

**DECISION MAKING PROCESS: A COMPARISON BETWEEN  
FAMILY BUSINESS AND NON-FAMILY BUSINESS IN THE  
CONSTRUCTION INDUSTRY USING THE BAYESIAN CAUSAL MAP**

**by**

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## **Abstract**

This is a conceptual paper in exploring the differences in decision making process between family business and non-family business in the construction industry in Malaysia. The understanding of the complexity and dynamics of a family business is becoming more prevalent among researchers. Fast decision making is not only seen as necessary but crucial to ensure speed and efficiency in responding to market opportunities and maneuvering through market uncertainties and tumultuous environment, with the intention to diversify their businesses by finding opportunities towards new venture creation. This study intends to suggest how to simplify decision making and find tactics to have quality decision making. Hence, this study will focus primarily on the decision making process which is mapped against the Bayesian causal map.

**Keywords : Business ownership, Entrepreneurial cognition, Decision making, Decision making process, Family business, Entrepreneurial orientation, Opportunity recognition, New venture creation, Bayesian causal map.**

## **1. Introduction**

The headline reads, “Escada sold to India’s Mittal Group”. Escada, the Munich-based, iconic European luxury fashion is sold to Megha Mittal, daughter-in-law of India-born billionaire Lakshmi Mittal. His son, Aditya Mittal, is the finance director and president of the family corporation Arcelor Mittal, the world's largest steel firm.

This is a unique case of diversifying from its core business, something which is seen as a masculine industry, into something somewhat feminine, the fashion industry. This kind of strategy is not common in non-family businesses. Non-family businesses tend to acquire or merge with businesses of the likes, in their effort towards being competitive and pursuing its growth strategy. For non-family businesses, it is about keeping to their core business, what they do best, their bottom line and their responsibility towards their shareholders.

Even though family businesses are stereotypically known for conservative planning and organic expansion which could limit their growth compared to non-family enterprises (Astrachan, 2010), of late, more family businesses are either acquiring or diversifying their businesses, not only to sustain their growth, but also to create wealth for and within the family, and to ultimately continue their business legacy (Malaysia’s NAZA Group, diversifying from Automotive industry to property development (July 2009), Germany’s Merck Group acquiring Millipore Corp. (March 2010), and America’s Mars, Inc. taking over Wrigley (October 2008)).

What then, is the motivation behind family businesses when decisions such as these take place? How, why (and possibly for whom) are these decisions made? How different is the decision making process between family businesses and non-family business?

## 1.1 Background

The global economic outlook is gloomy and this affects consumer confidence and spending. The direction for the property market is challenging and although the property prices in Malaysia seem to be hanging on but business owners and investors nationwide is holding their breath for the economy to pick up in a year or two.

These challenging times will hit contractors and property developers hard and force them to evaluate and re-evaluate their investment opportunities and staying risk-averse. Only the willed with perseverance and those with continuous innovation may stay ahead of the pack.

For these business owners in the construction and property development industry, staying vigil is key during these trying times. Therefore, in order to continue leveraging on domestic opportunities and competing in the global marketplace, Malaysian construction industry players need to address a number of key strategic and operational challenges. There is a need to take a holistic approach in reviewing the factors impacting the construction industry value chain.

Improvements need to be implemented by all parties along the entire construction industry value chain for lasting transformation to occur. Therefore, in addition to contractors, clients, approving authorities, consultants, and other stakeholders must be involved in this transformation (Malaysian Construction Industry Masterplan 2008).

The construction industry contributes almost 4% to the GDP and expected to increase by 5% by year 2015. Globally, 70% of businesses are family owned (STEP 2007). In Malaysia, out of 7,622 G5-G7 registered contractors, there are 88% active contractors. And if the ratio of businesses to family businesses is mapped, there are potentially 4,695 active contractors in Malaysia which are family owned.

Family businesses are an important segment to the global economy, whereby they contribute towards more than 75% of the gross domestic product (GDP) in most countries and employ more than 85% of the working population around the world (Poza, EJ, 2007). In the World Competitive Report 2000 produced by the Lausanne Management Centre, 80% of the enterprises around the world are more or less considered family enterprises (Lee & Li, 2009). In the US, family enterprises contribute half of the job opportunities. In Germany, family enterprises create 66% of GDP and account for 75% of the total national employment. In Great Britain, the number of employees in family enterprise is 50% of the country's workforce. Family enterprises contribute a lot to GDP of Southeast Asian nations and the region, with Korea reaching 48.2%, Taiwan 61.6% and Malaysia 67.2%.

In his book, *Family Business*, Poza (2007) explained that approximately 85% new businesses fail within their first five years of operation and among those that survive; only 30% are successfully transferred to the second generation of the founding-family owners. And the odds get worse in the transition between the second and the third generations, and the third to the fourth generations, when only 12% and 4% of such businesses, respectively, remain in the same family. This phenomenon is also prevalent but many others have shown to be even stronger as they maneuver towards their 4th and 5th generation. How do companies such as the Lee family from China (5th generation), the Deague family from Australia (into its 6th

generation), the Dunn family of USA (into its 5<sup>th</sup> generation) or even the Frescobaldi family of Italy date back to 1300, remain strong up to this day?

Limited research has been carried out to understand the intricacies of family-owned businesses; this in turn inhibits the development of an integrated theory of family firms (Brice, 2007). In 2003, Dyer explained that business researchers usually overlook the family dimension even when it strongly exists in the firm they study and he further suggested that a number of research areas would benefit from including variables such as strategy, governance, competitive advantage, organization culture, social capital/networks, groups/teams, conflict, leadership succession, and change. And in 2010, Astrachan highlighted that the field of family business needed greater attention and more outlets for theory and research. He further explained that the proportion of family businesses to all other businesses is overwhelming as is the contribution of family businesses to Gross World Product (GWP), employment and employment growth (IFERA, 2003).

Therefore, a study on the decision making made by entrepreneurs within a family business will enrich the knowledge of mechanisms that drive the companies to participate in the economy, thus creating growth and prosperity for society. With such small survival rate in transgenerational entrepreneurship, it is imperative that one necessity for business survival is the family members' ability to make sound decisions together (Tisue, 1996) .

## 1.2 Problem Statement

The challenges and complexity of the ever-changing business environment in the construction industry, the unique make-up of familiness, and the lack of research that can tailor to specific situations in the orientation of decision making process, calls for this study to be generated.

## 1.3 Scope

This study is limited to respondents from the construction industry. The selected businesses fall within the G5-G7 categories as classified by the Construction Industry Development Board Malaysia (CIDB). The reasons why G5-G7 categories are chosen are because these companies are big enough to exhibit sizeable revenue, business growth, and innovativeness in their product or services.

## 1.4 Research Focus

In this study, the main focus would be on the entrepreneur, within a business group (Lehner & Leyronas, 2009), and his multiple activities (“portfolio entrepreneurship”) in order to exploit new opportunities and examining his entrepreneurial cognition, how he functions as an entrepreneur, the dynamics of his family environment, and how he makes and arrive at such a decision.

In doing so, the entrepreneur needs to be intuitive, creative and able to forecast, as these are essential elements of decision making (Fontela, Guzman, Perez & Santos, 2006). However, these entrepreneurs are somewhat motivated by what surrounds him, i.e. the family context, therefore, it is also necessary to understand the way the family works as a system, and how this affects the entrepreneurs and the individual family members.

### 1.5 Purpose and Objectives

The understanding of the complexity and dynamics of a family business is becoming more prevalent among researchers. Fast decision making is not only seen as necessary but crucial to ensure speed and efficiency in responding to market opportunities and maneuvering through market uncertainties and tumultuous environment. The ability to make creative decisions with the flexibility to lower operational cost could reduce operational risks and achieve rapid growth (Lee and Li, 2009).

Although strategic decisions may be intentionally rational, overall the process of making the decision may be incremental. (“Logical incrementalism” and the process by fragmentation, constant evaluation, intuition and political behaviour) (Quinn, 1980). Rationality may be said to characterize behaviour that is logical in pursuing goals (Dean & Sharfman, 1993). However, entrepreneurs simply do not have the time to go through a thorough, rational decision making process (Bhuin, 2003). Entrepreneurs often deal with a situation without planning in advance, which decreases the firm performance when confronting with more complex problems (Levander & Raccuia, 2001). Complexity of the environment will lead to increased use of complete planning, but changeability of the environment will lead to less frequent use of rationality (Gelderen, Frese & Thurik, 2001).

This study uses the cognitive perspective (Matlin, 2002), an emerging perspective within the field of entrepreneurship to understand entrepreneurs in making decisions and solving problems (Sternberg, 1999). Furtherance to that, Mitchell and Busenitz (2002, 2007) defined entrepreneurial cognition as the knowledge structure that people use to make assessments, judgments, or decisions involving opportunity evaluation, venture creation, and growth. In 2004, Baron described decision making and reasoning, and how people use stored knowledge for making decision and in reasoning about the situation. Baron suggested that due to these complexities, future researches need to suggest how to simplify decision making and find tactics to have quality decision making.

Hence, this study will focus primarily on the entrepreneur’s decision making process, within the business group (Lehner & Leyronas, 2009) and his multiple activities (“portfolio entrepreneurship”) in order to exploit new opportunities, which is then, mapped against a Bayesian causal map. The Bayesian causal map considers reasoning (deductive versus adductive) which underlies the cause-effect relations perceived by the individual, taking into consideration the uncertainty variable and effects of the variable (Nadkarni & Shenoy, 2003). This study shall examine potential causes (uncertainty variable) which comprise of family resource pool, industry, family life stage and family involvement, and how these causes moderate the entrepreneurs’ decision making process in creating new ventures.

Therefore, following is the objective of the study:

To identify the process of and factors that affect decision making by entrepreneurs in the construction industry. In doing so, it is with the intention to understand how the entrepreneurs decide (heuristic or systematic thinkers) when creating new ventures and to compare that between family businesses and non-family businesses using the Bayesian causal map.

New venture creation (as a diversification strategy) is chosen as the outcome variable because there may be a unique reason to why and how family businesses are embarking into such strategy. Among the possible reasons which may differentiate family businesses to non-family businesses are:

- (a) the expectation of wealth creation for the family, and within the family; and
- (b) preserving their family legacy.

This pattern is not seen in non-family businesses because wealth creation is not the goal of the business owners, neither is legacy, because their names are not tied to the company. Instead, non-family business owners may be concern of the company's reputation rather than legacy.

Decision specific characteristics influence the decision making process more than any other environmental, organizational and managerial factors (Papadakis, Lioukas & Chambers, 1998). A lot of the decision making process is controlled by the family patriarch (Lee & Li, 2009). In most cases, the decision making by the founder is liken to the authoritarian style, and everyone follows it without questioning the decision or the process of carrying out the decision (Tisue, 1999). However, other influences may also affect the founder's decision making, such as his experiences and abilities and the team that backs him up (Wells, 1974); the size of investment, cash out potential, geographic location and product differentiation (Tyebjee & Bruno, 1984); and knowledge and personal psychology (values) (Harris, 1998). Nonetheless, one cannot separate the entrepreneur from the family context because the contribution of the family members and the significance of the family dynamics; and despite the ideology of individualism, entrepreneurs belong to households that are emotional and economic units (Cramton, 1994).

Therefore, what motivates entrepreneurs to decide on such strategies? Aldrich & Zimmers (1986) and Caroll & Mosakowski (1987) describes entrepreneurial activity can be conceptualized as a function of opportunity structures and motivated entrepreneurs with access to the resources (Shane, Locke & Collins, 2003). And there are different levels of motivation as the entrepreneur is influenced not only by his perception of risk but also evaluating the opportunity (Shane & Ventakamaran, 2000).

The idea behind the family firm research is that the family could be the critical variable that must be explored (Astrachan, 2003; Dyer Jr., 2003; Habbershon, Williams & MacMillan, 2003; Rogoff & Heck, 2003; Zahra, 2003). In identifying what this "critical variable" is, Habbershon et al (2003) introduced a new perspective called "familiness" which describes unique, inseparable, and synergistic resources and capabilities emerging from family involvement and interactions.

## 2. Literature Review

### 2.1 Introduction

Richard Cantillon (1680-1734) who, in 1755 was credited for being the first to introduce the term “entreprendre”, which means, “to undertake” (Jones & Wadhvani, 2006). The term later evolved from the function that the individual undertakes to the individual himself. In 1934, Schumpeter defined entrepreneurship as “carrying out new combinations”, which see the entrepreneur as someone who seeks opportunities for profits and by doing so; he comes out with new opportunities by innovating.

Frank Knight (1921) defined entrepreneurship as someone who is able to successfully predict the future. Knight's intuitive entrepreneur initiated the early notion of entrepreneurial thinking and the pivotal role of information that later became the essential elements in the cognitive perspective of entrepreneurship and venture creation (McMullen & Shepherd, 2006). It was in the late 1990's that researchers had begun to look at entrepreneurial thinking, entrepreneurial research domain, that comes from the cognitive stream. In a landmark journal article, Mitchell, Busenitz & Lant (2002) defined entrepreneurial cognition as “the knowledge structures that people used to make assessments, judgments or decisions involving opportunity evaluation and venture creation and growth.

### 2.2 Business Ownership

Family businesses and non family businesses make up the sphere for habitual entrepreneurs. The term “portfolio entrepreneurs” and serial entrepreneurs were further explored by Ubasaran, Westhead, Wright and Flores (2009). They suggested that experience needs to be considered when looking at an entrepreneur's prior business ownership(s); whether past experience(s) is associated with business failure and whether this business ownership experience is acquired sequentially (i.e., sequential entrepreneurs or serial entrepreneurs) or concurrently (i.e., portfolio entrepreneurs).

### 2.3 Family Business

In 1995, Wakefield indicated that family firms originate from any business activity. However, researchers have come up with many different definitions, either looking at the individual level, i.e. individual founder (Kelly, Athanassiou & Crittenden, 2000), and the next generation member (Eckrich & Loughhead, 1996) or the group level, i.e. conflict among family members (Kellermanns & Eddleston, 2006), and succession in business (Cadieux, Lorrain & Hugron, 2002). However, of late, researchers are becoming more interested in the field of family business, hence, there is a clearer line separating between family business and non-family business. The line separating a firm which is clearly a family firm as opposed to those which are clearly not is now easier to draw. The ones in between, i.e. the grey area, is one which is hard for researchers to shade (Westhead & Cowling, 1998).

Hence, Poza (2007) adopts an inclusive theoretical definition of a family business that focuses on the vision, intention, and behaviour, vis-à-vis succession, of the owner : (a)

ownership control (15% or higher) by two or more members of a family or a partnership of families; (b) Strategic influence by family members on the management of the firm, whether by being active in management, by continuing to shape the culture, by serving as advisors or board members, or by being active shareholders; (c) concern for family relationship; and (d) the dream (possibilities) of continuity across generations.

In 2003, Anderson and Reeb found that family firms listed in the S&P 500 whose firms are influence by the founding family, tend to outperform their counterparts. In the Successful Trans-generational Entrepreneurship Practices (STEP) 2008 report, it is found that more than 60% businesses worldwide are family owned or/and and was also highlighted that 85 of these businesses are well established companies. Family-owned businesses such as the LG Group from Korea, Bosch Group from Germany, L'oreal Group from France, Tata Enterprise from India, Cheung Kong from HK-China, Asian Pacific Buildings Corporation from Australia are examples of large and successful businesses located around the globe and are common brands we can associate ourselves with.

In delving into the lifespan of family businesses, many researchers found that they are often relatively short, as only a limited number survives the transition to the second generation, and hardly one-third even into the third (Beckhard & Dyer, 1983; Shanker & Astrachan, 1996; Neubauer & Lank, 1998; Paisner, 1999). In 2003, Dyer found that the field of management studies has paid insufficient attention the family firms' unique theoretical and practical problems so far and further iterated in 2006 that due to this high importance of family firms, academia has finally recently begun to recognize their necessity as a research object (Chrisman, Steier & Chua, 2006).

## 2.4 Decision Making

Decision Making is the act which marks out the businessman from all those who collaborate with him in production (Shackle, 1966). Historically, corporate America's decision making is modeled from the military decision making. Hence, the authoritarian style of leadership where decision is made by the founder and no one questions the decision or the process of carrying out the decision (Tissue, 1999). However, as an entrepreneur, he does not merely live in the context of the present, he needs be able to sense and have the foresight because the implications of the decisions he make today will only be realized tomorrow (Thaler, 2000). Alvarez and Busenitz (2001) explored the coordinating role of entrepreneurship on the collection and use of organization knowledge that leads to heterogeneous outputs and, ultimately, to a firm's competitive advantage. This substantiate that the capability of the entrepreneur, his behaviour, the way he thinks and the way he makes his decision in using and leveraging on the available resources, does impact the organization performance. Mitchell (2002) defined entrepreneurial cognition as "the knowledge structures that people used to make assessments, judgements or decisions involving opportunity evaluation and venture creation and growth".



## 2.5 Rationality

Rationality may be said to characterize behaviour that is logical in pursuing goals (Dean & Sharfman, 1993). Although strategic decisions may be intentionally rational, overall the process of making the decision may be incremental as Quinn in 1980 described it as a “Logical incrementalism” and the process by fragmentation, constant evaluation, intuition and political behaviour. Olson and Broker (1995) explained that the strategy process focuses on the formulation and implementation of the strategic decision, and is connected to formal planning (detailed business plan elaboration).

However, entrepreneurs tend to have tight deadlines and the entrepreneurs simply do not have the time to go through a thorough, rational decision making process (Bhuan, 1997). In 1998, Papadakis, Lioukas and Chambers observed that strategic decisions for new business investments and marketing type seem to be subject to a less comprehensive analysis than strategic decisions on capital investment and internal reorganisation. Entrepreneurs often deal with a situation without planning in advance, which decreases the firm performance when confronting with more complex problems (Levander & Raccuia, 2001). However, as the going gets tough, and environment becomes too complex to comprehend, entrepreneurs will tend to use complete planning, but when the environment tend to change too rapidly, the entrepreneurs will lead to less frequent use of rationality (Gelderens et al, 2001).

Observations of entrepreneurs in various countries (USA, UK, Canada, Hong Kong, New Zealand and Singapore), Cunningham, Gerrard, Schoch, Chung (2002) showed that there is a kind of logic that is neither functionally nor substantially rational, and thus, concluded that there is a way of thinking and decision making that might be appropriate in creatively making decisions in highly turbulent environment, which is known as “the new economy”.

## 2.6 Entrepreneurial Cognition

Entrepreneurial cognition (Mitchell, Busenitz, et al, 2002) is defined as the knowledge structure that people use to make assessments, judgments or decisions involving opportunity evaluation, and venture creation and growth. Over the years, researchers continue to understand “how do entrepreneurs think”, what makes them better entrepreneurs compared to others. And thus, the interest by researchers were moving towards understanding the structure (whether heuristic or systematic thinking) and how the entrepreneurs process the information to come up with better decisions.

The research done by Baron in 2004 where he focused on entrepreneurial process, where he asked three basic questions, i.e. (1) Why do some persons but not others choose to become entrepreneurs? (2) Why do some persons but not others recognize opportunities for new products or services that can be profitably exploited? (3) Why are some entrepreneurs so much more successful than others. It is at this point that Baron’s work serves as a nucleus for other researchers to explore in the area of entrepreneurial cognition, a way of thinking and behaving.

## 2.7 Decision making process

Wells (1978) observed that an entrepreneur's abilities and those of the entrepreneurial team are decisive in the strategic decision-making process: their background, previous experience and level of commitment. In making decisions, it was found that size of the investment, the cash out potential, the geographic location and the product differentiation as most influential for the strategic choice (Tyebjee & Bruno, 1984). The research which was carried out by Harris (1998) found that the decision making process focuses the attention on factors like: time available for making the decision, cost involved with alternative solutions, availability of resources, knowledge and personal psychology (values). It was also found that entrepreneurs use the approach of concentrating on the most difficult, most unclear, and most important point first. Only after solving this first critical point further steps are planned (Frese, Gelderen & Ombach, 2000).

## 2.8 Family Business and Decision Making

In most family businesses, there is a prevalent leadership style, i.e. authoritarian decision making, whereby decision is made by the founder, i.e. the father, and no one questions his decision or the process of carrying out that decision (Tisue, 1999). However, there are many definitions to explain what decision making is in the context of a family business. Thus, due to their dissatisfaction with existing definitions, several authors have recently shifted their approach to identifying the "essence" of a family firm, e.g. through the question of the family's influence in strategic decision making (Davis & Tagiuri, 1989; Handler, 1989; Shanker et al, 1996).

Historically, the concept of decision making is made by only one person, i.e. the business owner, with little or no input from other (Gersick, Davis, Hampton, & Lansberg, 1997), However as time moved on, the dynamics of a family-owned business becomes complex and in surviving through the course of times, it is crucial to make effective decision making (Tisue, 1999).

In later studies conducted in 2003 by various researchers, (Astrachan, Dyer, Habbershon et al., Rogoff et al., Zahra), it was concluded that there could be a common idea behind this and that the family could be the critical variable in family firm research. In identifying what this "critical variable" is, Habbershon, Williams & Macmillan (2003) introduced a new perspective called "familiness" which describes unique, inseparable, and synergistic resources and capabilities emerging from family involvement and interactions.

## 2.9 Conceptual Framework

### *Resourced- based View*

The resource-based view (RBV) of the firm argues that firms are able to outperform others if they can develop valuable resources or capabilities which cannot be easily imitated or substituted by its competitors (Barney, 1991; Teece, Pisano & Shuen, 1997). The RBV can contribute to investigating how family firms identify and develop distinct unique capabilities,

and how those might be transferred (e.g. during business succession) to new owners and structures (Habbershon & Williams, 1999). Further studies carried out between the years 1999 to 2003 prove that the connection between family and business may lead to unique advantages in the acquisition of resources. An appropriate method for doing that is to assess the family influence on the resources of an organization (Haynes, Walker, Rowe & Hong, 1999). Family ties may provide an advantage in opportunity identification due to a higher willingness to share information with each other between members of the same family (Barney, Clark & Alvarez, 2002).

Thus, family influence, which is defined as “familiness” is one of the main inputs in the system as a way to assess family influence on performance outcomes (Aldrich & Cliff, 2003; Stewart, 2003). Sirmon & Hitt (2003) applied the RBV to family firms, and distinguish between five sources of so called “family firm capital”: human, social, survivability, patient, and governance structures. The authors argue that family firms acquire, bundle and leverage their resources differently to non family firms. However, Nordqvist (2005) concluded that not all firms have unique resources, and it is possible to survive without them. It can thus also be argued that not all family firms have such a “familiness” capability which is are unique and inseparable, and lead to a competitive advantage.

### *Entrepreneurial Orientation*

Entrepreneurial Orientation (EO) is a firm level construct that is closely linked to strategic management and the strategic decision making process (Covin & Slevin, 1991). In 1996, Lumpkin & Dess explored the constructs of EO and defined a firm’s EO as its propensity to act autonomously, innovate, take risks, and act proactively when confronted with market opportunities. They also concluded that EO is a process construct and concerns the methods, practices and decision making styles managers use. In 2005, Aloulou & Fayolle explored a firm’s strategic orientation, and concluded that it involves capturing specific entrepreneurial aspects of decision making styles, methods and practices. Habbershon et al, (2007) introduces the EO framework that provides five established constructs to explore as antecedents to entrepreneurial performance – proactiveness, innovativeness, autonomy, riskiness, and aggressiveness

### *Decision Making Process*

Mintzberg, Raisinghani & Theoret (1976) introduced the decision making structure and described it by seven elements, comprising three central phases’ (identification, development and selection), three sets of ‘supporting routines’ (decision control, decision communication and political) and six sets of ‘dynamic factors’ (interrupt, scheduling delays, timing delays and speedups, feedback delays, comprehension cycles and failure recycles). The general model describes the interrelationships among them and the decision processes studied are shown to fall into seven types of ‘path configurations’. Three decision stimuli sit in a continuum, namely ‘opportunities’ (voluntary decisions to improve a secure position) at one end, ‘crises’ (decision responses to intense pressures) at the other and ‘problems’ in the middle; each capable of integrating or moving along the continuum.

Further research on the decision making process which was conducted by Mullins and Foriani (2000) proposed a model to show that whilst strategic decisions are immensely complex and dynamic, it is possible to give them conceptual structuring. Mintzberg later revised his viewpoint and continued his research on decision making process with Westley, in 2001. In this study, they did not deny the rational approach, however, they defended the thesis that the conventional rationality is not anymore the only advisable way to determine the course of action. They came up with 3 approaches, i.e. Good decisions are the output of careful analytical thinking combined with two other possible ‘ingredients’ of decision-making, namely intuition and pro-active behaviour (see table 1).

<b>“Thinking First” (rational) features the qualities of</b>	<b>“Seeing First” (intuitive) features the qualities of</b>	<b>“Doing First” (action-oriented) features the qualities of</b>
<b>Science</b>	Arts	Crafts
<b>Planning</b>	Visioning	Venturing, Learning
<b>The verbal</b>	The visual	The visceral
<b>Facts</b>	Ideas	Experiences
<b>define -&gt; diagnose -&gt; design -&gt; decide</b>	preparation -> incubation - > illumination -> verification.	enactment -> selection -> retention
<b>Ready reviewed path</b>	subconscious manner of decision-making, which requires a significant amount of prior experience	If rationality is helpless and strategic vision is not present. This approach is advisable when the situation is novel and confusing, and things need to be worked out.

Source : Mintzberg and Westley, 2001.

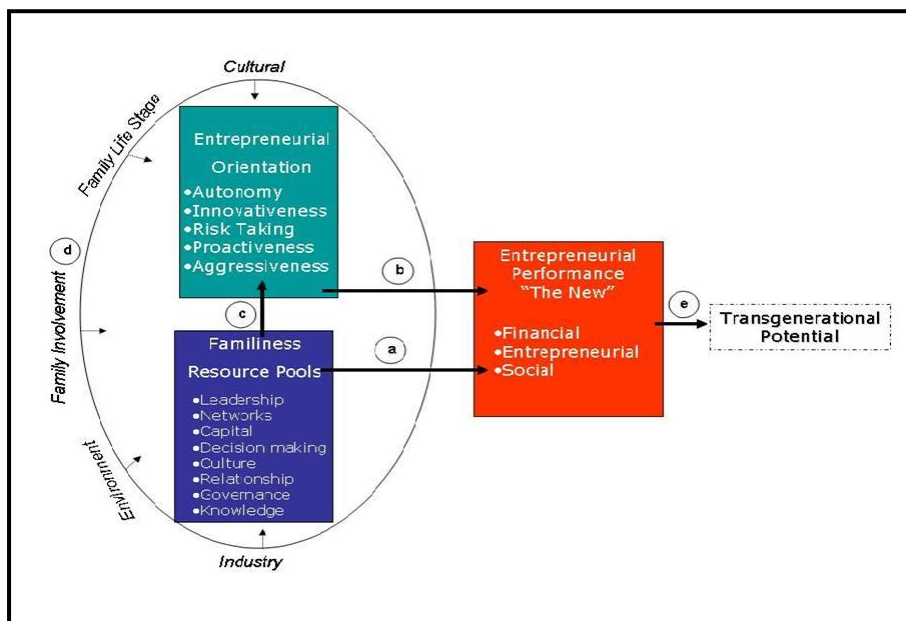
**Table 1 : Characteristics of the 3 Approaches to Making Decision by Mintzberg & Westley (2002)**

Additionally, Lee & Li (2009) also suggested that formalization of professional management system should be developed with objectivity and rationality in decision-making. The set-up of scientific decision-making mechanism would help to reduce risk and failure in the decision making process. Factors effecting decision making mechanism are mainly structural elements including leadership, organization to employee profile, and procedural elements ranging from decision making procedure, decision making methods to communication and information transfer. Therefore, it is suggested that, besides having the board, there should be another platform to facilitate decision making, i.e. the Family Representative Committee.

## STEP Research Model

The STEP Research Model, redefined in 2008 by the STEP Project, owned by Babson College (see Figure 1) is used to explore on corporate entrepreneurship study in the context of the family form of business organizations (versus a family business studies).

In this research proposal, focus is drawn to the decision making process within the element of “familiness” which is defined as a resource pool, i.e. RBV theory. Looking at who makes what decisions and how they are made is a critical part of strategy development and execution. Decision making is also tied to family and governance practices and structures. Noting how family influences decision practices to create an advantage (e.g. streamlined decisions) or constraint (e.g. disenfranchising certain family members from the process) highlights the speed, quality and commitment of decision-making.



Source : STEP Research Model 2007.

**Figure 1 : The STEP Research Model**

This study will compare family business with non-family business, therefore, context of corporate entrepreneurship with regard to entrepreneurial orientation and RBV are taken as suggested by scholars. And the dependant variable for both family business and non-family business is the outcome of the decision making, i.e. new venture creation.

On top of that, in both family business and non-family business, the mediating influences are:

- (a) *Cultural* – this refers to the ethnic or country cultural influences;
- (b) *Environment* – this refers to the externalities of the economy, region, country etc;
- (c) *Industry* – this refers to the specific factors related to the industry or industries of the business group;

However, the uniqueness of family business, whereby it may influence “families”, two additional mediating influences are included (as per what is suggested by the STEP model).

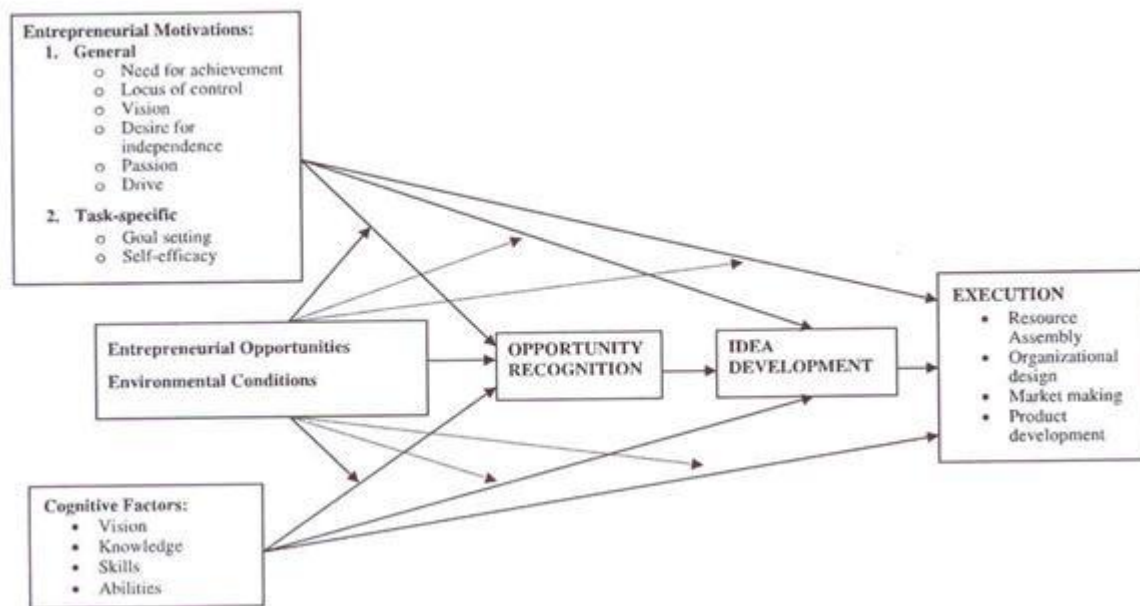
(d) *Family life stage* – this refers to the generation and development of the family and business;

(e) *Family involvement* – this refers to the role family members play in ownership and or management of the group. (note that the last two family categories strongly relate to the governance resource pool of the firm).

By addressing these five categories, it allows us to investigate and answer the question of what mediating influences have on entrepreneurial orientation and resource pools.

### *Entrepreneurial Motivation*

Shane, Scott & Collin (2003) suggest how human motivations might influence the entrepreneurial process and how at each stage of the process, the level, inclusion of or exclusion of some or all of the motivation may matter, or change, to the entrepreneur. See figure 2 below :



**Figure 2: Model of Entrepreneurial Motivation and the Entrepreneurship Process**

In exploring motivation and the entrepreneurial process, this study hopes to better understand entrepreneurial cognition and the entrepreneurs’ decision making process, and would be able to identify how differently or similarly decisions are made between family businesses and non-family businesses.

## *Bayesian Causal Mapping*

### (a) Causal Map

The use of causal map, which are also described as cognitive maps, are directed graphs that represent the cause-effect relations embedded in experts' thinking, whereby certain events or actions, will lead to particular outcomes. The interest seems to be prevalent of late, in using causal map to represent domain knowledge of decision-makers (Anderson & Gerbing; Huff, 1990; Laukkanen, 1996), especially in the area of policy analysis (Axelrod, 1976) and management sciences (Klein & Cooper, 1982; Ross & Hall, 1980).

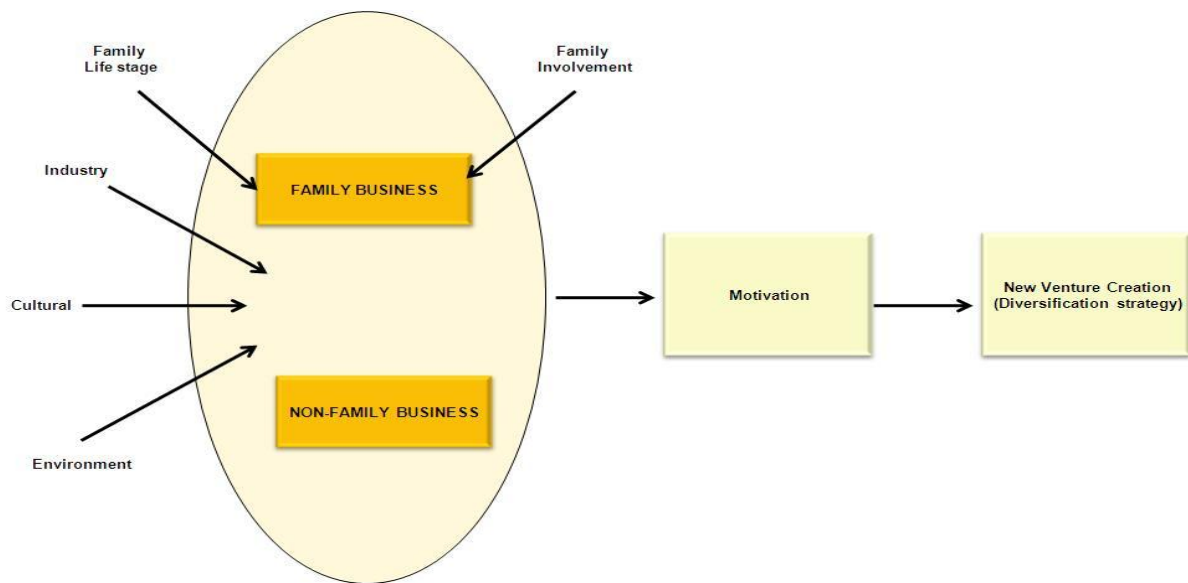
### (b) Bayesian Networks

Bayesian networks, which is based on probability, represents expert knowledge in domains where expert knowledge is uncertain, ambiguous, and/or incomplete (Speigelhalter, David, Lauritzen & Cowel, 1993). The Bayesian network model is depicted through qualitative (directed acyclic graph in which nodes represents variables, and directed arcs depicts conditional independence relations embedded in the model) and quantitative (the dependence relations are expressed in terms of conditional probability distributions for each variables in the network) levels.

### (c) Bayesian Causal Map

Both causal maps and Bayesian networks are causal models that represent cause-effect beliefs of experts. However, when combining causal map and Bayesian networks, the advantages of the two methods is seen and it reduces the limitation of either (Nadkarni & Shenoy, 2004). There are three main advantages to using the Bayesian causal main. The first advantage of using the Bayesian causal map is it assists the decision-maker to support his initial decision-making (Kemmerer, Mishra & Shenoy, 2002). Secondly, it also helps the decision-maker to scrutinize his decisions from those which was made based on tacit decisions, and thus reduces decision bias (Hodgkinson, Brown, Maule, Glaiser & Pearson, 1999). And finally, as described by Hodgkinson et. al (1999), inexperienced decision-makers can become experts in decision-making as they would learn from their experiences because Bayesian causal map stores variables assessments and decision drivers, hence, the decision-maker is able to, later, compare their decisions with reality.

Therefore, based on the literature review above, the following conceptual framework (see Figure 3 and research questions are illustrated below:



**Figure 3 : Proposed Conceptual Framework**

## 2.10 Research Questions

There is limited family business literature that explores on decision making process and what may be the factors that influence the entrepreneurs to come to such a decision, and taking “familiness” into the context of the study.

In embarking to investigate this phenomenon, the research question for this study is:

Do family business owners reason and make decision differently from non-family business owners when they create new ventures? If so, are they heuristic thinkers or systematic thinkers in coming to a decision when the element of “familiness” comes into the picture? And what are the factors (for example, motivation) and processes to their decision making? If the decision is not rational, is there “cognitive biasness” in family businesses?

This goes back to Baron (2004) whereby he suggested that in expanding the research on entrepreneurial cognition, researchers in this area may find the appropriate tools which he has brought forth, as described in Table 2 below :

Issues	Description	Description	Measures (tools)
1	Do entrepreneurs prefer heuristic to systematic thinking?	Entrepreneurs are persons who can “think on their feet” and who prefer action to reflection and thought (e.g., Markman & Baron, 2003).	<u>Reaction time:</u> Defined as the amount of time that passes between a stimulus event and an individual’s overt response to the event.



Issues	Description	Description	Measures (tools)
		<p>Entrepreneurs prefer to think <i>heuristically</i>, following quick rules for making decisions and planning actions, rather than to think <i>analytically</i> or <i>systematically</i> (e.g., Petty et al., 1994).</p> <p>Successful entrepreneurs are more adept at switching between these two modes of thought as the need arises.</p>	<p><u>Number and pattern of correct responses and errors:</u> Just as shorter reaction times may be taken as indicators of better execution of particular cognitive processes, few errors and many correct responses can serve as indicators of proficiency.</p>
2	<p>Do entrepreneurs possess knowledge structures that differ from those of other persons (e.g., knowledge structures that are richer, better interconnected; different in specific content), and do they apply that knowledge more effectively in a wide range of situations?</p>	<p>Entrepreneurs have knowledge structures (i.e., the sum of their stored information and knowledge) that differ from those of other persons has frequently been suggested in the entrepreneurial cognition literature.</p> <p>In short, entrepreneurs' knowledge structures may play a key role in the entrepreneurial process.</p>	<p><u>Reaction time :</u> If entrepreneurs possess more fully developed knowledge structures in certain domains, they would be expected to respond more quickly than other persons to stimuli relating to these domains.</p> <p><u>Number and pattern of correct responses and errors :</u> Just as shorter reaction times may be taken as indicators of better execution of particular cognitive processes, few errors and many correct responses can serve as indicators of proficiency.</p> <p><u>Categorisation :</u> Several measures for assessing or mapping the knowledge possessed by individuals and, more important, how such knowledge is organized, have been developed by cognitive scientists.</p> <p><u>Priming (Prime and target) :</u> A valuable tool for mapping the knowledge structures of entrepreneurs. how they make decisions (Issue #4), and their ability to</p>

Issues	Description	Description	Measures (tools)
			<p>recognize complex patterns of change in the external world (Issue #5).</p> <p><u>Memory:</u> Relates to that from Issue#2</p> <p><u>Generative task:</u> New ideas and innovation.</p>
3	Do entrepreneurs have greater capacity than other persons to focus their attention on pertinent information?	<p><i>Working memory</i> - the cognitive system in which our stored knowledge and experience (in a sense, our consciousness) interacts with incoming information from the external world.</p> <p>It seems possible that entrepreneurs—and especially successful ones - may show greater working memory capacity, and hence greater ability to “zero in” on key information, than other persons.</p>	<p><u>Memory:</u> Relates to entrepreneurs’ capacity to focus their attention on relevant information.</p>
4	Do entrepreneurs reason or make decisions differently than other persons?	<p>Making decisions is a key task faced by all entrepreneurs, and it is often far from an easy one.</p> <p>Do they employ different decision-making strategies or reason about available information differently?</p> <p>For instance, given the fact that they must often make decisions quickly, it seems possible that entrepreneurs are more likely to rely on heuristics in making decisions, or to <i>satisfice</i>—accepting the first decision that works, rather than resorting to more analytical procedures. These are important issues, because the success or failure of new ventures often depends heavily on decisions reached by entrepreneurs.</p>	<p><u>Reaction time :</u> perhaps to reach decisions concerning them more rapidly (Issue #4)</p> <p><u>Priming (Prime and target) :</u> A valuable tool for mapping how they make decisions.</p> <p><u>Memory:</u> Their decision-making abilities. Presumably, the more effectively entrepreneurs can focus their attention on pertinent information, the more readily can such information enter into memory, and the better, ultimately, will be their decisions.</p> <p><u>Decision making &amp; reasoning:</u></p>

Issues	Description	Description	Measures (tools)
			In <i>decision-making</i> or <i>choice</i> (the question of whether entrepreneurs reason or make decisions differently than other persons).
5	Are entrepreneurs better than other persons at recognizing complex patterns— at “connecting the dots” or seemingly unrelated factors and events into identifiable opportunities?	Do opportunities “exist” in the external world, or are they “created” in the minds of specific individuals?	<p><u>Categorisation:</u> Insights into these question may also shed important light on Issue #5. (better, in a sense, at “connecting the dots”).</p> <p><u>Priming (Prime and target) :</u> A valuable tool for mapping the ability to recognize complex patterns of change in the external world.</p>

**Table 2 : Summary of Baron’s 5 Issues and suggestions in researching on Entrepreneurial Cognition.**

Hence, on Baron’s Issue#1, Issue#4, and Issue#5, the research questions proposed above look at successful entrepreneurs, and to investigate whether there are any differences or commonalities between family business owners and non-family business owners in the creation of new ventures. The research question further looks into Baron’s Issue#4, of whether the family business owners are heuristic thinkers or systematic thinking in coming to a decision when the element of “familiness” comes into the picture. Baron’s Issues #2 and #3 may not be directly referred to in this research, but in coming to Issue#4, it does require Issues #2 and #3.

In concluding this proposed conceptual framework, and tying up all these together, this study is proposing to use the Bayesian causal map as a tool to map decision making process, with the intention that it will help to simplify decision making and find tactics to have quality decision making.

### **3. Methodology**

#### **3.1 Introduction**

The research will primarily use the case study approach. The case study approach according to Yin (1989), “investigate the contemporary within its real life context; when the boundaries between the phenomenon and the context are not clearly evident; and in which multiple sources of evidence are used. The use of case study is to develop critical thinking and it gives a holistic understanding of the cultural system (Alvarez, Binkley, Bivens, Highers, Poole & Walker, 1990). Case study is the best design to answer the question of “why and how” whenever the researcher is not having control of the event.

Stake (1994) advises that when choosing a site for a study, “the primary criterion is the opportunity to learn. Stake further adds that, “qualitative study is characterized by the main researcher spending substantial time, on site, personally in contact with activities and operations of the case, reflecting, revising meanings of what is going on”.

Bachor in 2002 pointed out that case study is a convenient and meaningful technique to take a snap shot of what is being observed. And he further explained that case studies also appeal to people because they have what might be termed as ‘face-value credibility’. Wiersma (2005) highlighted that a case study design is used as it allows detailed examination on the phenomenon.

Upon further readings on cases related to entrepreneurial cognition, decision making and family business, the literature review shows that most of the methodologies carried out by the researchers are done through case studies. Sarasvathy in 2004, suggested that when one is investigating more than the entrepreneurs motivation, i.e. “plunge decision”, whereby issues such as emotional endurance, strength, efficacy of spousal, familial, friendship ties and sheer physical energy, one must do qualitative analysis. These are only some issues highlighted by Sarasvathy, however, the complexity and dynamics of a family business goes beyond what was highlighted.

Hence, a case study analysis is ideal for this study. It is also noted that a case study has to be carefully done to ensure that the objectives are met, and that, to maximize what can be learn and taking into consideration the time available for the research.

#### **3.2 Research Design**

The database of the family-business owners in the construction industry will be derived from the CIDB (Construction Industry Development Board, Malaysia) database and the database from the Statistic Department of Malaysia. The selection of the business owners will be based on the CIDB Contractor Grading (see Table 3), those under Grade G5, G6 and G7. The reason for selecting only those under these categories is for its capabilities and possibilities for business growth, innovativeness and transgenerational entrepreneurship.

GRADE	TENDERING CAPACITY	PAID-UP CAPITAL*/ NET CAPITAL WORTH ** (RM)	PERSONNEL TECHNICAL REQUIREMENT#
<b>G7</b>	No Limit	750,000.00	1 Group A & 1 Group B (Both minimum 5 years experience), or 2 A Groups (one of them must minimum 5 years experience).
<b>G6</b>	Not exceeding 10 million	500,000.00	1 Group A & 1 Group B (one of them must minimum 3 years experience)
<b>G5</b>	Not exceeding 5 million	250,000.00	1 Group A or 1 Group B (minimum 5 years experience)
<b>G4</b>	Not exceeding 3 million	150,000.00	1 Group B
<b>G3</b>	Not exceeding 1 million	50,000.00	Course Certificate In Construction Related Fields / Experience
<b>G2</b>	Not exceeding 500,000.00	25,000.00	Course Certificate In Construction Related Fields / Experience
<b>G1</b>	Not exceeding 200,000.00	5,000.00	Course Certificate In Construction Related Fields / Experience

Source : CIDB Malaysia

**Table 3 : CIDB Malaysia Grading**

In Malaysia, out of 7,622 G5-G7 registered contractors, there are 6,447 active contractors. And if the ratio of businesses to family businesses is mapped, there are potentially 4,695 active contractors in Malaysia which are family owned. However, the exact number is yet to be determined upon communication with the CIDB Malaysia.

GRADE	Active	Family Business
<b>G7</b>	3,457	?
<b>G6</b>	795	?
<b>G5</b>	2,195	?

**Table 4 : Number of Active Construction Businesses According to Grading**

The research will be carried out using the case study approach, whereby between four to eight construction firms will be selected based on :

- 1) Annual sales turnover
- 2) Innovativeness towards products or process
- 3) Transgenerational entrepreneurship

According to Yin (1994), research case design can either be single-case design or multiple-case design. Robson (2002) indicated that multiple-case design is appropriate for making analytical generalizations from a sample of cases; and he further concluded that the evidence gained from multiple cases is usually more extensive and the results obtained from the cases are therefore more compelling (Robson, 2002; Yin, 1994).

The interview questions will be using open-ended questions modeled after the STEP Research Model and modified to fit the purpose of this research, and will be carried out on family-business owners and for selected two to three top management personnel. The method of gathering the information will be by way of one-to-one interview, observation and visit the day-to-day practices and examination of documents.

### 3.3 Study Population

The entrepreneur will be the main focal point to gather information through a series of interviews using open ended questionnaire, which will be designed at a later stage. Additionally, request to observe the day-to-day activities within the organization's premises including the consent to refer to selected documents and information is vital in ensuring that the study not only concentrate on the entrepreneur, his family, but also on the environment he is in.

### 3.4 Data Collection Tools

According to Ritchie and Louise (2003), the characteristics of the population should be used as the basis of selection in order to make them suitable for small scale and in-depth studies. The results are not meant to be statistically representative, thus, units are selected to reflect the particular features of the sampled population (Par, 2008). Therefore, the unit of analysis is the entrepreneur and the decision making, i.e. family owned business in the construction industry.

The decision making process will be depicted using the Bayesian causal map. There are four softwares which have been identified, however, it is yet to be reviewed and tested to fit this study. The proposed softwares are :

Software Name / website	Free / Proprietary	Price	Developed by
Hugin Expert www.hugin.com	Proprietary	Euro 863 (Academic version)	Hugin Expert

Software Name / website	Free / Proprietary	Price	Developed by
Bayes Server 2.2 www.bayesserver.com	Proprietary	Euro 490 (Academic version)	Imperial College, UK
AI Space www.aispace.org/bayes	Free	NIL	University of British Columbia, USA
Bayesian Network Tool <a href="http://sourceforge.net/projects/bnj">http://sourceforge.net/projects/bnj</a>	Free	NIL	Kansas State University, USA

**Table 5: List of Bayesian Causal Map (to be reviewed and tested)**

### 3.5 Survey Instrument

For the case study, the questionnaire from the STEP Research Model will be used with some modification done on it to fit the purpose of this study especially in unraveling entrepreneurial cognition, and understanding how decision making is in the context of the family-owned business and non-family business.

### 3.6 Reliability and Validity

Boyatzis (1989) explained that reliability and validity of data in a case study can be done in the following manner, “each code was described and checked for differentiation from other codes for purpose of validity” putting a code to describe each differentiation and theme.

### 3.7 Scope and Limitation

- 1) Focus on one industry, i.e. construction. Hence, may not be applicable for other industries.
- 2) Focus on the “intangible” component (where “familiness” falls into) of the RBV.

### 3.8 Research Gap

- 1) Little or limited research done on the relationship between rational thinking vs entrepreneurial logic to in the process of a decision making
- 2) Little or limited research done on family business and its relationship to decision making.
- 3) No similar research done in Malaysia

### 3.9 Work Schedule

Phases	Description	Duration
<b>Research design</b>	To analyze research domain and define scope of research	<b>4 months</b>
<b>Literature Review</b>	Information gathering from journals, articles, news clips, and research papers of previous works	<b>6 months</b>
<b>Design and implementation</b>	Design of overall concept and scope of work	<b>3 month</b>
<b>Survey</b>  - Case study	Conduct case study	<b>6 months</b>
<b>Data analysis and findings</b>	Collect and Analysis data	<b>6 months</b>
<b>Findings and Conclusion</b>	Write up on the findings and conclusion that can be shared	<b>6 months</b>
<b>Finalized thesis</b>		<b>3 months</b>
<b>Submission and defense of the Thesis</b>		<b>2 months</b>
Total duration		36 months

**Table 6 : Work Schedule**



### **Contribution to the body of research**

The use of Bayesian causal map to assess the decision making process among entrepreneurs in the construction industry and its comparison among the decision makers of family businesses and non-family businesses will add richness in the area of family business. This study will also provide a better understanding on how “familiness” may (or may not) affect the decision making process.

The use of Bayesian causal map to assess the decision making process among entrepreneurs will enable decision makers to make inferences to reality. In doing so, future decisions can be simplified, made more efficiently and enhance the quality of decision making to weather the new economy.

#### 4. Bibliography

- Alvarez, M. Binkley, E. Bivens, J. Highers, P. Poole, C. & Walker, P. "Case-based Instruction and Learning: An Interdisciplinary Project. Proceedings of 34th Annual Conference. College Reading Association. Reprint. 1990. pp.2-18.
- Anderson, J.C. Gerbing, D.W. "Some Methods of Respecifying Measurement Models to Obtain Unidimensional Construct Measurement." *Journal of Marketing Research*.
- Anderson, R. Reeb, D. "Founding-family Ownership and Firm Performance: Evidence from S&P500." *Journal of Finance*, 2003, 58(3). 1301-1327.
- Aldrich, H. Cliff, J. "The Pervasive Effects of Families on Entrepreneurship: Towards a Family Embeddedness Perspective." *Journal of Business Venturing*, 2003, 18(5). 573-597.
- Astrachan, J. "Strategy in Family Business: Towards a Multidimensional Research Agenda"." *Journal of Family Business Strategy*, 2010. 6-14.
- Astrachan, J. "The Emergence of a Field. Commentary on the Special Issue, "The Evolving Family/Entrepreneurship Relationship"." *Journal of Business Venturing*, 2003, 18(5). 567-572.
- Axelrod, R. "*Structure of Decision: The Cognitive Maps of Political Elites*." Princeton University Press, Princeton, NJ. 1976.
- Baron, R.A. Ward, T.B. "Expanding Entrepreneurial Cognition's Toolbox: Potential Contributions from the Field of Cognitive Science." *Entrepreneurship: Theory and Practice*, Winter 2004, 553-573.
- Barney, J. "Firm Resources and Sustained Competitive Advantage." *Journal of Management*, 1991, 17, 99-120.
- Barney, J.B. Clark, C. Alvarez, S. "Where Does Entrepreneurship Come From: Network Models of Opportunity Recognition and Resource Acquisition with Application to the Family Firms." Proceedings of the Second Annual Conference on Theories of the Family Enterprise, University of Pennsylvania, Philadelphia, 2002.
- Beckhard, R. Dyer, W. "Managing Change in the Family Firms – Issues and Strategies." *Sloan Management Review*, 1983, 24, 59-65.
- Brice, William D. "The Cultural Basis of Management Strategy – Professional vs. Family Business Management in Three Countries." Ph.D. diss., University of Hawai'i, 2005.
- Cadieux, L. Lorrain, J. Hugron, P. "Succession in Women Owned Family Businesses: A case Study." *Family Business Review*, 2002, 15(1), 17-30.

- Chrisman, J.J. Steier, L.P. Chua, J.H. "Personalism, Particularism, and the Competitive Behaviours and the Advantages of Family Firms: An Introduction." *Entrepreneurship Theory and Practice*, 2006, 30(3). 719-730.
- Construction Industry Development Board of Malaysia (CIDB). <http://www.cidb.gov.my>, accessed January 2009.
- Cramton, Catherine Durnell. "The Entrepreneurial Family." Ph.D. diss., Yale University, 1994.
- Cunningham, J.B. Garrard, P. Schoch, H. Chung, L.H. "An Entrepreneurial Logic for the New Economy." *Management Decision*, 2002, 40/8.
- Cunningham, J.B. MacGregor, J.N. "Training Insightful Problem Solving: Effects of Realistic and Puzzle-Like Contexts." *Creativity Research Journal*, 2008, 20(3), 291-296.
- Davis, J. Tagiuri, R. "The Influence of Life-stage on Father-son Work Relationships in Family Companies." *Family Business Review*, 1989, 2(1), 47-74.
- Dean, J.W., Jr. Sharfman, M.P. "The Relationship of Procedural Rationality and Political Behaviour in Strategic Decision Making." *Decision Sciences*, 1993, 24, 1069-1083.
- Dean, J.W., Jr. Sharfman, M.P. "Procedural Rationality in Strategic Decision Making Process." *Journal of Management Studies*, 1993, 30, 607-630.
- Department of Statistics Malaysia, <http://www.statistics.gov.my/>, accessed May 2008.
- Dyer, William G. "The Family: The Missing Variable in Organisational Research." *Entrepreneurship Theory and Practice*, 2003, 27(4), 401-416.
- Eckrich, C. Loughhead, T. "Effects of Family Business Membership and Psychological Separation on the Career Development of Late Adolescents." *Family Business Review*, 1996, 9(4), 369-386.
- Frese, M. Gelderen, M.van. Ombach, M. "How to Plan as a Small Scale Business Owner: Psychological Process Characteristics of Action Strategies and Success." *Journal of Small Business Management*, 2000, 38, 1-18.
- Fontela, E. Guzman, J. Perez, M. Santos, F.J. "The Art of Entrepreneurial Foresight." *Emerald Group Publishing Limited*, 2006, 8(6), 3-13.
- Gersick, K. Davis, J. Hampton, M. Lansberg, I. "Generation to Generation: Life Cycle of the Family Business." *Harvard Business School Press*, Boston, MA, 1997.
- Gelderen, M.van. Frese, M. Thurik R. "Strategies, Uncertainty and Performance of Small Business Start-ups." *Small Business Economics*, 2001, 15, 165-181.

- Habbershon, T.G. Williams, M.L. MacMillan, I.C. "Familianness: A Unified Systems Perspective of Family Firm Performance." *Journal of Business Venturing*, 2003, 18, 451-465.
- Habbershon, T.G. Williams, M.L. "A Resource-Based Framework for Accessing the Strategic Advantages of Family Firms." *Family Business Review*, 1999, 12, 1-25.
- Handler, W. "Methodological Issues and Considerations in Studying Family Businesses." *Family Business Review*, 1989, 2(3), 257-276.
- Harris, R. *Introduction to Decision Making*. 1998. [www.virtualsalt.com/crebook5.htm](http://www.virtualsalt.com/crebook5.htm), accessed January 2009.
- Hayes, G. Walker, R. Rowe, B. Hong, G. "The Intermingling of Business and Family Finances in Family-owned Businesses." *Family Business Review*, 1999, 12(3), 225-239.
- Huff, A.S. *Mapping Strategic Thought*, Wiley, Chichester, UK, 1990.
- Hodgkinson, G.P. Brown, N.J. Maule, A.J. Glaiser, K.W. Pearson, A.D. "Breaking the Frame: An Analysis of Strategic Cognition and Decision Making Under Uncertainty." *Strategic Management Journal*, 1999, 20, 977-985.
- Kellermanns, F.W. Eddleston, K. "Corporate Entrepreneurship in Family Firms: A Family Perspective." *Entrepreneurship Theory and Practice*, 2006, 30(6), 809-830.
- Kelly, L. Athanassiou, N. Crittenden, W. "Founder Centrality and Strategic Behavior in Family Owned Firm." *Entrepreneurship Theory and Practice*, 2000, 25(2), 27-42.
- Kemmerer, B. Mishra, S. Shenoy, P.P. "Bayesian Causal Maps as Decision Aids in Venture Capital Decision Making: Methods and Application." Proceedings- Academy of Management, 2002.
- Klein, J.H. Cooper, D.F. "Cognition Maps on Decision Workers in Complex Games." *The Journal of the Operational Research Society*, 33 (1982).
- Laukkanen, M. *Comparative Cause Mapping of Organizational Cognition*, in Meindl, J.R. Stubbart, C. Porac, J.F. *Cognition Within and Between Organisations*, Sage, CA, 1996.
- Lee, Jean, and Hong Li. *Wealth Doesn't Last 3 Generations – How Family Businesses Can Maintain Prosperity*. World Scientific, 2009.
- Lechner, C. Leyronas, C. "Small-Business Group Formation as an Entrepreneurial Development Model." *Entrepreneurship Theory and Practices*, 2009.
- Levander, A. Raccuia, I. "Entrepreneurial Profiling – A Cognitive Approach to Entrepreneurship." *Stockholm Business School*, 2001.

- Lumpkin, G.T. Dess, G.G. “Clarifying the Entrepreneurial Orientation to Construct and Linking it to Performance”, *Academy of Management Review*, 1996, 21(1), 135-72.
- Malaysian Construction Industry Masterplan 2009, <http://www.cidb.gov.my/v6/?q=en/content/ibs-centre/construction-industry-master-plan-cimp-malaysia>, accessed January 2009.
- Ministry of Finance, <http://www.treasury.gov.my/>, accessed May 2008.
- Mintzberg, H. Raisinghani, D. Theoret, A. “The Structure of Unstructured Decision Processes.” *Administrative Science Quarterly*, 1976, 21, 247-275.
- Mintzberg, H. Westley, F. “Decision Making: It’s Not What You Think.” *MIT Sloan Management Review*, 2001, 42(3), 89-93.
- Mitchell, R.K. Busenitz, and Bird, B. Gaglio, C.M. Jeffery, S.M. Morse, E.A., Smith, J.B. “The Central Question in Entrepreneurial Cognition Research 2007”. *Entrepreneurship Theory and Practice*, 2007, 1042-2587, 1-27.
- Mitchell, R.K. Busenitz, L.W. Lant, T. McDougall, P.P. Morse, E.A., Smith, J.B. “The Distinctive and Inclusive Domain of Entrepreneurial Cognition Research.” *Entrepreneurship Theory and Practice*, 2004, 505- 93-518.
- Mitchell, R.K. Busenitz, L.W. Lant, T. McDougall, P.P. Morse, E.A., Smith, J.B. “Toward a Theory of Entrepreneurial Cognition: Rethinking the People Side of Entrepreneurship Research.” *Entrepreneurship Theory and Practice*, 2004, 1042-258, 93-104.
- Mullins, J. Forlani, D. “Perceived Risks and Choices in Entrepreneurs’ New Venture Decisions.” *Journal of Business Venturing*, 2000, 15, 305-322.
- Nadkarni, S. Shenoy, P.P. “A Causal Mapping Approach to Constructing Bayesian Networks.” *Decision Support Systems*, 2004 (8), 259-281.
- Neubauer, F. and Lank, A. *The Family Business – Its Governance for Sustainability*. Macmillan-London. 1998.
- Nordqvist, M. “Familianness in Top Management Teams: Commentary on Ensley and Pearson’s “An Exploratory Comparison of the Behavioural Dynamics of Top Management Teams in Family and Non-Family New Ventures: Cohesion, Conflict, Potency and Consensus”.” *Entrepreneurship Theory and Practice*, 2005, 29(3), 285-291.
- Paisner, M. *Sustaining the Family Business*. Perseus Reading, MA, 1999.
- Papadakis, V. Lioukas, S. Chambers, D. “Strategic Decision Making Processes: The Role of Management and Context.” *Strategic Management Journal*, 1998, 9, 115-132.
- Poza, Ernesto J. *Family Business*. 2<sup>nd</sup> edition. Thomson South-Western, 2007.
- Quinn, J.B. *Strategies for Change: Logical Incrementalism*. Homewood, IL: Irwin, 1980.

- Rogoff, E.G. Heck, R.K.Z. "Evolving Research in Entrepreneurship and Family Business: Recognising Family as the Oxygen that Feeds on the Fire of Entrepreneurship." *Journal of Business Venturing*, 2003, 18(5), 559-566.
- Ross, L.L. Hall, R.I. "Influence Diagrams and Organisational Power." *Administrative Science Quarterly* 25 (1980).
- Sarasvathy, S.D. "Making it Happen: Beyond Theories of the Firm to Theories of Firm Design." *Entrepreneurship: Theory and Practice*, 2004, 519-531.
- Schumpeter, J.A. *The Theory of Economic Development*. Harvard University Press, Cambridge, MA, 1934. (first publish in German in 1911).
- Shane, S. Cocks, E.A. Collins, C.J. "Entrepreneurial Motivation". *Human Resource Review*, 2003. 257-279.
- Shackle, G. *The Nature of Economic Thought*. Cambridge University Press, Cambridge, 1966.
- Shanker, M.C. Astrachan, J.H. "Myths and Realities: Family Businesses' Contribution to the US Economy – A Framework in Accessing Family Business Statistics." *Family Business Review*, 1996, 9(2). 107-123.
- Sirmon, D. Hitt, M. "Managing Resources: Linking Unique Resources, Management and Wealth Creation in Family Firms." *Entrepreneurship Theory and Practice*, 2003, 27(4), 339-359.
- Speigelhalter, D.J. Dawid, A.P. Lauritzen, Cowell, R.G. "Bayesian Analysis in Expert Systems." *Statistical Science*, 8(3), 1993.
- Stake, R. *The Art of Case Research*. Thousand Oaks, CA: Sage Publications, 1995.
- Steward, A. "Help One Another, Use One Another: Toward an Anthropology of Family Business." *Entrepreneurship Theory and Practice*, 2003, 27(4), 383-396.
- Successful Transgenerational Entrepreneurship Practices (STEP) 2007 Report.
- Successful Transgenerational Entrepreneurship Practices (STEP) 2008 Report.
- Teece, D. Pisano, G. Shuen, A. "Dynamic Capabilities and Strategic Management." *Strategic Management Journal*, 1997, 18(7), 509-533.
- Thaler, R.H. "From *Homo Economicus* to *Homo Sapiens*." *Journal of Economic Perspective*, 2000, 14(1), 133-141.
- Tisue, Linda. "Facilitating Dialogue and Decision-Making in a Family Business." Ph.D. diss., The University of Tennessee, Knoxville, 1999.
- Tyebjee, T. Bruno, A. "A Model of Venture Capitalist Investment Activity." *Management Science*, 1984, 30, 1051-1066.

- Wakefield, M.W. "Antecedents of Conflicts in Family Firms – An Empirical Study." *University of Nebraska, Lincoln* 1995.
- Wells, A. "Venture Capital Decision Making." Unpublished Ph.D. diss., Carnegie Mellon University, Pittsburgh, 1974.
- Westhead, P. Cowling, M. "Family Business Research: The Need for a Methodological Rethink." *Entrepreneurship: Theory and Practice*, 1998, 23(1). 31-57.
- Yin, R. *Case Study Research: Design and Methods* (Rev. ed.). Beverly Hills, CA: Sage Publishing, 1989.
- Yin, R. *Case Study Research: Design and Methods*. 2<sup>nd</sup> edition. Newbury Park, CA. Sage, 1994.
- Ucbasaran, D., et al. "The Nature of Entrepreneurial Experience, Business Failure and Comparative Optimism." *Journal of Business Venturing*, 2009, doi:10.1016/j.jbusvent.2009.04.001
- Zahra, S.A. "International Expansion of US Manufacturing Family Businesses: The Effect of Ownership and Involvement." *Journal of Business Venturing*, 2003, 18(4), 495-512.

### **Additional Reading**

- Alvarez, S.A. Busenitz, L.W. (2004), "The Entrepreneurship of Resource-Based Theory." *Journal of Management* 27, 2004, (2001), 755–775
- Bachor, D. "Reformatting Reporting Methods of Case Studies." *The Australian Association for Research in Education*, Sydney, New South Wales, Australia. December, 2000.
- Bhuiyan, S.N. Menguc, B. Bell, S.J. "Just Entrepreneurial Enough : The Moderating Effect of Entrepreneurship on the Relationship Between Market Orientation and Performance." *Journal of Business Research*, 2005, 58, 9– 17.
- Day, J. Reynolds, P. "Entrepreneurship and the Small to Medium Sized Enterprise: A Divergent / Convergent Paradox in Thinking Patterns Between Advisers and SME Owner-Managers." *Management Decision*, 2006, 44(5), 581-597, Emerald Group Publishing Limited.
- Fielden, S.L. Dawe, E. "Entrepreneurship and Social Inclusive." *Women in Management Review*, 2004, 19(3). 139-142, Emerald Group Publishing Limited.
- Fillis, I. " A Biographical Approach to Researching Entrepreneurship in the Smaller Firm." *Management Decision*, 2006, 44(2), 198-212, Emerald Group Publishing Limited.
- Langowitz, N. *Myths-and-Realities-of-Women-Entrepreneurs*, Babson College, 2004.
- Sarasvathy, S.D. *What Makes Entrepreneurs Entrepreneurial*, 2001.

Tarabishy, A. *Identifying Entrepreneurial Leaders, Today's Dynamic Markets*

Verstraete, P.T. "Dialectic Modeling of the Entrepreneurial Phenomenon: A French Point of View." Maitre de Conférences a IIAE de Lille, 2000.

Politis, D. "The Process of Entrepreneurial Learning : A Conceptual Framework." *Entrepreneurship Theory & Practice*, 2005.

Wickham, P.M. "The Representativeness Heuristics in Judgment in Involving Entrepreneurial Success and Failure." *Management Decision*, 2003.

Zahra, S.A. "International Expansion of U.S. Manufacturing Family Businesses: The Effect of Ownership and Involvement". *Journal of Business Venturing*, 2003. 495-512.

Zahra, S.A. Korri, J.S. Yu, J. "Cognition and International Entrepreneurship: Implications for Research on International Opportunity Recognition and Exploitation". *International Business Review*, 2005. 129-146.

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