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ABHISHEK SHUKLA
MELBOURNE BUSINESS SCHOOL,
UNIVERSITY OF MELBOURNE.

POST ENTRY DEVELOPMENT OF SERVICE FIRMS IN OVERSEAS HOST MARKET: PACE AND NATURE OF CHANGES IN THE RESOURCE COMMITMENT.

ABSTRACT

Post entry resource commitments of firms in the host market are investigated to identify different patterns in the internationalization of capital intensive service firms (CISF) and knowledge intensive service firms (KISF). At a theoretical level, this study addresses the lack of research on the progression of firms after entry and also tests the applicability of the established internationalization models to service firms. A quantitative longitudinal research design is used to analyze the pace of irreversible investments in the host market and the findings suggest that KISF accelerate almost twice as fast in their market expansion as CISF. A difference in the nature of change in the resource commitment is also hypothesized and supported. Through, optimal scaling categorical regression, it is noted that KISF change their resource commitment frequently but with lesser degree (evolutionary) as compared to CISF which tend to have few but more significant changes (revolutionary).

1. INTRODUCTION

The internationalization processes of a firm for a specific host market involves selection of the appropriate entry mode and then a gradual increase in its resource commitment to that market (Johanson and Vahlne, 1977). Several scholars have lamented that much of the research on the internationalization process has primarily concentrated on entry mode (Brouthers and Hennart, 2007; Malhotra, Ulgado and Agarwal, 2003) and neglected the aspect of change in commitment after the initial entry (Calof and Beamish, 1995; Nummela, Saarenketo and Puumalainan, 2004; Pedersen, Petersen and Benito, 2002; Petersen and Welch, 2002). The international activities of

firms are believed to be dynamic as their internationalization strategies frequently change (Agndal and Chetty, 2007; Ruzzier, Antoncic and Hisrich, 2007). Empirical research indicates that, with time, firms change the modes of already established foreign operations (Benito, Pedersen and Petersen, 2005; Clark, Pugh and Mallory, 1997) and repeatedly reconfigure themselves over time throughout their internationalization (Asmussen, Benito and Petersen, 2009). Strategic decisions made by firms following the entry mode choice are critical for its success in the host market, but still very few studies have addressed the post -entry decisions taken by the firms (Brouthers and Bamossy, 2006; Pan, Li and Tse, 1999).

This gap in the literature widens when seen in the light of service firms. The research of services in an international context is limited in comparison with the manufacturing sector (Peinado and Barber, 2006). Most of the existing frameworks of internationalization have been developed from the perspective of manufacturing firms (Ball, Lindsay and Rose, 2008). As a result, service firms, which have become the driving force in the global economy and are internationalising at a fast pace, often rely on relevant studies in the domain of manufacturing industry (Axinn and Matthyssens, 2001). Lack of theoretical validity (as compared to manufacturing firms) and paucity of empirical studies on marketing services internationally has been pointed out by various researchers (Javalgi and Martin, 2007; Javalgi and White, 2002; Johansson and Vahlne, 1990; Knight, 1999).

Addressing these issues, this study aims to gain a better understanding of the expansion behavior of internationalizing service firms. The focus is on how service firms increasingly commit resources to their host market thereby increasing their degree of commitment. It investigates the market commitment aspect of the internationalization process of firms where market commitment refers to the movement of the firm inside a specific foreign market.

The literature on internationalization process suggests that firms approach internationalization slowly and try to minimize the associated risk by making resource commitments in small steps due to the lack of local market knowledge and business contacts (Liesch, Welch, Welch, McGaughey, Petersen and Lamb, 2003). This study uses a quantitative research design to test if service firms follow such an incremental and gradual resource commitment in host markets.

To test this, service firms are split based on their capital intensity (consistent with Contractor, Kundu and Hsu, 2003; Peinado and Barber, 2006) into capital intensive service firms and knowledge intensive service firms. The variations in the pace and nature of changes in the resource commitment of international service firms operating in Australia are studied in detail. Methodologically, this study takes the temporal dimension of resource commitment into consideration. Consistent with the calls for longitudinal studies investigating steps following entry into the host market by Asmussen, Benito and Petersen (2009) and Canabal and White (2008) a longitudinal research design is adopted.

A brief literature review of the existing internationalization models and the internationalization research on service firms is presented next. Based on the literature review, a need for research is highlighted in the next section, which is followed by the hypotheses development. Two hypotheses are developed, one measures pace of resource commitment and the other captures the nature of changes (continual vs. sporadic) in the resource commitment for service firms. Their respective methodologies are covered next. Discussion based on the results obtained is presented followed by research contribution and limitations.

2. LITERATURE REVIEW

The literature review is divided into two sections. First the existing internationalization models are critiqued. Suggestions of the non-applicability of these models to service firms are highlighted. A brief literature review on the internationalization of service firms follows.

2.1 INTERNATIONALIZATION PROCESS

Two widely known approaches to internationalization have been suggested: the Uppsala model and Innovation related internationalization models. However, the Uppsala Model (Johansson and Vahlne, 1977) is the dominant model in explaining the international activities of a firm and has been subject to a wide variety of research.

The Uppsala model suggests two aspects of internationalization. First, firms start their internationalization by approaching international markets (market selection) that are psychically close to them and then enter new markets with successively greater psychic distance. This aspect of the model has been empirically validated by studies in different markets like Central and Eastern Europe (Lloyd-Reason, Damyanov, Nicolescu and Wall, 2005), Hawaiian firms (Hook and Czinkota, 1988), Japanese firms (Johansson and Nonaka, 1983), Turkish exporters (Karafakioglu, 1986) and Australian firms (Barrett and Wilkinson, 1985; Dow, 2001). The second aspect of the Uppsala model refers to the movement of the firm inside the selected foreign market. The firm enters a new market through indirect low commitment modes like exporting and then slowly moves towards higher commitment modes like wholly owned subsidiaries. Inherent to the firm starting operation in the host market is the concept of international entry mode, which represents one of the most researched fields in international management (Werner, 2002). As the firm accumulates market specific knowledge, it incrementally increases its resource commitment in a gradual manner. This study focuses on the progression of the firm inside a particular market after the initial entry. Hence the progression of the firm is discussed in more detail below and interested readers are directed to Canabal and White (2008) for a comprehensive review of the literature on entry mode.

Lack of knowledge about foreign markets and operations is a major obstacle in the development of the firm in the host market. But this obstacle can be overcome through

experiential learning, which also helps firms in identifying other business opportunities in the market. Such acquisition of knowledge through experience is gradual and it helps in reducing market risks and uncertainty. Consequently, firms are expected to make stronger commitments incrementally over time as they gain experience from their current activities in the market. Hence it is the driving force of the internationalization process (Johnason and Vahlne, 1977, 1990).

The experiential learning conceptualization has received both empirical and theoretical support (Barkema, Bell and Pennings, 1996; Delios and Beamish, 1999; Johansson and Vahlne, 1990; Kogut and Singh, 1988; Luo and Peng 1999; Petersen and Pedersen, 1998) and has emerged as a critical concept in internationalization research (Erramilli, 1991). The empirical support for the Uppsala model is however not undisputed. Several authors have criticized the Uppsala model for overemphasizing the difficulty in acquiring knowledge (Forsgren, 1989) and underemphasizing the role of individuals and top management (Andersson, 2002).

Also, the Uppsala model has been termed too deterministic as it confines firms to move through four stages: no export activities, exporting, foreign sales and production/manufacturing units (Melin, 1992; Turnbull, 1987). To counter this problem, innovation related internationalization models were introduced. According to different innovation models, the number of internationalization stages varies from three (Leonidou and Katsikeas, 1996; Moon and Lee, 1990) to eight (Reid, 1983). Several other similar models are also identified with the same key idea that a firm proceeds in a host market through temporally defined, sequential and stage-wise process (Chetty, 1999; Freeman, 2002; Gankema, Snuif and Zwart, 2000; Lundan and Hagedoorn, 2001; Pauwels and Matthyssens, 1999; Rao and Naidu, 1992).

Both, the Uppsala and the innovation related internationalization models agree that firms internationalize step by step where every new step represents more experience and involvement

than the earlier stage (Andersen, 1993). Both models contend that expansion in a host country is incremental in nature. It is a gradual process due to the uncertainty of the unknown foreign market, industry characteristics and because knowledge acquisition takes time.

However, they both have also been criticized for limited industrial scope by neglecting service based firms and have been found to be less suitable for services (Axinn and Matthyssens, 2001). The internationalization of service firms is a relatively understudied research area (Javalgi and Martin, 2007) and the empirical evidence from the studies conducted on service firms following the stages model is mixed.

2.2 INTERNATIONALIZATION OF SERVICE FRIMS

Applicability of the stage models, which were primarily developed for manufacturing firms, to service firms has been constantly challenged (Boddewyn, Halbrich and Perry, 1986; Campbell and Verbeke, 1994; Javalgi and Martin, 2007). Internationalization of firms in the service sector depends on the nature of the service to be delivered and may be considered more complex than manufacturing (Ball, Lindsay and Rose, 2008). The unique characteristics of the service industry like intangibility coupled with the simultaneous production and consumption in most cases (Gummesson and Lehtinen, 1997; Habib and Victor, 1991) attributes to the differences between manufacturing and services (Aung and Heeler, 2001; Capar and Kotabe, 2003). Also, the level of capital intensity required for manufacturing firms is generally huge, but it is very variable in the service industry (Peinado and Barber, 2006). It may be argued that certain service firms are more knowledge intensive like consulting, legal services and accounting. This results in a lower capital requirement for internationalization than manufacturing firms. The cost of establishing a wholly owned subsidiary or branch office for such service firms might not be as significant as manufacturing firms as it is highly dependent on the nature of services offered (Contractor, Kundu and Hsu, 2003; Enderwick, 1989).

2.2.1 Current State of Research

Research on the pattern of how a service firm internationalizes is sparse (Goerzen and Makino, 2007, Javalgi and Martin, 2007, Peinado and Barber, 2006). Only approximately 7 % studies (44 out of total 650) of all studies published in the top 4 prominent international business journals (Journal of International Business Studies, Management International Review, Journal of World Business and Thunderbird International Business Review) in the 2003-2007 period dealt exclusively with service firms and another 13% studies (86 out of 650) had a mixed sample of both service as well as manufacturing firms (Merchant and Gaur, 2008). Kundu and Merchant (2008) also highlight the dearth of research on services (specifically multinationals) with only 29 studies in the Journal of International Business Studies between 1971-2007 (37 years). There are even fewer studies that have looked into the subsequent expansion into the host market for service firms.

It has been argued that the internationalization modes used by service firms are flexible (Rialp and Rialp, 2005) and they tend to be more affected by the individual host market and clients (Sharma and Blomstermo, 2003). Very few studies have touched upon the continued internationalization modes for service firms. Bell (1995) didn't find any significant change in the post entry stage for high-tech SMEs. However, the incremental nature of resource commitment where firms increase their commitments to the market and subsequently establish high control modes have also been noticed in the software industry (Coviello and Munro, 1997), Swedish banks (Engwall and Wallenstal, 1988), internet service providers (Kim, 2003) and advertising firms in China (Cheung and Leung, 2007).

2.2.2 Rapid Internationalization and skipping of stages by firms

The pace of resource commitment of service firms doesn't conform to the gradual increment suggestions of the stages model (Oviatt and McDougall, 2005). As compared to manufacturing,

service firms strive to create a local presence in the host market at a fast pace (Enderwick, 1989). Due to the intangible nature of services, the transfer of skills to third parties in the host markets involves significant transaction costs (Goerzen and Makino, 2007). Moreover, with information sensitive services like banking and consultancy, valuable knowledge is generated in the course of doing business (also identifying opportunities in the market) and thus fast increase in the resource commitments in the host market are preferred by service firms (Blomstermo, Sharma and Sallis, 2006; Peinado and Barber, 2006; Zahra and George, 2002).

Born Globals have been found to leapfrog through internationalization stages and speed up their market expansion (Bell, 1995; Knight and Cavusgil, 2004; Rennie, 1993). Welch and Loustarinen (1988) noted that some established Swedish firms skipped important stages of internationalization and they were involved with unexpected speed in foreign direct investments. Numerous studies have supported the emergence and expedited internationalization strategies of such firms (Bell, McNaughton and Young, 2003; Luostarinen and Gabrielsson, 2006; Oviatt and McDougall, 2005).

Most of the born globals tend to be service firms in the knowledge intensive sector like high tech firms, advertising firms and consultancy firms.

3. NEED FOR RESEARCH

There is a significant change in the global economy due to the increasing importance of the service sector in both developed and developing economies. According to the World Investment Report (2007), between 2000-2006, the stock of worldwide outward FDI in the non-manufacturing sector (primarily services) doubled from about USD 6210 billion to about USD12474 billion (current prices). Currently, there is a rapid increase in the internationalization of service firms due to the liberalization, deregulation and privatization in the service sector around the world especially in the developing countries (Kundu and

Merchant, 2008). The service sector plays a substantial role in the world economy and has mostly escaped academic scrutiny.

The incremental and gradual nature of resource commitment into the host market as postulated by the most established stages models (Uppsala and innovation related internationalization models) has been challenged for its validity to service firms. As highlighted in the literature review, the internationalization process of service firms in itself is an under studied area. Most of the studies conducted are industry focused, for example, hotel industry (Gannon and Johnson, 1997), retailing (Andersson, 2002; Burt, Dawson and Sparks, 2003), technical consultancy (Sharma and Johanson, 1987), financial industry (Grosse, 1997), tourism (Bjorkman and Kock, 1997) and banking (Agarwal and Ramaswami, 1992). This may be problematic as these studies don't give a holistic picture of the internationalization process of service firms and it's very hard to generalize results across industries. It poses a challenge to international business scholars to investigate the theory of internationalization for service firms, which seem to follow a different trajectory as compared to manufacturing firms.

4. HYPOTHESIS DEVELOPMENT

This study focuses on the resource commitment decisions taken by service firms after their initial entry into a specific host market. Commitment to overseas operations is a basic requirement for internationalizing firms and helps to alleviate the liabilities of foreignness and establish a strong foothold in the host market (Luo and Park, 2001; Zaheer, 1995). It helps in attaining market, product and technological opportunities in foreign markets (Luo, 2004) over local state firms, which have been operating in their home market for decades.

The degree of irreversibility of the committed resources is also an important variable, which needs to be considered to measure the intensity of commitment (Pedersen and Petersen, 1998).

A high degree of irreversibility implies that the firm cannot employ the committed resources in markets other than the host market.

The stages model suggests that the continued irreversible resource commitment in the host market is incremental and gradual. However, if host market expansion of service subsidiaries is considered, all firms are likely to exhibit some form of incremental behavior in their internationalization (Pedersen and Petersen, 1998). The pace of irreversible investments and nature (continual vs. sporadic) of changes in the resource commitment that the service firm goes through are important determinants in understanding their internationalization process. Capturing pace and nature of change is expected to capture the dynamic nature of resource commitment by service firms.

To test the same, this study adopts the level of capital intensity as the underlining factor to classify services into capital intensive service firms and knowledge intensive service firms. There is interdependence between capital intensity and the level of resource commitment as the former represents the magnitude of investments in assets that are necessary to begin production and carry out operations in a given host market (Erramilli and Rao, 1993). A higher degree of capital intensity for any industry implies that it requires high investments in acquiring resources. In the domain of international business, Peinado and Barber (2006) and Contractor et al. (2003) in their respective studies on service firms use the same classification.

A service firm is considered capital intensive if it requires heavy capital investment in buying assets relative to the level of sales or profits that those assets can generate. The key resource for such firms is often physical or financial capital (Swart and Kinnie, 2003). It includes sectors such as wholesale, transport, construction and real estate among others (Contractor et al., 2003). On the other hand, knowledge intensive firms refers to those firms where most work is said to be of an intellectual nature and where well educated, qualified employees form the

major part of the workforce. The key resource for such firms is often human capital or intellectual material (Swart and Kinnie, 2003). Examples of knowledge intensive firms include accounting and management consultancy, marketing, advertising, insurance and publishing firms among others (Peinado and Barber, 2006).

It is proposed that variations exist between the pattern (pace and type of change) of resource commitment between capital intensive service firms and knowledge intensive service firms.

4.1 PACE OF RESOURCE COMMITMENT

Knowledge accumulation through experiential learning is a slow and time taking process that happens in small steps (Cheung and Leung, 2007). As a result, firms will slowly commit more resources into the market and it would take considerable time in doing so. These stages model suggestions have been empirically supported in the manufacturing industry (Denis and Depelteau, 1985; Karafakioglue, 1986; Johansson and Nonaka, 1983; Du, 2003). Since, the internationalization patterns of the capital intensive service firms are likely to be similar to the manufacturing firms (Peinado and Barber, 2006) they will go through slow incremental resource commitment in the host market.

On the other hand, knowledge intensive service firms generally target international markets because their specialization necessitates fast international expansion to exploit the narrowly defined market niche (Miles, Preece and Baetz, 1999). Thus there is an acceleration of the internationalization process for such firms, which may skip the stages in order to beat their competition and gain a competitive advantage over other firms (Aspelund and Moen, 2001; Madsen, Rasmussen and Servais, 2000). Also, the expansion of knowledge intensive service firms is driven primarily by "follow the client strategy" which implies that firms like advertising, finance and market research follow their multinational clients abroad (Bell, 1995; Contractor, Kundu and Hsu, 2003). The subsequent resource commitment needs to be

responsive to these clients and hence firms may sometimes overlook the experiential learning aspect and move up the resource commitment to serve them better.

Pedersen and Petersen (1998) use the irreversibility of the committed resources as a variable that determines the pace of internationalization of Danish firms. Consistent with the definition of resource commitment, the following hypothesis is proposed.

Hypothesis 1) Capital intensive service firms increase their <u>irreversible</u> resource commitment in the international host market at a <u>slower rate</u> than knowledge intensive service firms.

4.2 NATURE OF CHANGE IN THE RESOURCE COMMITMENT (CONTINUAL VS. SPORADIC)

Capital-intensive service firms generally need big investments to increase their resource commitment due to the nature of the industry. They may have some inertia to committing more resources until they break even from the previous investment. It is likely that capital-intensive service firms will spend considerable time on a particular resource commitment stage before incrementing. Hence, it can be argued that such firms have long periods of relatively stable and slow increments in investments interspersed with short and intense periods of massive changes in the magnitude of resource commitment in the host market.

On the other hand, the key business strategy for knowledge intensive service firms is rapid and dedicated internationalization. Knowledge intensive services find it harder to patent their information/ knowledge and hence are exposed to threats of imitation by competitors. The problem is escalated when local firms may have better access to distribution channels and may also enjoy reputation advantages. Thus, these firms should continuously evolve. The key resource for these firms is knowledge and human capital and the increment in resource commitment does not involve huge investments. This gives them the liberty to make frequent changes to their resource commitment.

It is proposed that capital intensive service firms will have few but significant (revolutionary) changes in their resource commitment as compared to knowledge intensive service firms which change their resource commitment frequently but with lesser degree (evolutionary).

Hypothesis 2) Capital-intensive service firms increase their resource commitment in the international host market through sporadic events as compared to knowledge intensive service firms, which adopt a more continual approach.

5. METHODOLOGY

International service firms that have their subsidiaries in Australia are considered in this study. Consistent with the description of capital intensive and knowledge intensive service firms on Page 10 and also previous studies (Contractor, Kundu and Hsu, 2003), 11 service sectors are divided are into two groups according to their ANZSIC code. The capital intensive sectors include accommodation, cafes and restaurants, construction, air transport, road transport, water transport and wholesale trade. The knowledge intensive service sectors considered in this study are communication services, finance and insurance, property and business services, personal services and printing, publishing and recorded media.

5.1 SOURCE OF DATA

To test the above two hypotheses, secondary data was obtained from the database IBIS World. It was chosen as the preferred database as it contains financial information on public as well as private firms in Australia. This is particularly crucial for this study as a majority of knowledge intensive firms tend to be private firms and it is extremely hard to get their financial information. It provides data between 2002-2008. Australia is the preferred market since it is one of the major service economies with over 70% of its wealth and jobs falling in the service sector.

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IBIS world lists Australian as well as foreign firms. The database was scanned for only operating subsidiaries of foreign firms in Australia. Most of the firms considered have significant internationalizing experience.

Testing the two hypotheses involves consideration of different statistical techniques. Panel data analysis is used to postulate the pace of the service firms and optimal scaling categorical regression is utilized for the nature of change in the resource commitment. The following two sections cover each methodology in more detail.

5.2 METHODOLOGY TO DETERMINE THE PACE OF SERVICE FIRMS

5.2.1 Sample Selection

In order to capture the pace of the irreversible resource commitment, a choice is made to retain only those firms in the sample that have three or more years of available financial data. As elaborated in the data variable section, the categories in the financial data that are necessary to test this hypothesis are current assets, tangible assets and intangible assets, which combine to give the total assets of the firm in the Australian market. The firms that didn't report on all of these dimensions were also deleted. The final sample contains 101 capital intensive service firms and 59 knowledge intensive service firms (total 160 firms).

5.2.2 Data Variables and Operationalization

5.2.2.1 Dependent Variable

The *compound annual growth rate of irreversible investments* into the Australian market by individual firms is taken as the dependent variable for testing hypothesis 1. Coded as CAGR, it is calculated as follows:

$$CAGR(T_0, T_n) = [\{IR_n/IR_0\}^{\{1/(T_n-T_0)\}}-1]*100 \quad \text{where}$$

IR_n = Irreversible investment in Year T_n ; IR_0 = Irreversible investment in Year T_0

The irreversible investment (IR) in the host market is defined in accordance with the Uppsala model.

IR = CPI adjusted (Current + Tangible + Intangible) assets * Irreversibility index ……..…… Eq1

The following two aspects of the Uppsala model are highlighted in Eq1:

Capital intensity of the firm: It represents the investments in assets that are necessary to begin production and carry out operations in a given market (Erramilli and Rao, 1993). In this study it is measured as investments in total assets that include current assets, tangible assets and intangible assets. The percentage change in the CPI is used to adjust for the effects of inflation over the total assets investments made by the firms in the Australian market. The index is obtained from the Reserve Bank of Australia official website.

Irreversibility of the invested capital: The *current assets* of the firms are generally almost reversible as by definition they can be converted into cash in the next 12 months or by the next business cycle. Thus its irreversibility index is assumed as 0. On the other hand, investments into *intangibles* such as goodwill, copyrights, trademarks, patents and brand names are almost irreversible and thus have an irreversibility index of 1. The irreversibility of *tangible* investments varies and is computed using the methodology suggested by Bulan (2005).

Please refer to **appendix 1** for a detailed calculation of irreversible investment.

5.2.2.2 Independent and Control Variables

Firm Type: A categorical variable coded, 1 = capital intensive firm; 0= knowledge intensive firm. The dependent variable will be regressed against Firm type to capture the different pace of resource commitment among capital intensive and knowledge intensive firms.

Besides the firm type, size of the firm, industry growth rates and age of firm in the host market, as defined below are taken as control variables as they offer alternative explanations in determining the pace of resource commitment.

***Firm size*:** It is an important indicator of many resources that aid internationalization process of service firms (Javalgi, Griffith and White, 2003). Large firms that have an advantage in financial and physical resources over small firms are likely to adopt a more aggressive expansion strategy (Gielens and Dekimpe, 2007).

Coded as Size, firm size is expressed as the natural logarithm of the total number of employees for each year of analysis.

Industry growth rate: Resource advantage theory suggests that environment in which firms operate influences its conduct and performance (Hunt and Morgan, 1995). The industry growth rate of different service sectors is taken as an indicator of the environment of operation.

Coded as Growth, industry growth rates are available through the Australian Bureau of Statistics (Time series workbook 5204.0 Australian System of National Accounts, 2007). The growth rates are then matched to the year of data used, thus monitoring for yearly injections of capital by firms in the specific industry due to the industry growth in that year.

Age of firm: Firms gain valuable tacit knowledge specific to the market and which is difficult to attain elsewhere through international experience (Magnusson, Westjohn and Boggs, 2009). Firms draw on their experience to deal with liabilities of foreignness, which helps them in identifying new opportunities in the market. It is measured through the age of the firm in the host market (Magnusson and Boggs, 2006).

Coded as Age, the year of their starting operation in Australia is obtained from the firm specific internet website, usually publicly available. The age is calculated by taking the difference between the year of start of operation and the year of financial data available.

When put together, the above variables result in a panel data set that is spread over a minimum of 3 years and a maximum of 5 years. It results in total 724 observations. The panel of this study is a cross section of firms with periodical financial figures over a 3-5 year period. With

repeated observations of 160 firms, panel analysis presents a way to study the dynamics of change over short time series.

5.2.3 Analysis

A panel data analysis endows regression analysis with both spatial and temporal dimensions. The spatial dimension refers to the set of cross sectional units, (in this case, firms) and the temporal dimension pertains to yearly observations of the above said set of variables characterizing the firms over a time span. The data is analyzed using LIMDEP statistical software. The fixed effects least square regression with group dummy variables with autocorrelation is employed. The fixed effects model assumes that differences across the firms can be captured in a constant term. The fixed effects model is preferred because the unmeasured country, parent and other subsidiary specific effects are controlled since they do not vary "within subsidiaries" over time. Thus it helps in focusing on the variables of interest (independent and control variables).

5.2.4 Results

The mean of the average rate of compound change for capital intensive service firms is 10.39 % p.a. and for knowledge intensive service firms is 18.75 % p.a. The positive value of the means indicate that both type of firms generally increment their resource commitment in the host market.

The regression results are reported in figure 1. The results of model 1 indicate that firm type (capital intensive vs. knowledge intensive), age of the firm in the Australian market and the yearly industry growth rate combined together explain approximately 52 % of the variance in the compound annual growth of firms. All three are found to be significant indicators of the rate of the pace of resource commitment. This finding is consistent with the literature. Adding

size of the firm as another control variable did not produce significant result as documented in model 2.

The regression analysis lends strong support to Hypothesis 1. Capital intensive services tend to follow the gradual resource commitment suggestion of the stages model more closely than knowledge intensive firms, which accelerate at almost, double the pace (10.39% vs. 18.75%).

5.3 METHODOLOGY FOR THE NATURE OF CHANGE IN SERVICE FIRMS

5.3.1 Sample Selection

Service firms are classified into capital intensive and knowledge intensive categories (as in hypothesis 1). IBIS world was scanned for operating subsidiaries of international service firms in Australia. In order to determine continual or sporadic changes in the resource commitment, a choice was made to retain only those firms that reported five years of total assets. Five years is considered a suitable duration to assess levels of corporate strategic change (Lamont and Anderson, 1985; Simmonds, 1990). Firms with less than 5 years of total asset figures were deleted. It resulted in a sample of 167 capital intensive and 75 knowledge intensive firms (total 242 firms).

5.3.2 Data Variables and Operationalization

Hypothesis 2 aims to establish the difference between capital intensive service firms and knowledge intensive service firms in the manner in which changes in their resource commitment take place in the observed years. These changes can be classified into either, sporadic changes which imply that they are infrequent but involves significant change in the resource commitment or continual where the changes are regular and less substantial.

Measures of the CPI adjusted total assets were taken in year 1 and year 5. Absolute percentage change in total assets between year 1 and 5 figures was used as a measure of the magnitude of change in resource commitment for each firm during the time period studied. This measure was

intended to capture the nature of change when compared to the absolute industry average of changes in the resource commitment between year 1 and year 5.

The changes are put into three categories: evolutionary, intermediate and revolutionary. Evolutionary changes refer to the continual changes while revolutionary covers the sporadic changes. There is little prior research to guide a classification scheme of sporadic or continual changes except for Fornaciari, Lamont, Mason and Hoffman (1993). Consistent with their work, firms are said to be going through evolutionary change if their absolute change is between 0 and the industry average. An intermediate change is allocated when the absolute change of the firm is between the industry average and one standard deviation above it. Firms with their change score above one standard deviation than the industry average are said to be experiencing revolutionary change.

All variables associated with this hypothesis are categorical.

Response Variable: Coded as Change_type, the three categories are evolutionary, intermediate and revolutionary which are given numeric identification as 1, 2 and 3 respectively. Change_type is an ordinal variable.

Design Variable: Coded as Firm_type, the two categories are capital intensive service firms and knowledge intensive service firms, which are given numeric identification as 1 and 0 respectively. Firm_type is a nominal variable.

Summary statistics are reported as figure 2.1.

5.3.3 Analysis

In both categories (capital intensive service firms and knowledge intensive firms) there were significant outliers. To counter the presence of outliers, the 5 % trimmed mean as reported by the descriptive statistics of SPSS 17 are taken into consideration instead of the usual mean.

Categorical regression quantifies categorical data by assigning numerical values to the categories, resulting in an optimal linear regression equation for the transformed variables. The procedure quantifies categorical variables so that the quantifications reflect characteristics of the original categories. Optimal scaling categorical regression method is used as detailed in PASW 17.

5.3.4 Results

Figure 2.2 indicates that firm type is a significant indicator of the change type. The regression analysis suggests that firm type (capital intensive vs. knowledge intensive) explains 1.6% variation in change in total assets in the firms. The negative sign of the standardized coefficients (-.127) indicates that as we move from capital intensive service firm to knowledge intensive service firms, the type of change moves in the opposite direction from revolutionary to evolutionary changes. Thus capital intensive service firms are associated with more revolutionary changes as compared to knowledge intensive service firms. The categorical regression analysis lends support to Hypothesis 2.

6. DISCUSSION

Integrating the two hypotheses together, distinct patterns emerge in the resource commitment of capital intensive and knowledge intensive service firms.

Capital intensive service firms tend to follow the stages model more closely as they expand (increment) the investments into the host market at a slow pace (gradual manner). It may be due to liabilities of foreignness, slow market specific knowledge accumulation and other factors as suggested before in the hypothesis development. Also, such firms are more likely to go through revolutionary changes in the host market. This revolutionary change, in most cases, reflects a change in the mode of operation. By increasingly opting for higher commitment modes, capital intensive service firms gain more control over their activities in the host market

(Petersen and Welch, 2002). The incremental nature of these revolutionary changes suggests that these firms become increasing involved with the host market with more irreversible investments indicating higher exit barriers.

On the other hand, knowledge intensive service firms tend to speed up their internationalization by increasing their resource commitment at almost double the pace of capital intensive service firms. The speed of expansion indicates that these firms have to continually adapt to the foreign market and are much more affected by industry, environment and cultural differences. In order to maintain their niche, they bring about successive but small changes. The evolutionary change approach that is adopted by these firms suggests that these firms do not necessarily change the operational mode over time. Instead they are likely to expand their geographical base inside the host market mostly by opening more offices or adding new related services to cater their target market better. These findings are consistent with the findings of the research on born globals and other high tech firms that have highlighted that they enter the market with high control modes and hence don't need to change operational mode in the host market.

7. RESEARCH CONTRIBUTIONS AND LIMITATIONS

This study is one of the very few studies that are focused on the post entry resource commitment decisions of firms in the host market. It investigates the aspect of change in the resource commitment for service firms, which has been neglected in previous research on the internationalization process (Nummela, Saarenketo and Puumalainen, 2004; Petersen and Welch, 2002; Pedersen et al., 2002). The pace of continued resource commitment into the host market and the type of changes in the resource commitment are used to qualify the differences between the different types of service firms. It highlights that knowledge intensive service firms which plan to expand in the host market should structure their strategy such that it facilitates continued commitments. On the other hand, from a strategic viewpoint, capital

intensive service firms should try not to invest huge capitals at very close quarters. Also, literature suggests that resource commitment decisions are primarily based on manager's perceptions. It is suggested that firms train their managers to consider type of service firm (capital vs. knowledge intensive) and their relevant expansion characteristics as important variables during strategic planning. From a managerial point of view, it gives a better understanding of the process of international expansion in host markets. Knowledge of the pace and type of changes will help firms in deciding appropriate timing for resource commitment changes which is crucial for the success for the firm in overseas markets (Petersen and Welch, 2002).

This study further develops the idea of irreversibility of committed resources (Appendix 1) in the host market (Pedersen and Petersen, 1998) by using elaborate quantitative measures and incorporates that while formulating the commitment of a firm towards a foreign market. The irreversibility concepts have been borrowed from the financial economics literature and its integration with international business is a major improvement.

Internationalization of services is emerging as an important area of research since service firms are moving to international markets at an unprecedented pace (Merchant and Gaur, 2008). A number of researchers have pointed out the lack of theoretical and empirical rigor of existing studies in service firm internationalization (Knight, 1999; Javalgi and White, 2002). This study empirically tests the validity of the internationalization concept of the stages model to the service firms. In the international business literature, the resource commitment after the initial entry has only been dealt with either the case study approach or cross-sectional analysis. In contrast this study uses a quantitative longitudinal research design.

There are certain limitations to this study. Since this study investigates the growth of firms in the host market, it's desired to have data on multiple years for more concrete results.

Unfortunately, data is available for only 3-5 years and it serves as a deterrent in generalizing the findings of the study over the complete internationalization period of service firms. More longitudinal studies are called for to investigate the patterns of post entry resource commitments to develop the theory even further. Also, the measures deciding the evolutionary and revolutionary changes seem to be a bit restrictive. They are based on very limited research and thus more refined statistical measures are called for.

8. CONCLUSION

This study aims to provide a better understanding of the internationalization process and progression of service firms in the overseas host markets. Concentrating on only post entry decisions, variations in the resource commitment for different types of service firms are highlighted based on the pace and type of changes. Using a quantitative longitudinal research design this study refines the argument of non-applicability of the internationalization process to service firms. The findings of the study indicate that the conceptual stages model is more suitable for capital intensive services and only knowledge intensive services increase their resource commitment at a much faster pace. Consistent with the literature it calls for new models explaining the internationalization process of knowledge intensive firm but at the same time contends that current models are appropriate for capital intensive service firms.

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10. APPENDIX 1

Calculation of the measure for Irreversible investments

Irreversible Investment =CPI adj (Current + Tangible + Intangible) assets *Irreversibility index
E*xpanding:*

Irreversible Investment = [CPI adj Current assets * irreversibility of current assets] + [CPI adj Tangible assets * irreversibility of tangible assets] + [CPI adj Intangible assets * irreversibility of intangible assets]   **…………………….Eq 1**

Putting values as described in section 5.2.2.1 (Irreversibility of the invested capital)

Irreversible Investment = CPI adj Current assets * 0 + [CPI adj Tangible assets * irreversibility of tangible assets] + CPI adj Intangible assets * 1

Hence:

Irreversible Investment = [CPI adj Tangible assets * Irreversibility of Tangible assets] + CPI adj Intangible Assets.   …………………….Eq 2

Calculation of the Irreversibility index of tangible assets

Irreversibility of tangible assets is modeled at the level of industry as is done by various studies in financial economics (Bulan, 2005; Kogan, 2001). Dixit and Pindyck (1995) argue that the irreversibility of capital is more pronounced at the industry level than at the firms level because investments are generally industry specific.

Using Bulan (2005), a firm's tangible investments are classified according to their degree of irreversibility at the industry level. Investments like "electrical and electronic equipment", "industrial machinery and equipment", "other transport and equipment" and "other machinery and equipment" are considered irreversible investments while investments like "computer and peripherals" and "motor vehicles" are treated as reversible investments. For each industry, total tangible investment is broken down into the type of equipment, structure or software. Using this grouping, each investment type is classified as reversible or irreversible based on the industry specificity.

Yearly irreversibility index of tangible investments is calculated as follows:

Irreversibility Index of year I= total irreversible investment in year I / net capital stock of year I

The index is calculated individually for 8 years, from 2001 through to 2008. The yearly indexes are then averaged to calculate the irreversibility index of the specific industries as given on Page 13 under methodology.

11. FIGURES
Figure 1: Fixed effects least square regression results (Pace of resource commitment)

Model Number	Dependent Variable	Independent Variables	T-statistic	Sig.	R-squared
Model 1	Compound change of Irreversible investment	FIRM (CISF VS KISF)	4.114	0.0000*	0.519
		AGE (Age of firm)	2.822	0.0000*	
		GROWTH (yearly industry growth)	3.797	0.0001*	
Model 2	Compound change of Irreversible investment	FIRM (CISF VS KISF)	4.221	0.0000*	0.521
		AGE (Age of firm)	3.630	0.0000*	
		GROWTH (yearly industry growth)	2.213	0.0003*	
		SIZE (Ln of employees)	1.332	0.1828	

*Values are significant at the 1% level using a two tailed t test.

Figure 2.1: Summary Statistics

	Capital Intensive firms	Percentage of firms	Knowledge Intensive firms	Percentage of firms
Sample	167		75	
5% Trimmed Industry Average	30.39		55.94	
Standard Deviation	29.85		130.91	
Firms with evolutionary change	91	54.49%	51	68%
Firms with intermediate change	51	30.54%	16	21.33%
Firms with revolutionary change	25	14.97%	8	10.66%

Figure 2.2: Optimal scaling categorical regression results

Response Variable	Design Variable	Standardized Coefficients		Sig.	R- square
		Beta	Std. Error Estimate		
Change_Type (1: Evolutionary 2: Intermediate 3: Revolutionary)	**Firm_Type** (1: Capital Intensive 0: Knowledge Intensive)	-.127	.056	.025**	0.016

**Value is significant at the 5% level.