultural dimensions. Of the five cultural dimensions he developed, the combination of PD and UA is considered the most important in studying organizations in various national cultures. Organizational structures are decided by who has the power to take decisions (dependent on PD dimension) and what rules and procedures are needed to arrive at a decision (dependent on the UA dimension). The combination of these dimensions yields a four-quadrant framework (based on the combination of low and high values of UA and PD), each of which represents certain profiles of organizations. These four organizational models are: machine, market, pyramid and family. Each quadrant includes countries that share a common degree of national culture dimensions.

#### ***Market-like Organization***

A *market-like organization* is a combination of small PD and weak UA (Hofstede, 2001). Some examples of nations where these structures are prevalent are the United States, Great Britain, Australia, Canada, and New Zealand. This structure has a preference for decentralized authority and unstructured work flows. This type of organization is usually flexible in its response to problems of production and distribution because of its decentralized nature (Hofstede, 1991). A market-like structure suggests negotiation and a certain type of give-and-take in decision-making situations. Independency and self-interest are perhaps basic social principles (Burcik et al., 2007).

#### ***Family-like Organization***

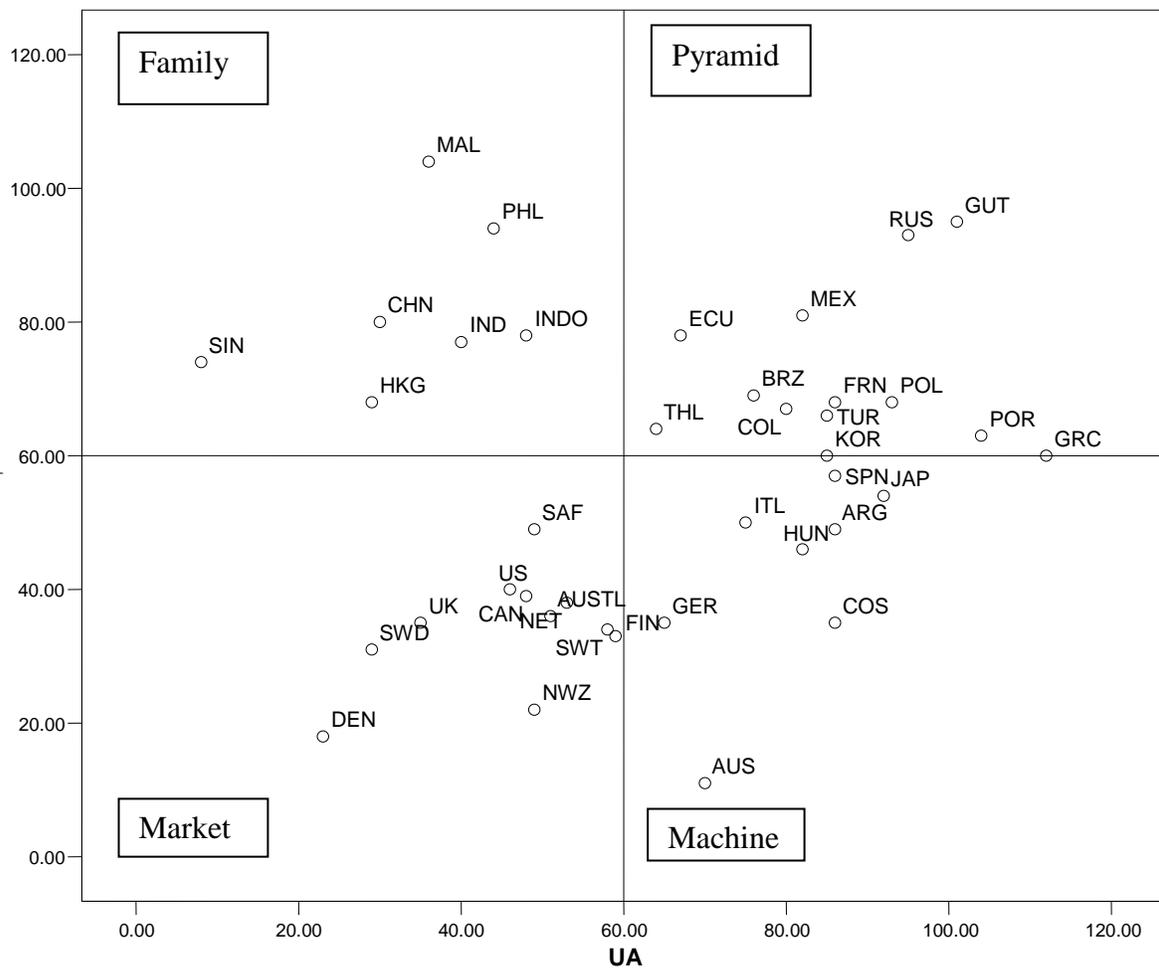
A *family-like organization* is derived from a large PD and weak UA (Hofstede, 2001). Some example nations where the structure is common are Slovakia, China, Hong Kong, and Singapore. It consolidates authority autocratically but does not frame business processes with a

lot of rules. A family-like organizational structure is paternalistic (materialistic) in its policies and decision-making.

**Pyramid-like Organization**

A *pyramid-like organization* is made of large PD and strong UA (Hofstede, 2001). Nations where this structure is popular are, for example, France, Czech Republic, Slovenia, Croatia, Serbia, Poland, and Taiwan. It centralizes and focuses authority and prefers structured work flows. A pyramid-like structure of an organization represents a hierarchical organization with a built-in rigidity and reliance on policy to deal with emerging problems. Multiple levels of a bureaucracy slow information exchange and decision-making.

Figure 3: Nation classification by Hofstede’s organizational model



### ***Machine-like Organization***

A *machine-like organization* consists of small PD and strong UA (Hofstede, 2001). Some examples nations where this structure is common are Germany, Austria, and Hungary. This type of organizations normally does not centralize authority but usually relies on rules and procedures to structure business processes. A machine-like organizational structure is functionally efficient. Policies and lines-of command are in place to frame decision-making situations. It is an effective bureaucracy. Figure 3 above shows our sample nations in quadrant of organizational structure.

This research also investigates the possibility of differences in the role of organizational structures in service growth in a nation; in particular, we attempt to answer the question - *What organizational structures aid in service growth in a nation?* The above discussion leads to our following hypothesis:

*H6-The influence of organizational structures on nation's growth of services market is not similar and some structure may be more suitable for growth than others.*

## **METHODOLOGY AND DATA**

### **Methodology**

Kaul and Sengupta (1991) offers an excellent review of modeling methodologies for complex macro-economic systems such as countries and societies. To test hypotheses 1 through 4, we developed a least-squared regression model where the dependent variable is average services value-added per capita (SVA). We found that SVA is highly correlated (0.836) with the innovation variable in our sample. We, therefore, use SVA as a measure for service innovation. The independent variables are nation's PD, UA, IC and MF scores. The regression model is:

$$SVA = b_0 + b_1 * PD + b_2 * UA + b_3 * IC + b_4 * MF \quad (\text{model 1})$$

To test hypothesis 5, we selected four service segments based on availability of data. These segments are: "Computer and communications" or ICT, "Finance and Insurance" or "FinIns", "Transport", and "Travel." The average service activity levels in these 4 sectors are the dependent variables in the regression models:

$$\text{Avg. ICT} = b_{02} + b_{12} * PD + b_{22} * UA + b_{32} * IC + b_{42} * MF \quad (\text{model 2})$$

$$\text{Avg. FinIns} = b_{03} + b_{13} * PD + b_{23} * UA + b_{33} * IC + b_{43} * MF \quad (\text{model 3})$$

$$\text{Avg. Transport} = b_{04} + b_{14} * PD + b_{24} * UA + b_{34} * IC + b_{44} * MF \quad (\text{model 4})$$

$$\text{Avg. Travel} = b_{05} + b_{15} * PD + b_{25} * UA + b_{35} * IC + b_{45} * MF \quad (\text{model 5})$$

To test hypothesis 6, we created a 2X2 (PD and UA) typology of nations by using the above independent dimensions for organizational profiles (Hofstede, 1991). We predict what type of country's organizational structure (Pyramid, Family, Market, or Machine) would be more prone to service market growth.

## **Data**

### ***Dependent Variables***

To test hypotheses 1 through 4 and hypothesis 6 we computed dependent variable SVA in two steps. First, we calculated net output of services of a nation by subtracting intermediate inputs from total outputs (World Bank, 2008). The net service output number was then divided for a given year by the nation's population for the corresponding year. We obtained the average of these numbers for four years (2000-2004) to get our dependent variable of a nation: SVA.

To test hypothesis 5 we calculated activity levels of service related dependent variables from various service segments - average of Computer, communications and other services (Avg. ICT), the average of Insurance and financial services (Avg. FinIns), the average of Transport services (Avg. Transport), and the average of Travel services (Avg. Travel). These dependent variables are the average of various such services as a percentage of commercial service export for four years 2000-2004.

### ***Independent Variables***

As discussed in section 2 earlier, a typology of cultural attributes was created empirically by Hofstede by analyzing data obtained from surveys conducted among individuals in 53 nations in 1968 and 1972. Since all 116,000 respondents were employees of the same firm – IBM, Hofstede was able to hold the influence of corporate culture constant. We used Hofstede's four cultural dimensions - PD, UA, IC, and MF for each nation as the independent variables.

### ***Data Definition***

Table 1 shows the data sources and the descriptions of the variable. The study used data from the following 43 nations:

Argentina, Australia, Austria, Brazil, Canada, China, Colombia, Costa Rica, Denmark, Ecuador, El Salvador, Finland, France, Germany, Greece, Guatemala, Hong Kong, Hungary, India, Indonesia, Iran, Italy, Malaysia, Mexico, Morocco, Netherlands, New Zealand, The Philippines, Poland, Portugal, Russia, South Africa, Singapore, Slovenia, South Korea, Spain, Sweden, Switzerland, Thailand, Turkey, UK, USA and Venezuela.

Both developing and developed nations were part of the set. The developed nations consisted of 47% of the total set. We started with 43 nations and dropped a few countries later from the analysis because of missing data.

Table 1: Data Sources and Their Meanings

<b>Variable</b>	<b>Meaning</b>	<b>Source</b>
SVA	Service Value added (in constant US \$ 2000) per capita, averaged over years 2000-2004	World Bank data base (2007)
UA, PD, IC, MF	Hofstede's 4 cultural dimensions	Hofstede (1980, 1991, and 2001)
Innovation	Averaged value of innovation variable for years 1999-2003. The innovation variable value is obtained from a principal component analysis of three innovation variables, No. of patents, No. of R&D workers and no. of research articles published in a given year and averaged over 1999-2003.	World Bank data base (2007)
<b>Avg.Travel, Avg.Transport, Avg.FinIns and Avg.ICT</b>	Corresponding Service sector in % of commercial service exports, averaged over years 2000-2004	World Bank data base (2007)

## RESULTS AND ANALYSIS

The OLS regression results are shown in Table 2. The coefficients of all cultural dimensions (except for MF) are significant and in predicted directions. This provides support for hypotheses 1-3, but not for hypothesis 4. The model explains 54% of the variance of SVA in our sample.

Table 2: Culture's Impact on Service Activities.<sup>a</sup>

Model	Variable Name	Unstandardized Coefficients
		<b>B</b>
	Constant	16312.73*** (5240.39)
	PD	-104.03** (50.49)
	UA	-74.19** (32.87)
	IC	93.92** (43.58)
	MF	-47.26 (43.86)
	Dependent Variable:	SVA
Overall Fit	R <sup>2</sup>	0.54

<sup>a</sup> We report the unstandardized coefficient, with standard error in parentheses.

\*\*\* p<.01; \*\*p<.05; \*p<.10.

To prove hypothesis 5 we selected average service values representing activities in four service sectors: Avg. ICT, Avg. FinIns, Avg. Transport and Avg. Travel. The OLS results are mixed. Results in Table 3 show that only model 2 (please refer to the methodology section earlier) with Avg. ICT as dependent variable has three cultural dimensions significant with expected signs, and Insurance service sector model (model 3 with Avg. FinIns as dependent variable) has one dimension UA significant with expected sign. Transport service sector model with Avg. Transport as dependent variable (model 4) has IC significant with a negative sign. Also Travel services sector model (model 5 Avg. Travel) has MF significant with a positive sign. All models are significant at  $p < 0.05$  level. The  $R^2$  values vary from 0.14 to 0.39. Since the models are significant it is clear that cultural factors influence service activities in different service sectors. However, the range of  $R^2$  values proves H5 that the impact is different in different service sectors.

Table 3: Impact of Culture on Various Service Sectors

<b>Model</b>		<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
	Variable Name	Unstandardized Coefficients	Unstandardized Coefficients	Unstandardized Coefficients	Unstandardized Coefficients
	Constant	<b>45.67***(11.9)</b>	3.12(4.15)	<b>46.34***(11.77)</b>	<b>26.55***(7.39)</b>
	PD	-.06(.12)	-.002(-.04)	-.13(.11)	-.09(.07)
	UA	<b>-.16**(.08)</b>	<b>-.05*(.03)</b>	-.01(.07)	.01(.05)
	IC	<b>.18*(.10)</b>	.05(.04)	<b>-.19*(.10)</b>	.01(.06)
	MF	<b>-.19*(.10)</b>	.05(.04)	-.10(.09)	<b>.12*(.06)</b>
	Dependent Variable:	Avg. ICT	Avg. FinIns	Avg.Transport	Avg.Travel
Overall Fit	$R^2$	0.39	0.26	0.14	0.18
	N	39	38	38	39

<sup>a</sup> We report the unstandardized coefficient, with standard error in parentheses.

\*\*\*  $p < .01$ ; \*\*  $p < .05$ ; \*  $p < .10$ .

To test H6, two dimensional grids of nations based on the organizational model of Hofstede (2001, p. 658) were developed (please refer to Figure 3 previously). The organizational model has four types of organizational structure: market, family, pyramid and machine, based on a 2X2 continuum of UA and PD dimensions (Table 4). Table 5 shows sample PD and UA dimensional values of 43 nations.

Figure 3 previously showed 43 nations in four organizational structures – pyramid, family, machine, and market - based on Hofstede's two cultural dimensions, PD and UA. We clustered each nations PD and UA scores in two groups – high (H) or low (L). We computed average SVA of these four organizational structural groups – PD high-UA high (HH or pyramid structure), PD high-UA low (HL or family structure), PD low-UA high (LH or machine structure), and PD low-UA low (LL or market structure). Table 6 shows the clustering groups of nations, frequency of nations in each cluster and average SVA values Nations which have market types of organizational structures has the highest service related activities.

Table 4: Nation Classification by Organizational Model of Hofstede

<b>Market</b>	<b>Family</b>
UA--low, PD—low	UA--low, PD—high
US	Slovakia
UK	China
Australia	Hong Kong
Canada	Singapore
New Zealand	India
Netherlands	Malaysia
Denmark	Indonesia
Sweden	
South Africa	Philippines
<b>Machine</b>	<b>Pyramid</b>
UA--high, PD--low	UA--high, PD—high
Austria	France
Germany	Czech
Hungary	Slovenia
Costa Rica	Croatia
Finland	Serbia
Italy	Poland
Switzerland	Taiwan
	Brazil
	Colombia
	Ecuador
	Guatemala
	Greece
	Mexico
	Portugal
	Russia
	South Korea
	Spain
	Thailand
	Turkey

Table 5: The PD and UA Dimensional Values of Nations

<b>COUNTRY_NAME</b>	<b>PD</b>	<b>UA</b>
Argentina	49	86
Australia	36	51
Austria	11	70
Brazil	69	76
Canada	39	48
China	80	30
Colombia	67	80
Costa Rica	35	86
Denmark	18	23
Ecuador	78	67
Finland	33	59
France	68	86
Germany	35	65
Greece	60	112
Guatemala	95	101
HongKong	68	29
Hungary	46	82
India	77	40
Indonesia	78	48
Italy	50	75
Japan	54	92
Malaysia	104	36
Mexico	81	82
Netherlands	38	53
New Zealand	22	49
Philippines	94	44
Poland	68	93
Portugal	63	104
Russia	93	95
SAfrica	49	49
Singapore	74	8
Skorea	60	85
Spain	57	86
Sweden	31	29
Switzerland	34	58
Thailand	64	64
Turkey	66	85
UK	35	35
US	40	46

Table 6 shows statistical significance of differences in average SVA between 6 pairwise combinations of four organizational structures. For example, the first row corresponds to difference in SVA values between countries with pyramid structure and countries with family structures. This pairwise comparison created 6 unique difference-of-means tests. First the equality of variances test (SAS/STAT user guide, V8 pp. 3578-3579) was run to determine if the assumption of equal variance hold true in the subsamples. If the assumption was true then the standard t-test under equality of group variances was performed. If the variance test failed, the approximate t-statistics (Satterthwaite approximation) under the assumption of unequal variances was conducted.

Table 6: Clustering Cultural Group and Their Means

Frequency	Combination	Service average
70	PD high UA High	4166.03
35	PD high UA Low	5718.61
35	PD Low UA High	10813.96
55	PD Low UA Low	15052.58

Table 7 reports statistical tests to determine if the differences of national service levels across the four organizational structures are significant. For example, the first row below the two header rows in Table 7 (a combination “HH-HL” or pyramid versus family) represents the difference of SVA in the two groups - PD is high and UA is high (first group) and PD is high and UA is low (second group). The standardized t-test is reported. Most of the differences are significant, with the exception of pyramid versus family. These results prove hypothesis 6.

Table 7: Statistical Test Results of Difference in Cultural Group Means

Comparison Groups		Difference of means test		Equality of Variance Test		Statistical
Organization	Hofstede	T	Pr > t	F	Pr > F	Significance
Pyramid Vs. Family	HH-HL	-1.27	0.20	4.26	0.00	No
Pyramid vs. Machine	HH-LH	-5.76	0.00	3.58	0.00	Yes
Pyramid vs. Market	HH-LL	-12.08	0.00	2.09	0.00	Yes
Family vs. Market	HL-LL	-6.12	0.00	2.04	0.00	Yes
Family vs. Machine	HL-LH	-2.63	0.01	1.19	0.61	Yes
Market vs. Machine	LL-LH	-2.92	0.00	1.71	0.07	Yes

## DISCUSSION AND CONCLUSION

Peres et al. (2010) observed “(R)esearch on the evolution of multi-markets reveals a noteworthy aspect of diffusion that deals with heterogeneity among different social systems in which the same *product* is adopted” (emphasis added). In essence, our study contributes by extending this research to the service sector.

Table 8 summarizes test results. Our results support hypothesis 1-3, but not hypothesis 4. Most of these results are supportive of previous research work. Lynn and Gelb (1996) found e national innovativeness is correlated significantly to low UA ( $r=-.58^{**}$ ). Steenkamp et al., (1999) found a strong negative association between innovativeness and UA. Finally, Shane et al. (1995) found a high correlation between high IC and granting of invention patents (Shane, 1992). This suggests a high IC society will exhibit high innovative activities. It follows that service innovation is associated with low UA and high IC.

Table 8: Summary of Hypothesis Test Results

Hypothesis	Results
H1. The greater the PD present in a national culture, the lower will be the nation's growth of services market.	Supported
H2. The greater the uncertainty avoidance present in a national culture, the lower will be the nation's growth of services market.	Supported
H3. The more individualistic a nation's culture is, the higher will be the nation's growth of services market.	Supported
H4. The more masculine a nation's culture is, the higher will be the nation's growth of services market.	Not supported
H5: The influence of cultural dimensions on nation's growth of services market is not similar across different service sectors.	Supported
H6: The influence of organizational structures on nation's growth of services market is not similar and some structure may be more suitable for growth than others.	Supported

De Mooij (2001) found that services such as organizing, conferences, exhibitions and trade fairs are strongly correlated with low PD dimension ( $r=-.69^{***}$ ). Hypothesis 1 is therefore, consistent with that observation: low PD is associated with high service innovation. Steenkamp et al., (1999) found a weaker positive association between innovativeness and MF (at .05 level). A high MF society may be associated with high innovative activities. This suggests an association between a high MF society and high innovative activities and therefore high service expenditures (Hypothesis 4). However, our results do not support hypothesis 4. We recommend further research is needed in this area.

As a country's PD increases, its service innovation decreases. IC is positively related to service innovation in a global sense, whereas, high UA has a negative impact on service innovation as predicted. From the empirical tests we conclude that cultural factors serve to influence trans-national service providers in considering the benefits of taking into account cultural differences between nations in decision makings. In societies measuring lower in power distance, higher in IC and lower in UA, service providers have a greater opportunity to provide trans-national service.

As noted earlier, the results also provide support for hypothesis 5. Results show that ICT service (Avg. ICT) has three cultural dimensions as significant with expected signs, and insurance and financial service sector (Avg. FinIns) has one dimension UA as significant with usual sign. Previous research also supports this conjecture. In travel services which include tourism, high masculine cultures are known to be more likely to report service dissatisfaction (Crotts and Erdmann, 2000) which can result in better services or service innovations.

Finally, our results support hypothesis 6. Previous research shows that the effect of organizational structures on decision making or problem solving is not similar (Hofstede, 1991).

The present research finds that the market type organizational structure may be more suitable than others in service innovation and growth.

### ***Managerial implications and service value creation***

From the results it is evident that trans-national service innovation and growth remains unchanged between family and pyramid structures; however it is different for other five pairs of structures. Trans-national service innovation and growth is the highest in market, then in machine, family, and, pyramid structures in that order. Therefore, non-centralized decision making is a key to service innovation and growth. In other words, low PD societies which are based on non-centralized authority are better enablers of service innovation and growth, as market and machine structures indicate.

The results from this paper help shape future research and practice of decision making in trans-national service innovation and growth. Burcik et al., (2007) connected decision making with organizational structure per Hofstede's organizational classification scheme. We discuss decision-making in context of the most relevant organizational structure for service expenditures: The market. The market structure is characterized by non-centralized authority and unstructured workflows. It is flexible in response to problems of production and distribution. It suggests negotiations and certain give-and-take in decision making (Hofstede, 2001). The governance in the market structure is federal in nature and the managerial style is analytical, conceptual and social. Since the market structure is most suitable for service growth, demands of situation, not hierarchy or rules, may help most in service environment to arrive at what decision to make.

From a managerial point of view, the ways to accomplish total interdependence in service sectors should be identified and developed in achieving high relationship quality. The results imply that trans-national service providers from high PD societies should create more relationships with customers so that corporate customer will feel less threatened due to their relative difference in power structure. At the same time, nations with high score on "uncertainty avoidance" have lower service innovation which means that the people involved on these nations feel threatened by ambiguous situations. They should be encouraged to innovate and produce new service and adopt a creative approach. However, further research is required to gain a more complete understanding of ways to enhance symmetric interdependence and reduce interdependence asymmetry in client-service provider relationships.

Present study focuses only on Hofstede's cultural values (Hofstede, 1980; Hofstede, 1991; Hofstede, 2001). Our study does not explain international service differences by other national level factors such as institutional/economic ones. We did not attempt this for two reasons. First, recent literature in economics and finance (Greif, 1994; Landes, 2000; Stulz & Williamson, 2003) demonstrates that culture could be a determinant of economy/institutions. Thus we decided to concentrate on impact of culture on service. Second, additional potentially correlated attributes may introduce multi-collinearity problem in the data.

Drawing upon past work in the cultural framework developed by Hofstede (1980), we built and tested several hypotheses involving many countries. The study, perhaps the first of its own kind for service sectors, measures cultural value and verifies empirically the influence of national

culture in a service sector. The cross-country and sector level analyses suggest that culture is a critical factor in service growth and innovations.

The results of this study should alert service managers to consider cultural dimensions in managing their service related activities in different countries. Managers can create added values to the services they are already providing to a country by getting to know the country's organizational structures. They must benchmark average expected growth in their service activities in the country according to the country's organizational structure. For example, the managers now know that market structure is conducive to service growth. If the managers find out that they are below the benchmarked number, they must act to grow more service related activities. They can expand their market share with more service related innovations in the country. If the country's structure is pyramid then service managers should proceed carefully in investing more in service related activities.

Managers can benefit in targeting new countries as well. If they have the knowledge of new country's cultural framework then they can anticipate the country's organizational structures. For example, if they find that the new country's organizational structure is market type they can then be more aggressive in penetrating the new market. If they are not aggressive enough they can lose potential new businesses to their global competitors.

The knowledge of cultures of new or existing markets for service related businesses adds substantial value in service management. We emphasize that service managers should apply the combined knowledge of country's culture and organizational structures and decide on a suitable plan for service management.

The findings of the study, in particular, support the hypothesis that the degree of uncertainty avoidance, power distance and individualism prevailing in a society affects the nature of service growth, that culture has more pronounced effect on ICT sector of service and that market structure (emanating from low PD and low UA) is most conducive for service growth. The findings have significant implications for service providers in their efforts to maintain relationships with international consumers. From a managerial point of view, the possibility of a cultural difference in customer-provider relationships should be considered carefully while developing international service strategies. To ignore the impacts of cultural differences in a trans-national environment is to run a risk that service practices in one country may prove to be insufficient in another. Finally, in contrast to the assumptions of some variants of the globalization theory, this paper provides support that globalization does not always lead to the borderless world when service growth is considered (Ohmae, 1991; Peres et al. 2010).

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