

Case Study Business Model Enterprise Excellence through Growth Strategy and Risk Management

Please Note: Highlighted in green is deleted Highlighted in yellow is added

ABSTRACT

The Enterprise Excellence (EE) philosophy is a holistic approach for leading an enterprise to total excellence by achieving a sustainable significant growth in revenue and profitability, and a reduction in business cycle time while mitigating the enterprise risk and primarily focusing on the needs of the customer. There are various organizations within an enterprise but they all focus on to meet/exceed customer needs. This principle applies to all types and sizes of enterprise.

The top level elements of EE philosophy are the enterprise growth and the enterprise risk management. Enterprise growth is an integrated approach affecting every employee, every functional area and strategy within the organization. It is important to note that successful enterprise growth is likely to require significant investments in skills, processes, organization and technology. Enterprise growth initiatives may be driven by external opportunities such as market segment/customers which will force the development of strategies such as targeted market, value proposition, or new/upgraded product/service offerings. Enterprise risk must be identified, assessed and prioritized as developing growth strategy proposal which leadership has to execute to achieve goals. As business leaders lead the efforts, they have to minimize, monitor and control the probability and/or impact of unfortunate events and maximize the realization of opportunities.

Therefore, the need for enterprise growth entails a fundamental change in the way enterprises are started to optimize the probability to flourish. Those that succeed eventually must face the challenges of change; which some master and succeed in enterprise growth strategy. Most enterprises fail to transform or grow.

The EE philosophy is applied to two businesses (Boeing and Airbus) in aerospace industry and analyzed their products and market data of more than fifty years. Three case study scenarios are presented to This analysis will demonstrate how business leaders are trying to approach or have approached to achieve the enterprise excellence (EE) through the enterprise growth strategy while mitigating the enterprise risk. –

- Why the company was successful in achieving their enterprise excellence goals
- Why the company was struggling in achieving their enterprise excellence goals
- How the company leadership developed their growth strategy proposal while mitigating the risk issues in achieving their enterprise excellence goals.

To gain experience from various industries these case studies have been compiled in three industries: Sewing, Transportation and Aerospace.

Keywords

Enterprise excellence, Growth strategy, Risk management, Core competency, Enterprise transformation, Economic impact.

1. INTRODUCTION – ENTERPRISE EXCELLENCE MODEL

The Enterprise Excellence (EE) philosophy is a holistic approach for leading an enterprise to total excellence by focusing on the needs of the customer whether within the state, the nation, and the world. The top elements of the EE are the enterprise growth strategy and the enterprise risk management. There are various high level elements under each top level elements, e.g., business vision and mission, innovative growth ideas; market growth and core competency are some of the high level elements under the top level element of the enterprise growth strategy. Businesses vision and mission, and their

innovative growth ideas give birth to the innovative product(s) to meet/exceed the customer needs. These innovated products are then developed through various elements of enterprise excellence including core competency and enterprise transformation, and at the same mitigating the enterprise risk elements. Businesses regardless of industry are innovating and trying to grow/survive in a global economy. The rate of change in today's competitive world is constantly increasing and the competition is forcing businesses to be well funded and at the same time, customers are becoming unpredictable.

There are various organizations within an enterprise with a collection of processes in each organization but they all focus on to meet/exceed customer needs. This principle applies to all types and sizes of enterprise. The conceptual model of the EE (Figure 1) was developed based on the above identified elements by Kumar (2009). So Therefore, EE is achieved by developing and executing a sustainable growth strategy as well as mitigating the enterprise risk (Kumar 2010) to:

- Support markets and products growth
- Acquire new or expand business
- Improve margin
- Increase revenue and profitability
- Reduce business cycle time

The quantitative values for revenue, profitability, and business cycle time and risk management would vary from industry to industry, but could be compared within the same industry. Every business offers products for the selected market based on their vision and mission, innovation, core competency, market competition and risk management. But managing enterprise risk is equally important. Risk Management is the identification, assessment and prioritization of risk followed by coordinated and economical application of resources to minimize, monitor and control the probability and/or impact of unfortunate events or to maximize the realization of opportunities as per Hubbard (2009). So Therefore, risk is not just as threat but also as opportunity. Risk can come from various areas including project failure (at any phase of the project – from development through sustained life-cycle), financial markets, credit risk, accidents, legal liabilities and natural disaster.

Highlights of the top level elements are discussed with some literature survey. Business strategy of achieving and sustaining the enterprise excellence at Boeing and Airbus will be analyzed utilizing the concepts presented in the top elements (Enterprise Growth Strategy and Enterprise Risk Management) as well as in some of the high level elements as will be discussed in the second section 'Model Analysis with Literature Survey.'

1.1 Enterprise Growth Strategy

Enterprise growth is an integrated approach affecting every employee, every functional area and strategy within the organization. It relies on transformational change management. It is very different from implementing the firm's business strategies or executing process changes in isolation, (Kumar 2010).

Enterprise growth calls for more than superficial change. These changes can be in response to marketplace events or to address underperformance, but enterprise growth is quite different from a company's turnaround in financial difficulties. It will inevitably be the biggest single internal program that any enterprise undertakes. It is expected to disrupt the existing business model as per Kumar (2010). There are several questions that have to be answered during development and execution of enterprise growth (Kumar August 2010), such as:

- What must enterprise do to grow?
- What do leaders transform?
- What product, market, and/or service do they need to grow?
- What are the vital signs that growth is underway?

It is important to note that successful enterprise growth is likely to require significant investments in skills, processes, organization, and technology. Enterprise growth initiatives may be driven by external opportunities which will force the development of strategies such as targeted market (emerging markets or pursuing vertical market), value proposition (providing integrated solution), product/service offerings (changing the products and services provided), (Kumar 2009).

1.2 Enterprise Risk Management

Organizations generally **spent** **spend** small fortunes to set up risk processes and supporting tools which then fail to deliver the expected value because their rational processes do not work well when trying to get groups of people to agree **on** what is risky, why and what to do about it. If you need to make sound decisions in important but risky situations; work with groups to identify, **and** prioritize and **then** respond to risks **as well as** deliver value and along the way, ensure the credibility of the process and the resilience of your organization. Pullan and Murray-Webster (2011) have set-out a very practical approach where risk management process can deliver value through effective facilitation. This developed process utilizes the human aspects of risk and risk attitude and the facilitation capacity of the individual. They have identified five areas: avoiding pitfalls, understanding of risk management, understanding your role, tried and tested tips for each step of the risk management process and running risk workshops. There are various risk areas in any enterprise including equality risk (Morden 2011), operational risk, political risk (McKellar 2010), customer risk (Truel 2010), ethical risk (Patetta Rotta 2010), technology/product and competitive risk, but due to paper size limitations are not discussed here.

The developed model concept was tested in three industries (Sewing, Transportation and Aerospace) with the following scenarios:

- Why the company was successful in achieving their enterprise excellence goals in sewing industry: Company's leadership invested enough time and resources in not only in developing their growth strategy proposal while mitigated the risks associated with the developed strategy but also in the strategy execution.
- Why the company was struggling in achieving their enterprise excellence goals in transportation industry: Company's leadership was lagging in analyzing the risk management issues as they were related to growth strategy.
- How the company leadership developed their growth strategy proposal while mitigating the risk issues in achieving their enterprise excellence goals in aerospace industry: This Company is in the process of implementing their growth strategy proposal and all the current results indicate that they will achieve their enterprise excellence goals.

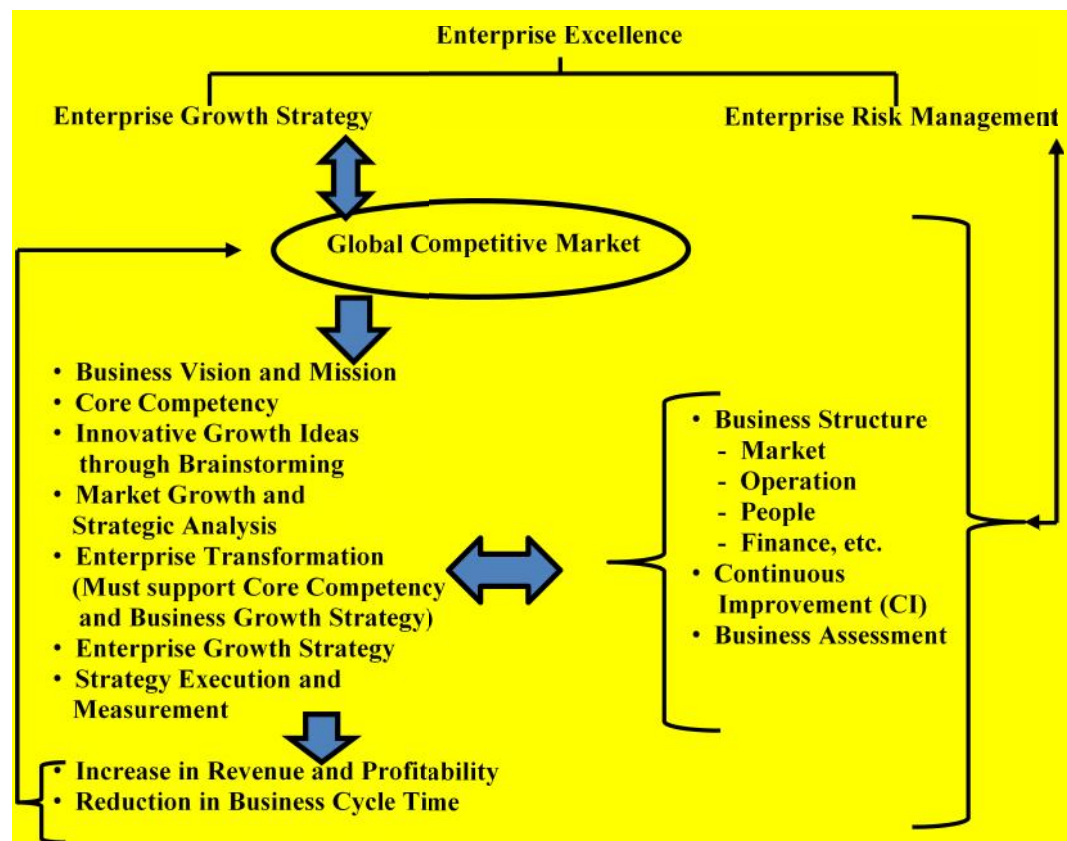


Figure 1. The Conceptual Model of the Enterprise Excellence

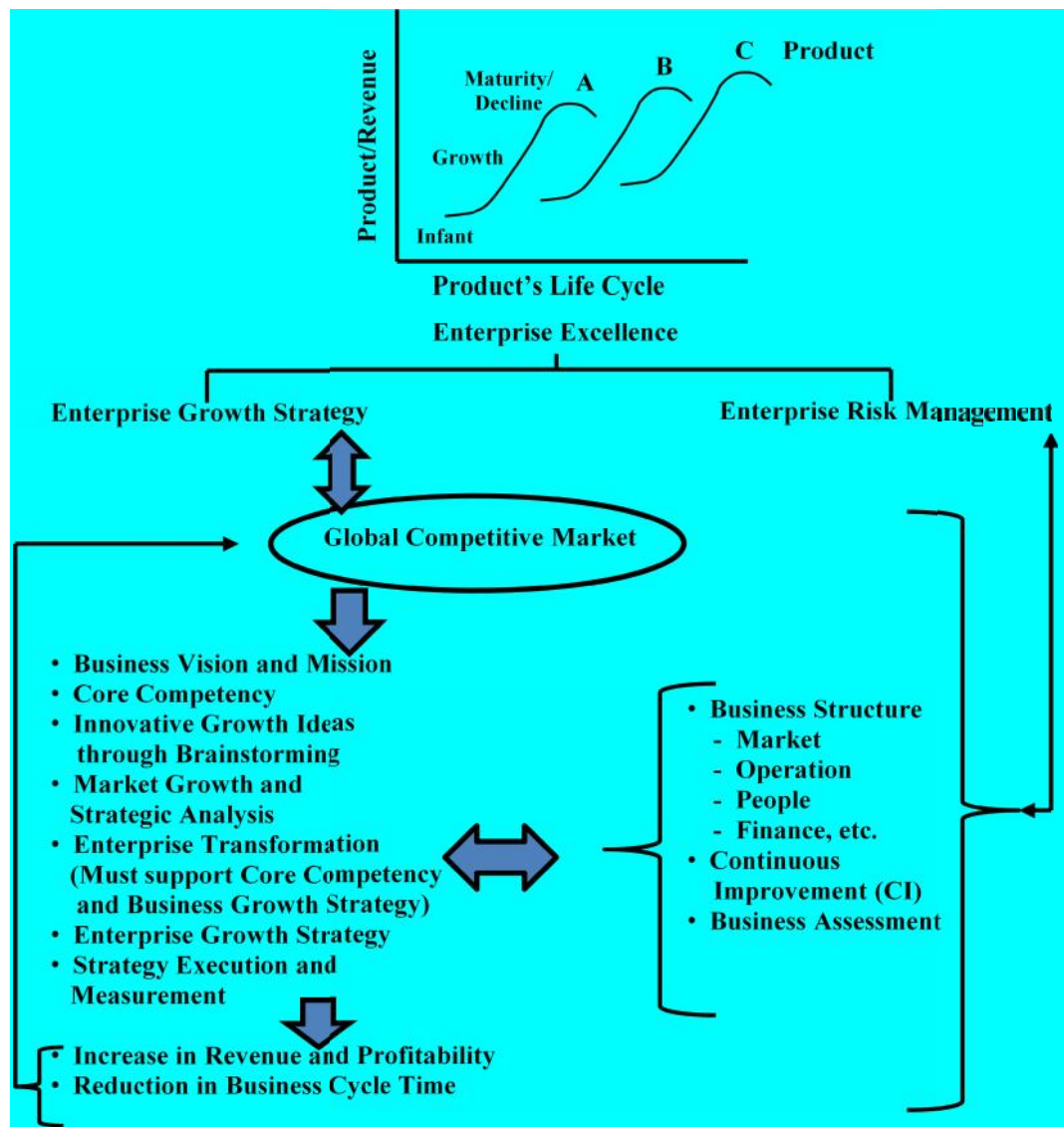


Exhibit 1. The Conceptual Chart of Enterprise Excellence

2. HIGH LEVEL MODEL ANALYSIS WITH LITERATURE SURVEY ELEMENTS

The high level elements of the EE model are identified in Figure 1 and it would not be possible to cover all of these elements in this paper, therefore only selected elements will be discussed in this section. The key discussion elements linking to Boeing and Airbus businesses would be:

- What was the business vision and mission in 1950s and 1960s and how it was evolved with time and market needs during the later part of the 20th century and now in the 21st century?
- How product innovations and core competencies supported the enterprise growth strategy while mitigating the enterprise risk in achieving and sustaining the enterprise excellence?

Every product will have a life cycle with an infant period, growth period and then the maturity/decline period (Figure 2). This product curve is also known as 'S' curve. Trade (1903) defined the 'S' process as the innovation-decision process. Once innovation occurs then the innovations generally spread from the innovator to other individuals and groups in the organization. The S-curve maps growth of revenue or productivity against time. In the early stage of a particular innovation, growth is relatively

slow as the new product establishes itself. At some point customers begin to demand and the product growth increases more rapidly. New incremental innovations or changes to the product allow growth to continue. Towards the end of its life cycle growth slows and may even begin to decline. In the later stages, no amount of new investment in that product will yield a normal rate of return.

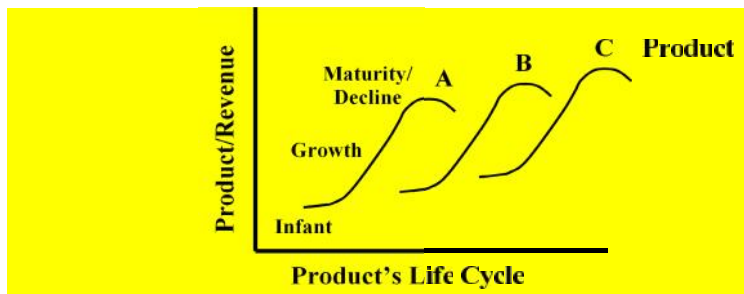


Figure 2. Product Life Cycle 'S' Curve

The following elements of the EE model are discussed and it would be very difficult to achieve the EE without these elements as well as mitigating the enterprise risk management.

- Core Competency
- Innovation Growth Ideas
- Growth Strategy Execution and Measurement

Enterprise excellence is a large topic, so the model analysis with the literature survey of the selected elements is presented in this section.

2.1 Diffusion of Innovation

As you see the product growth 'S' curve presented on the top of the enterprise excellence concept chart in Figure 1, came from Diffusion of innovation research which was first started in 1903 by researcher Gabriel Trade (Figure 2). Trade (1903) defined the innovation-decision process as a series of steps that include:

1. First knowledge
2. Forming an attitude
3. A decision to adopt or reject
4. Implementation and use
5. Confirmation of the decision

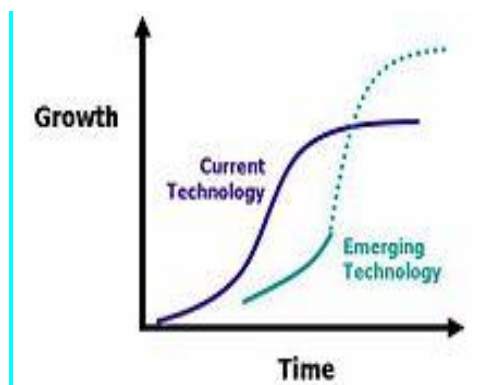


Figure 2. Diffusion of Innovation "S" Curve

Once innovation occurs then the innovations generally spread from the innovator to other individuals and groups in the organization. This process has been proposed that the life cycle of innovations can be described using the S-curve or diffusion curve. The S-curve maps growth of revenue or productivity

against time. In the early stage of a particular innovation, growth is relatively slow as the new product establishes itself. At some point customers begin to demand and the product growth increases more rapidly. New incremental innovations or changes to the product allow growth to continue. Towards the end of its life cycle growth slows and may even begin to decline. In the later stages, no amount of new investment in that product will yield a normal rate of return.

2.1 Core Competency

History reveals that If you go back in the history before the term was coined, it was known as special skills developed within an organization based on the skills, knowledge and the experience of employees along with the available equipment and the market requirements. For example, during 1980s when aerospace industry was machining very hard Titanium and Nichol alloy parts then the special machining skill was known as special skill.

Prahalad and Hamel (1990) coined the term 'core competency' and identified it as the collective learning and coordination skills behind the firm's product lines. They made the case that core competencies are the source of competitive advantage and enable the firm to introduce an array of new products and services. Several measures have been proposed how to identify unique resources and capabilities (Barney 1991, Grant 1991, Hamel 1994, Teece et al. 1997).

The generalized terms such as resource, asset, capability and competence are not clearly explained in connection with competence theory; they become an obstacle in understanding many contemporary management concepts as per Hafeez et al. (2002). They are categorizing resources into physical, intellectual and cultural assets and showing relationships between assets, capabilities, competencies and core competencies. There are several definitions in the literature: Knowledge view (Lenoard-Barton 1992), Network view (Klein and Hiscocks 1994) and Harmony view (Sanchez et al. 1996).

Therefore So, core competency is the fundamental knowledge, ability, or a specific subject area or skill set. It can take various forms, including technicality of subject matter know-how, a reliable process and/or unique understanding of material flow from supplier to manufacturer to end customer. It requires technically qualified and dedicated employees with a deep commitment to working across organizational boundaries, good market coverage, leadership support, etc. So, Core competencies are the collective learning in organizations, and involve how to coordinate diverse skills: marketing, product design, production, distribution, etc. and integrate multiple streams of technologies. They These are the skills that the organization possesses and sets it apart from its competition. They These skills are the sources of competitive advantage as well as the building blocks to future opportunities. For example, Walt Disney World's efficient operation of theme parks and Apple Computer's understanding of customer needs: iphone, ipad, etc. Core competency fulfills three key criteria: 1. It must not be easy for competitors to imitate; 2. It can be re-used widely for various products/services and markets and 3. It should lead to core products which must contribute to the end products to meet/exceed customer needs.

Every organization requires certain competencies to operate effectively and carry out their mission. These fundamental competencies are called 'table stakes' as per McIntire (2008). These stakes define the standard level of competency needed to sustain operations. Some of the There are various basic competencies are including marketing; product design, development and manufacturing; human resources; fund raising; financial; and administration., etc.

2.2 Innovation Growth Ideas

Innovation is the development of new product/value/idea through solutions that meet/exceed existing/new customer requirements (needs). Innovation generally refers to renewing, changing or creating more effective processes, products or ways of doing things as per Australian Government Initiative (business.gov.au). For businesses, this could mean implementing new ideas, creating dynamic products or improving your existing services. Innovation can be a catalyst for the growth and success of your any business, and help you businesses to adapt and grow in the marketplace.

Innovation strategy helps companies in three ways: exciting its customers, outperforming competitors and building a new product portfolio as per Bowonder et al. (2010). IBM was involved in transformation from computer maker to e-business servers for a large-scale, open systems computing during 1990s which required courage, focus and commitment at all levels of the enterprise as per Meyer

et al. (2005). There are various innovation approaches in the literature, for example, end-user-innovation (Von Hippel 1988), chain-linked model of innovation (Kline 1985), companies' growth through innovation (Davila et al. 2006) and research and development innovation model (Mark et al. 2008). Robotic engineer Engelberger (1982) strongly believes that innovation requires three things:

1. A recognized need,
2. Competent people with relevant technology, and
3. Financial support.

2.3 Growth Strategy Execution and Measurement

The missing link between aspiration and results is execution. Too many leaders spend all of their time on strategy planning and fail to execute, never accomplishing what they set out to do. In today's rapidly-changing and increasingly competitive world, achieving sustained success depends on having a solid strategy and aligning on organization's decisions, effort and resources to execute that strategy. **So Therefore**, execution is the major job of any business leader.

2.3.1 Growth Strategy Execution

Execution is a systematic process where participants discuss rigorously the how and what, questioning, persistently following through and ensuring accountability. Some leaders believe that they may end up micromanaging. Actually, there is an enormous difference between leading an organization and managing it. Leaders who boast that they take a hands-off or put their faith in empowerment are not dealing with the issues of the day. They are not confronting the people responsible for poor performance or searching for problems to solve and then making sure that these problems get solved. These types of leaders are only doing half of their job.

Leaders who excel at execution literally make themselves to participate up to certain extent in the execution process and even in some of the key details. They use their knowledge of the operation to constantly probe and question. They bring weaknesses to light and rally their people to correct them. **So Therefore**, the following is a short survey of some of the strategy execution approaches:

Organizational resources alignment: Strategy without execution is like a race boat without enough horsepower engines: the boat looks great in the water, but it does not impress anyone who sees the boat in the race. A similar concept applies here: some CEOs do not lose sleep over the design of strategy, but rather worry about their company's inability to deliver the strategy's intended results. If a business leader accelerates the alignment of strategy, organizational models and people, they increase the probability of maximizing the potential of their business and ultimately their business results as per King and Kosminsky (2006).

Critical relationship of major domains: Simply understanding the difference between strategy development as thinking (analysis, planning, setting goals, etc.) and strategy implementation as doing (follow-through, top-to-bottom, operational, goal achieving, etc.) is not enough to execute the developed strategy. Currently, this type of thinking is considered a traditional planning effort and has proven either too expensive or time-consuming: many major top-down strategy initiatives have failed. Today's challenge is how to build execution into strategy as per Chan and Mauborgne (2005).

Several other authors have made their recommendations, (Kaplan and Norton 2000), (Surowiecki's 2004), (Welbourne 2005), (Donlon 2007) and (Kumar 2010).

2.3.2 Growth Strategy Measurement

We all know that Good growth strategy leads to more business, but how many enterprises effectively measure their efforts? Not as many as one would think. Most enterprises struggle to measure the impact of their growth strategy to see if it spurs growth. Often, this is because they are not sure what to be measuring and what should be the expectations for success. Almost anything can be measured, although not all metrics will provide the necessary information. **So Therefore**, before **business leader you** should be measuring **their growth strategy performance**, it is important to search the literature.

Kaplan and Norton (1992) introduced the concept of Balanced Scorecard. They began with the premise that an exclusive reliance on financial measures in the leadership system. At the same time, these financial indicators were lagging indicators that were reporting on the outcomes from the past

activities. Porter (1992) and AICPA (1994) reported that exclusive reliance on financial indicators could promote behavior that sacrifices long-term value creation for short-term performance. The Balance Scorecard approach retained measures of financial performance that were based on lagging outcome indicators, but also supplemented those measures with the lead indicators, of future financial performance.

The limitations of managing solely with the financial measures, however, have been known since the late 20th century. Nonfinancial measurements were added on ad hoc basis as more like checklists of measures for business leaders to keep track of and improve the comprehensive system, (Kaplan and Norton 1993). Measurement system was linked with the strategy; and also with the cause-and-effect relationship that described the hypotheses of the strategy, (Kaplan and Norton 1996). The tighter connection between the measurement system and strategy elevates the role for nonfinancial measures from an operational checklist to a comprehensive system for strategy execution, (Kaplan and Norton 1996).

In the industrial-age competition of the 19th and much of the 20th centuries, businesses achieved competitive advantage from their investment and management of tangible assets such as facility, equipment and inventory, (Chandler 1990). In tangible assets dominated economy, financial measurements were adequate to support the growth strategy. Income statements could capture the expenses associated with the use of these tangible assets to produce revenues and profits, but by the end of the 20th century, intangible assets became the major source for competitive advantage. In 1982, tangible book values represented 62 percent of industrial organizations' market values; in 1992, the ratio dropped to 38 percent, (Blair 1995). By the end of the 20th century, the book value of tangible assets accounted for less than 20 percent of companies' market values, (Webber 2000, quoting research by Baruch Lev).

Commonly identified intangible assets are innovative products and services, supplier/manufacturer/customer relationship, responsive and high-quality processes, knowledge and skills of the workforce, the information technology that supports the workforce and links the business to its suppliers and customers, supports the continuous improvement and problem-solving activities, and maintains the organizational environment that encourages innovation. All of these assets support's the product/service throughput. But businesses were unable to adequately measure their intangible assets. Incomplete or insufficient information from management publications indicated that many companies could not implement their new strategies in this environment, (Charan and Colvin 1999). They could not manage what they could not explain or measure. Tangible assets are still critical in financial statements, but strategies for creating value have been shifted from managing tangible assets to knowledge-based strategies that create and deploy an organization's intangible assets.

As identified earlier that there is a shift in resources from tangible to intangible, but businesses still need to measure tangible assets through financial measures such as revenue, profitability and cash flow. Kumar (2012) has logically linked intangible assets to business cycle time. Business cycle time is defined as 'Order booking through payment.'

3. BUSINESS SCENARIOS AND DISCUSSION

Business strategies of two aerospace companies (Boeing and Airbus) will be analyzed in relation to some of the high level elements of the enterprise excellence (Figure 1) and their impact in achieving and sustaining the EE in these two enterprises. Two key issues as listed in section 2 'Model Analysis with Literature Survey' are also repeated below. These issues will be discussed in relation to business strategies of Boeing and Airbus.

- What was the business vision and mission in 1950s and 1960s and how it was evolved with time and market needs during the later part of the 20th century and now in the 21st century?
- How product innovations and core competencies supported the enterprise growth strategy while mitigating the enterprise risk in achieving and sustaining the enterprise excellence?

Products of late 20th Century through the early 21st Century

After WWII, Boeing was the main source of commercial aero-planes manufacturer in the non-communistic world. During 1950s and 1960s, energy was not the issue and the airlines were very much interested in having a larger plane for the long-distance flights. With Boeing's vision and mission, product

innovation ideas, their core competencies and the market demand which helped the company in mitigating their risk factors and developed the product known as **Boeing 747 (Jumbo jet)** plane during late 1960s. Plane went in flights in 1970s. This brought growth in the company's revenue and profitability during 1970s and 1980s.

The Boeing 747 is a wide body and four-engine commercial airliner and cargo transport aircraft manufactured by Boeing's Commercial Airplane division. It is among the world's most recognizable aircraft and was the first wide-body ever produced. The 747-400 passenger version can accommodate 416 passengers in a typical three-class layout, 524 passengers in a typical two-class layout, or 660 passengers in a high density one-class configuration, (Wikipedia January 09, 2012). It was first flown commercially in 1970, (Wikipedia August 03, 2010). McDonnell Douglas followed the Boeing lead to mitigate their enterprise risk and produced **MD-11 commercial aircraft** in 1986. MD-11 is a three-engine medium- to long-range wide-body jet liner, which originally was manufactured by the McDonnell Douglas, but later Boeing bought the company and continued to manufacture the jet liner at Boeing's Commercial Airplanes division. The following analysis of the Boeing activities demonstrates how the company was achieving and sustaining the enterprise excellence:

- To support the market, Boeing innovated and manufactured the product: Boeing 747 jet liner;
- To continue and sustain the enterprise excellence, Boeing purchased the McDonnell Douglas company and continued to manufacture the MD-11 jet liner;
- By doing so, Boeing improved their margin and gained market share; which
- Provided increased revenue and profitability and hopefully, reduced business cycle time as well.

These points are listed in the first section 'Introduction – Enterprise Excellence Model' which validates the enterprise excellence model.

These jet liners take some twenty-year from market research and innovative ideas through manufacturing and then offering the product in the market as well as billions of US dollars. This is a very complicated and lengthy process. The innovative idea of 1950s ended-up is providing the Boeing 747 for commercial flights in 1970s. Now continue the analysis process along the time line. During 1970s, world faced **oil embargo from the OPEC** (Organization of the Petroleum Exporting Countries) which created a significant energy issue. Four-engine jet liners were one of the major sources of energy consumption in the commercial flights; therefore airlines were looking for more energy efficient jet liners.

Boeing leadership utilized their all high level elements of enterprise excellence including business vision and mission, innovative growth ideas, business core competency, and market demand along with mitigating the enterprise risk elements and developed and manufactured **Boeing 777 jet liner** in 1995. The Boeing 777 is a long-range wide-body twin-engine jet liner developed and manufactured by Boeing's Commercial Airplanes division. It is the world's largest twinjet and has a typical seating capacity for 314 to 451 passengers, with a range of 5,235 to 9,380 nautical miles (9,695 to 17,370 km). Innovative ideas and core competency helps in creating core product(s) which ends-up producing commercial products. Boeing has developed several versions of Boeing 777 in the last fifteen-year as listed in Table 1.

Table 1. Boeing 777 Models

Boeing Model	Year Introduced in the Market
777-200	1995
777-200 ER (Extended Range)	1997
777-300	1998
777-300 ER (Extended Range)	2004
777-200 LR (Long Range)	2006
777F (Freighter)	2009

If apply the same EE analysis for the 777 models as previously did, the results would be that Boeing did continue to achieve and sustain the enterprise excellence as they did for the Boeing 747. The Boeing products 747 and 777 are also satisfying the concept of product life-cycle curve "S" as presented in Figure 2.

Airbus has also developed similar product series called **A330 Family**: the A330-200, A330-300, A330-200F, ACJ330 and A330 – which cover all market segments with one twin-engine aircraft type. The

combination of low operating costs, high efficiency, flexibility and optimized performance. The above discussed analysis of enterprise excellence is also applicable to A330 Family.

The next generation of twin-engine jet liners is Boeing's 787 (also known as Dreamliner) and A350 from the Airbus. Similar analysis can also be applied to **Boeing's 787** and the **Airbus A350**. These two products have created a fierce competition between Boeing and Airbus. The following statistics validates the status of fierce competition as well as support their continued drive to sustain the enterprise excellence.

The Boeing 787 Dreamliner is a long-range, mid-size wide-body, twin-engine jet liner developed by Boeing Commercial Airplanes. Its seating capacity varies from 210 to 330 passengers. Boeing states that it is the company's most fuel-efficient airliner and the world's first major airliner to use composite materials as the primary material in the construction of its airframe, (Norris et al. 2005). The Boeing 787 has been designed to be 20 percent more fuel efficient than the Boeing 767 it is to replace (Croft January 20, 2013 and Schofield June 13, 2012). As per Wikipedia (2013), the Boeing 787 was first introduced in the commercial flight (All Nippon Airways) on October 26, 2011. By October 2013, the Boeing 787 program had logged 982 orders from 58 customers, with International Lease Finance Corporation (ILFC) having the largest number on order (The Boeing Company October 4, 2013).

The Airbus A350 XWB is a family of long-range, twin-engine wide-body jet liners developed by European aircraft manufacturer Airbus. The A350 is the first Airbus with both fuselage and wing structures are primarily made of carbon fiber-reinforced polymer, (Wikipedia March 27, 2009). It can carry 250 to 350 passengers in a typical three-class seating layout, or maximum seating of 440 to 550 passengers, depending on variant. The launch customer for the A350 is Qatar Airways, which ordered 80 aircraft of all three variants, (Wikipedia October 31, 2013). The jet liner is scheduled to enter airline service in mid-2014, (Flight International October 23, 2012). As of October 2013, Airbus has received orders for 725 aircraft from 37 different customers around the globe, (Wikipedia October 31, 2013). The prototype A350 first flew on June 14th, 2013 at Toulouse-Montaudou Airport, France, (<http://www.a350xwbfirstflight.com/>).

There is a tough competition between Airbus and Boeing in the large jet airliner market since the 1990s. This resulted from a **series of mergers within the global aerospace industry**, with Airbus beginning as a European consortium while the American Boeing bought its former arch-rival, McDonnell Douglas in a 1997 merger. Other manufacturers, such as Lockheed Martin and Convair in the United States and British Aerospace, Dornier and Fokker in Europe, were no longer in a position to compete effectively and withdrew from the market. During the 1990s both companies researched the scope for a new model of very large aircraft, compared to the current largest passenger carrying aircraft then in use, Boeing's 747. Boeing decided the project would not be commercially viable, (Wikipedia, December 30, 2011) with Airbus launching its a full-length double-deck aircraft **A380** a decade later. The latest modification of Boeing's largest wide-body airliner 747 is **Boeing 747-8**. Therefore, Boeing's 747-8 and the A380 are placed in direct competition on long-haul routes. Both Boeing 747-8 and Airbus A380 are four-engine jet liners. Fuel economy is one of the most critical issues for airliners in this globally competitive market. The following is a short list of claims from both the companies (Boeing and Airbus).

Boeing claims the 747-8I to be over 10 percent lighter per seat and have 11 percent less fuel consumption per passenger, with a trip-cost reduction of 21 percent and a seat-mile cost reduction of more than 6 percent, compared to the A380. The 747-8F's (Freight liner) empty weight is expected to be 80 British tonnes (88 US tons) lighter and 24 percent lower fuel burnt per ton with 21 percent lower trip costs and 23 percent lower ton-mile costs than the A380F, (Wikipedia May 21, 2011).

Equally, Airbus claims the A380 to have 8 percent less fuel consumption per passenger than the 747-8I and emphasizes the longer range of the A380 while using up to 17 percent shorter runways (Wikipedia February 08, 2008). The A380-800 also has cabin 478 square meters (5,145.1 sq ft) of floor space, 49 percent more than the 747-8. Other commentators noted the lack of engine noise, with the A380 being 50 percent quieter than a 747-400 on takeoff (Saporito September 21, 2010).

Boeing 747 stayed in production for more than 30 years and as per Wikipedia (December 02, 2013), Boeing has delivered 1475 jet liners through October 31, 2013 and 627 jet liners are still in operation (October 31, 2013). Boeing is trying to offer a deal to buy back 747-400 and replace with 747-8 at the negotiated price. Airbus is also not receiving enough orders for A380 from around the world. Mostly Middle-East airlines (e.g. Emirates) are ordering the jet liner. Mostly European and the US airlines are not interested in either Boeing 747-8 or A380. According to the product "S" chart (Figure 2); these products are falling at the maturity/decline state of their life cycle. Even though the manufacturers are spending a

great amount of their resources, but they are facing very tough time to sell the product. This validates the concept of "S" curve.

The new **Boeing 777X Series** is now in development stage. Boeing expects to bring production in 2017, and start deliveries in 2020. This is a refreshed version of the 777, with a longer, composite wing and a new GE engine. The 777X family includes two jets: the 777-8X and 777-9X. The 8X will offer a range of over 9,300 nautical miles and have room for 350 passengers. The bigger 9X will have a range of over 8,200 nautical miles and have room for 400 on board. Competition does not have any matching product to 777-9X jet liner. Boeing says the 8X will compete with the Airbus A350-1000, while the 9X "is in a class by itself." In Dubai Air show of November 2013, Boeing sold 259 jet liners of family 777X to European and Middle-East airlines in one day, (Davies November 18, 2013). The analysis of the above information in relation to the enterprise excellence model: Boeing has demonstrated an excellent vision with a defined mission for the market needs; they innovatively are utilizing their resources in developing the enterprise growth product (777X Family); they have the core competency to support the innovative product; they are mitigating their risk throughout the process (planned production in 2017 and start of delivery in 2020) and they are executing their growth strategy to gain the market share (through offering the product in air show in Dubai, November 2013), and increasing their revenue and profitability (through advanced sale of their product). They are also clearly following the "S" curve as presented in Figure 2.

It is interesting to note that neither company is ready to walk away from the wide-body, four-engine jet liner and both the companies are offering their products: Boeing's 747-8 and A380 from Airbus. There is a sound reasoning behind it, 627 (Boeing's 747-400) jet liners are still operational. Leadership of both the companies could be arguing that some percentage of this large number (627) plus some new prospective customers would still be interested in this wide-body, four-engine jet liners. Even the small percentage of operational 627 jet liners would be a significant number of jet liners, therefore, the business leaders of neither company are ready to walk away from the prospective customers. Boeing is trying to mitigate their enterprise risk through the purchase program of older 747-400 and replacing it with new 747-8 at the negotiated price.

Business scenarios of two businesses (Boeing and Airbus) have been discussed covering over sixty years of time period from 1950s through early decades of 21st century. Both the companies have their great vision and mission; they have been developing series of innovative products to meet/exceed the market needs which are also following the life cycle "S" curve; they have been developing their core competency as market and product demands are changing throughout the analysis period; each company innovatively mitigating their enterprise risk, and executing their growth strategies in achieving and sustaining the enterprise excellence as well as increasing their revenue and profitability.

Three enterprise excellence scenarios are presented here. This will set the stage for discussion and conclusion which are presented in the next sections.

3.1 Sewing Industry

The enterprise excellence scenario in the sewing industry was in a non-profit organization where one of their product lines was sowed products. Blind employees were sewing these products. Company hires typical blind people (generally no training in sewing), trained them and their sewing work is as good as any regular worker would do. Good percentage of their contracts was with government organizations, but they were also selling their products through their own stores to general public. They were also involved in cloth cutting business as outsourced business for the other sewing companies.

Business situation: This non-profit organization was producing highly specialized products based on military specifications. They were supplying products to six military Defense Supply Centers nationwide and were acting as a distribution center for the federal General Service Administration. Therefore, their customers were expecting nothing less than the designated order, right down to the gauge of thread used in sewn components. None of these parameters were especially noteworthy, until you take into account that most of those producing said items were blind. Some of their products were in growth stage of their life cycle while others in the maturity/decline stage of their life cycle. Company leadership believes in product growth curves as presented in Figures 1 and 2. This company generally designs only simple sewing products and somebody else designs the complicated sewing products. Business leadership not only strongly believes in continuous improvement but also practices in most of the areas including operations, sales and marketing and finance.

3.2 Transportation Industry

The enterprise excellence scenario in the transportation industry was in a re-built truck engine components manufacturing company. Their major components were Air compressor, Air dryer, Alternator, Caliper, Fan clutch, Hydraulics, Starter and Water pump. This was a family owned business for three generations. Many people cannot afford to buy a new vehicle right now, said Ken Carter, chairman of the Engine Repower Council. "Repowering is a sensible economic option that saves big money in the long run. For the cost of an average down payment on a new car or truck, you can repower your vehicle with a remanufactured/rebuilt engine and gain years of reliable service without monthly car payments and higher insurance rates."

Business situation: Business leader was experiencing growth in his business (growth in revenue and profitability) and was forecasting, that his business will continue to grow for several years. Current site was not large enough to handle business growth and the manufacturing processes were poorly organized and managed. Parts and components were stored throughout the facility (huge inventory issue). There was no production manager in the business, business owner rarely used to go on the manufacturing floor and generally production supervisors used to update the business owner. He (business owner) had a great interest in marketing, sales and finance. Business owned the current manufacturing facility, but it was in a very poor condition and close to the shopping mall area. Shopping area was growing, so the land value in the area was also increasing. This business owner was a very smart person. He found a great site in the industrial park almost twice as big as was his current facility. So, he leased the facility in the industrial park at a very low leasing price with the option to buy the facility during the lease period or latest at the end of the lease period for the pre-agreed price. He was not sure how he would move from the current site to the new leased site and utilize space correctly for the business growth.

This was a 35 years old family business with the annual revenue of \$13-14 million and pre-tax profit of \$600-700K which was about 5 percent of the revenue. Business was managed by the second generation owner who faced several patent infringement law suits in the past. During that period he borrowed money from his customers in exchange for some percentage of partnership in his family business. Owner also borrowed about \$8 million at the annual interest rate of eight percent from the bank. He was only paying interest on the borrowed capital from the bank and so far he has not paid any principal. Second generation owner had decided to retire, so he announced his son (third generation) as the President of the company.

3.3 Aerospace Industry

The enterprise excellence scenario in the aerospace industry was in a small Company which is a closely held organization and their business is an integrated supplier and technical services provider specializing in components and subsystems for a variety of aerospace and defense applications. The business profile of the Company has a strong aftermarket focus with the Department of Defense and General Aviation and Commercial Aircraft Original Equipment Manufacturers (OEMs). The Company has a history of growth through acquisition and implementing operational excellence with the acquired business in order to improve operating margins.

Business situation: The Company's vision is to create significant shareholder value by growing into a leading international specialist provider of parts, services and logistical support for aging aircraft fleets and other legacy non-aircraft hardware. It will achieve the vision by capitalizing on a variety of opportunities to grow, both organically and through acquisition, in the domestic and international aerospace and defense markets, (Devine 2013).

Company invests a considerable amount of time in analyzing potential acquisition targets and has a history of investing in these acquisitions to grow the business. The company's financial investment in acquisition activities to grow the business is analogous to financial investments in traditional product and market research and development by other companies (Devine 2013).

4. DISCUSSION

Business situations of three companies from three different industries are presented above. Business leadership made certain decisions based on their understanding of the elements of the enterprise excellence model. Discussion section will identify those decisions and their impact in achieving and/or expected in achieving the enterprise excellence. These case studies would provide excellent learning opportunities for business leaders...

4.1 Sewing Industry

Business leaders knew that some of their sewing products were in either reaching and/or in the maturity/decline stage of their life cycle. They had four possibilities in the combination of two products (existing and new) and two markets (existing and new) for business growth. They also knew that they neither have resources to design and/or modify the sophisticated products nor they have experience in designing and/or modifying these complicated products. Sewing industry is highly labor intensive. So, leadership must have a plan to reduce business cost to stay competitive. The following were some key activities and achievements as Kumar (August 2010) identified:

- Streamlined processes: 5 products, 4 cutting tables, storage area, and receiving and shipping areas.
- Reduced the facility requirements to one-half the original space (from 200,000 Ft² to 100,000 Ft²)
- Minimized total material handling in various areas including receiving and shipping docks, warehouse and manufacturing floor.
- Performed strategic capacity-load analysis to meet future throughput requirements.
- Reduced products cost significantly, gained share in the existing market and captured new markets in non-governmental businesses.
- In quantitative term: the economic impact of over \$6.6 million, hired 40 employees during deep recession of 2009 and the revenue went-up 30 percent.

They went into the product market where they do not have to design the products, but manufacture the product at competitive cost to win the contracts. So, they primarily stayed in the government product contracts and received a contract for a new product. They developed manufacturing processes for the new product, developed and installed a new product line. This product brought approximately 25 percent of their total revenues for the fiscal years 2009 and 2010. They looked into their core competency of training blind people in sewing complicated products and they kept their core competency up as the requirements were changing. They were continuously upgrading and improving their business structure (marketing, operations, people and finance) in this competitive market. One of their major cost elements was supply chain where they developed longer term contracts with frequent material delivery and reduced capital requirements in inventory. They also used similar concept in their product delivery and improved their cash flow.

4.2 Transportation Industry

This was a family owned business where the third generation family member became the business leader (President of the Company). Actually this was not a pure case of family business. When this company was in trouble, the second generation business leader (Company President) got money from customers in exchange of some shares of family business. He also borrowed huge sums of money from the bank (Approximately \$8 million). Second generation business leader did not lead the operations properly; and production and sales were not compared for product throughput, revenue, profitability and cash flow. He also never did the inventory count. In some areas they had produced so much extra product which became obsolete, so some employees were taking out the good parts to use in the current production.

In the third generation leader's estimates, the value of current inventory was way short compared to borrowed capital. So, the business leader had a tough time in evaluating the risk of letting all the business owners know the actual financial status of the company. He did hire the Production Manager to lead the manufacturing floor, but he could not do the real analysis of balance sheet and cash flow due to the risk of exposing the actual inventory status to all the business partners as well as to the bank. They did start some parts supply chain relationship with Chinese manufacturers to reduce material cost. So, continuous improvements in operations were providing limited improvements towards business growth

and the enterprise excellence. He (third generation leader) had great operations experience, so he recognized the business core competency in re-building components and products, but he had limited marketing experience. The combination of products (existing and new) and markets (existing and new) play the critical role in business growth. The Company had already borrowed \$8 million earlier and they were paying back only interest and no capital, so he had a limited opportunity to borrow any more capital.

The concept of business measurement (especially the financial statements) was not utilized completely (balance sheet and cash flow analysis). Most of their investments were tangible (facility, equipment, material, etc.) and their intangible investments were very limited (software development, system integration, etc.), so financial statements were the key measurement tools.

4.3 Aerospace Industry

This company has been growing through acquisition for the last several years which created medium to high risk growth strategy. These acquisitions create a degree of uncertainty regarding the accuracy and completeness of information and the future prospects of the targeted business. The company utilized the concept of Ansoff's (1957) model and then they developed their own Risk-Reward Matrix (Figure 3).

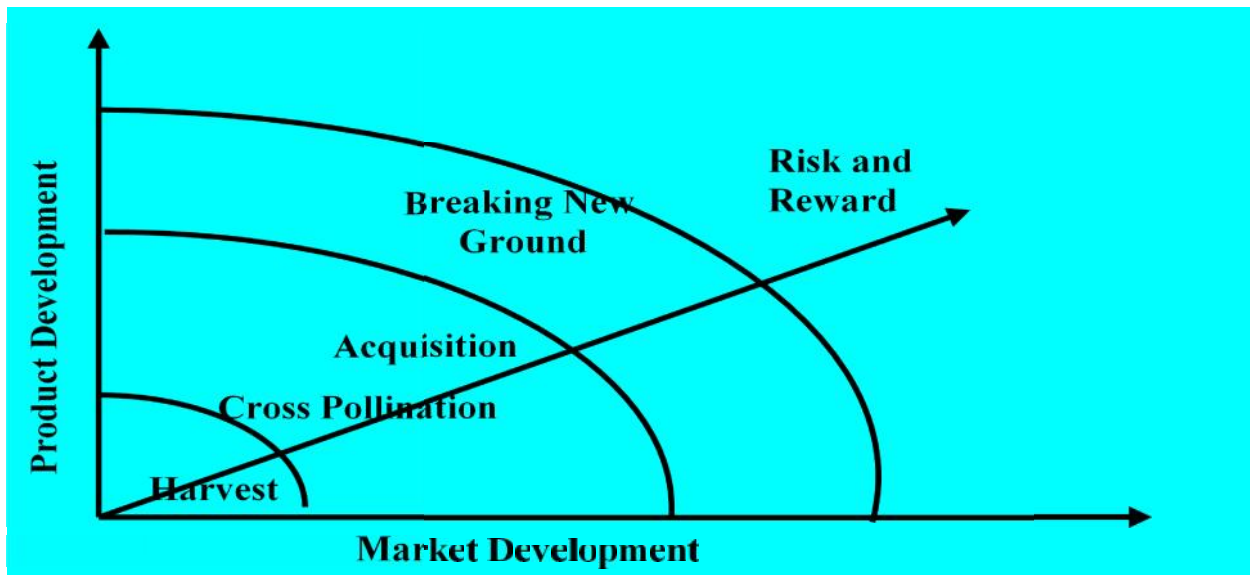


Figure 3. Company's Market Growth - Risk and Reward Matrix

So, historical growth has been achieved through a combination of acquisition, incremental new product and market development, and organic revenue growth of the existing businesses. This new strategic growth plan involves an innovative new product and market development. This is a joint venture (JV) partner who had the technical capability to develop the new product. The JV partner already designed and manufactured a similar product in the auto industry, so they were familiar with the developmental challenges, schedule and cost to develop the product. The JV partner also had the financial resources, which when combined with the financial resources of the Company, would be sufficient to bring the new product to market and to support the product and JV through the initial product launch until contracts could be won and recurring revenue realized to sustain the new venture.

The new JV product business will be low volume and will also contain a lot of product variability. The Company has proven experience in developing and optimizing the supply chain for low volume business unlike the JV partner which is more familiar with high volume production. A significant part of the physical production cycle will be outsourced in order to reduce total manufacturing costs and capital investments in new equipment. However, the Company does manage and retain internally key aspects of the supply chain in order to protect its intellectual property (IP). The Company evaluates outsourcing risks and has developed strategic alliances with suppliers because it is a challenge to leverage suppliers due

to low volumes of production involved. Models from Marshall et al. (2005) and Clemons and Hitt (1997) help organizations to evaluate the outsourcing process, decisions and risks.

The Company was awarded their first contract for the new product which they developed through their joint venture and the award information was taken from the flyer as presented in Figure 4.

5. CONCLUSIONS AND THE CHALLENGES

The analysis of over sixty years of information from Boeing and Airbus is validating the EE model (Figure 1) in achieving and sustaining their enterprise excellence through the enterprise growth strategy and also mitigating the enterprise risk with the following conclusions:

- To support the market and product growth, both the companies have been developing series of products to meet/exceed customer needs and supporting the concept of product life cycle curve "S" (Figure 2).
- Both the companies have either acquired other companies or developed consortium for expanding their businesses.
- Both the companies have been improving their margin through various elements of the enterprise growth strategy including vision and mission, innovative product growth ideas, core competency and market share.
- Both the companies have been mitigating their enterprise risk through products offerings.

The above listed conclusions have been resulting in increased revenue and profitability and both the companies are trying to reduce their business cycles.

This section is concluding the enterprise excellence activities of their respective industries.

5.1 Sewing Industry

With the help of a consultant, leadership not only developed but also executed their enterprise growth strategy while mitigating risk elements to achieve the enterprise excellence goals. These goals are presented as quantitative measurements in the Discussion section. If you compare to the concept chart as presented in Figure 1, they did utilize directly or indirectly almost all of the elements listed in the chart, except they did not design the complicated product. So they searched for those customers who would provide designed products for manufacturing.

FOR IMMEDIATE RELEASE



NEWS RELEASE

Aviation Occupant Safety
7000 19 Mile Road
Sterling Heights, Michigan 48314
www.aviationoccupantsafety.com
Contact:
Tony Nardone, Director 586-726-3922
David Devine, Director 919-956-4273

Aviation Occupant Safety Announces That Cessna Has Selected Its New Cabin Passenger Protection System for the Citation Latitude

Cessna's new mid-size Latitude will be the first business jet to offer the safety advantages of AOS's advanced inflatable passenger protection system.

Sterling Heights, Michigan USA July 25, 2013 – Representatives of Aviation Occupant Safety, LLC (AOS) announced today that Cessna Aircraft Company has selected the company's side-facing passenger protection system as standard for the side-facing seating configuration on the new mid-size Citation Latitude business jet.

Figure 4. First Contract – News Release

5.2 Transportation Industry

For the new President (third generation family member), inventory and financial issues were very critical to satisfy his business partners and the bank. He did hire a production manager to lead the manufacturing floor under his guidance. He was expecting some improvements in margin and profitability through continuous improvements on the manufacturing floor which would improve the payments to the bank (may be some principal plus interest). He was evaluating that the reality risk of inventory and the financial were too great to share with the business partners and the bank. His options were limited, so he would have to wait to achieve the enterprise excellence until the above identified factors improve enough to share with business partners and the bank.

5.3 Aerospace Industry

Business growth opportunity was proposed based on the enterprise excellence elements as presented in the concept chart (Figure 1). Some of those elements were validated, for example, core competency of the JV partners, a matured supply chain strategy, the validation of market needs and the validation of new product's capabilities to meet those needs, the availability of resources – both financial and human capital, and the effective execution and measurement plan to support the JV and achieve the enterprise excellence through innovation. Their growth strategy with mitigated risk worked very well. They received

their first contract as presented in the new release flyer (Figure 4). This also validates the concept of Enterprise Excellence as presented in Figure 1.

These case studies are from three different industries (Sewing, Transportation and Aerospace) and when the developed enterprise excellence concept was applied to these industries, it clearly validated the concept. So, this is an excellent concept which can easily be followed and would also provide a great help to business leaders to achieve their enterprise excellence.

5.4 The Challenges

These studies had provided some very positive impacts as discussed above, but also identified some challenges based on the participants' collective experience:

- Organizational complexity and diversity: Various organizations (businesses and partners, customers, suppliers and governmental agencies)
- Slow organizational and inter-organizational adaption to change: The ways organizations define themselves, relate to the environment, approach their work, and select processes, tools and techniques all evolve slowly than the technology around them. This was compounded when multiple groups must work together.
- Everybody's participation from planning through execution is very critical to achieve the enterprise excellence goals.

REFERENCES

- Airbus advances towards first flight of A350 twinjet. *Flight International*. 23 Oct 2012.
- American Institute of Certified Public Accountants (AICPA), Special Committee on Financial Reporting. *Improving Business Reporting – A Customer Focus: Meeting the Information Needs of Investors and Creditors*. New York, NY: AICPA. 1994.
- Ansoff, I. Strategies for Diversification. *Harvard Business Review*. Sept-Oct 1957; 35(5): 113-24.
- Barney, J. B. Firm resources and sustained competitive advantage. *Journal of Management*. 1991; 17(1): 99-120.
- Blair, M. B. *Ownership and Control: Rethinking Corporate Governance for the Twenty-First Century*. Washington, D.C.: Brookings Institution. 1995.
- Boeing 787: Orders and Deliveries (updated monthly). *The Boeing Company*. (September 2013). Retrieved October 4, 2013.
- Bowonder, B, Dambal, A., Kumar, S. and Shirodkar, A. *Research-Technology Management*. 2010; 53(3): 19-32.
- Chan Kim., W. and Mauborgne, R. *Blue Ocean Strategy*, Boston, MA, Harvard Business School Press. 2005.
- Chandler, A. D. *Scale and Scope: The Dynamics of Industrial Capitalism*. Cambridge, MA, Harvard University Press. 1990.
- Charan, R. and Colvin, G. Why CEOs fail. *Fortune*. June 21, 1999.
- Clemons, E.K. and Hitt, L.M. (1997). Strategic sourcing for services: assessing the balance between outsourcing and in-sourcing. 1997. (Unpublished).
- Croft, Jon. Powering the Dream: A typical paths to Boeing 787 EIS. *Flight International*. (October 17, 2011). Retrieved January 20, 2013.
- Davies, Alex. Here's The Boeing 777X Series that Airlines are Buying Like Crazy. November 18, 2013. Available at, <http://www.businessinsider.com/>
- Davila, T., Epstein, M. J. and Shelton, R. *Making Innovation Work: How to Manage It, Measure It and Profit from It*, Upper Saddle River, NJ, Wharton School Publishing. 2006.
- Devine, D. Application of Enterprise Excellence Concept in Developing a Growth Strategy Proposal for a Company in the Aerospace Industry. 2013. (Unpublished).
- Donlon, B. S. Strategy Execution: five major domains critical to any organization. *DM Review Magazine*. February 2007. Available at, http://www.dmreview.com/article_sub.cfm?articleId=1075123
- Engelberger, J. F. Robotics in practice: Future capabilities. *Electronic Servicing & Technology Magazine*. 1982.
- Grant, R. M. The resource-based theory of competitive advantage: Implications of strategy formulation.

- California Management Review. Spring 1991: 1140135.
- Hafeez, K., Zhang, Y. and Malak, N. Core competence for sustainable competitive advantage: a structural methodology for identifying core competence. *IEEE Transactions on Engineering Management*. 2002; 49(1): 28-35.
- Hamel, G. The concept of core competence, in G. Hamel and A. Heene (eds.). *Competence-based Competition*, New York, NY, John Wiley & Sons. 1994: 11-33.
- Hubbard, D. W. *The Failure of Risk Management: Why It's Broken and How to Fix It*. Hoboken, New Jersey, John Wiley & Sons, Inc. 2009.
- Kaplan, R. S. and Norton, D. P. The Balanced Scorecard: Measures that drive performance. *Harvard Business Review*. January-February 1992: 71-79.
- Kaplan, R. S. and Norton, D. P. Putting the Balanced Scorecard to Work. *Harvard Business Review*. September-October 1993: 2-15.
- Kaplan, R. S. and Norton, D. P. Using the Balanced Scorecard as a strategic management system. *Harvard Business Review*. January-February 1996: 75-85.
- Kaplan, R. S. and Norton, D. P. *The Strategy Focused Organization*. Boston, MA, Harvard Business School Press. 2000.
- King, K. and Kosminsky, F. *Maximize Strategy Execution by Aligning Organizational Resources*. Korn/Ferry International. 2006. Available at, <http://www.kornterry.com>
- Klein, J. A. and Hiscocks, P. G. Competence-based competition: a practical toolkit, in Hamel, G. and Heene, A. (eds.). *Competence-based Competition*, New York, NY, John Wiley & Sons. 1994.
- Kline. Research, Innovation and Production: Models and reality, Report INN-1, Mechanical Engineering Department, Stanford University. CA. 1985.
- Kumar, D. Notes on Enterprise Excellence Certificate (EEC) Program. Raleigh, NC, *North Carolina State University*. 2009. (Unpublished).
- Kumar, D. Role of Enterprise Excellence Initiative. *International Journal of Business and Management*, 5(8): 3-12. August 2010.
- Kumar, D. *Enterprise Growth Strategy: Vision, Planning and Execution*. Farnham, England. Gower Publishing Limited. 2010.
- Kumar, D. Class notes on Enterprise Excellence Certificate (EEC) Program. Raleigh, NC. *North Carolina State University*. 2012. (Unpublished).
- Leonard-Barton, D. Core capabilities and core rigidities: a paradox in managing product development. *Strategic Management Journal*. 1992; 13 (Summer Special Issue): 111-125.
- Mark, M., Katz, B., Rahman, S. and Warren, D. Metro Policy: Shaping A New Federal Partnership for a Metropolitan Nation. *Brookings Institution: Metropolitan Policy Program Report*: 2008:4-103.
- Marshall, D., Lamming, R., Fynes, B. and DeBurca, S. The development of an outsourcing process model. *International Journal of Logistics: Research and Applications*. 2005; 8(4): 347-59.
- McKellar, R. *A Short Guide to Political Risk*. Farnham, England. Gower Publishing Limited. 2010.
- McIntire, J. T. Discover and use your core competency. *Three Sigma, Inc.* 2008.
- Meyer, M. H., Anzani, M. and Walsh, G. Innovation and Enterprise Growth. *Research-Technology Management*. 2005;48(4): 34-44.
- Morden, T. *A Short Guide to Equality Risk*. Farnham, England. Gower Publishing Limited. 2011.
- Norris, G; Thomas, G; Wagner, M; Forbes Smith, C. *Boeing 787 Dreamliner – Flying Redefined*. Aerospace Technical Publications International. ISBN 0-9752341-2-9. 2005.
- Patetta Rotta, C. *A short Guide to Ethical Risk*, Farnham, England. Gower Publishing Limited. 2010.
- Porter, M. E. Capital disadvantage: America's failing capital investment system. *Harvard Business Review*. September-October 1992: 65-82.
- Prahalad, C. K. and Hamel, G. The core competence of the corporation. *Harvard Business Review*. May-June 1990:79-81.
- Pullan, P. and Murray-Webster, R. *A Short Guide to Facilitating Risk Management*. Farnham, England, Gower Publishing Limited. 2011.
- Sanchez, R, Heene, A. and Thomas, H. *Dynamics of Competence-based Competition: Theory and Practice in the New Strategic Management*. Oxford, Pergamon. 1996.
- Saporito, Bill. Can the A380 Bring the Party Back to the Skies? TIME magazine. (September 19, 2010). Retrieved September 21, 2010.

836 Schofield, Adrian. ANA Says 787 Exceeding Fuel Efficiency Target. *Aviation Week* (subscription article).
837 (June 12, 2012). Retrieved June 13, 2012.

838 Surowiecki, J. *The Wisdom of Crowds*. New York, NY, Random House. 2004.

839 Teece, D. J., Pisano, G. and Shuen, A. Dynamic capabilities and strategic management. *Strategic*
840 *Management Journal*. 1997; 18(7): 509-533.

841 Trade, G. The laws of imitation (E. Clews Parsons, Transaction). New York, NY, *H. Holt & Co.* 1903.

842 Truel, C. *A Short Guide to Customer Risk*. Farnham, England. Gower Publishing Limited. 2010.

843 Von Hippel, E. *The Source of Innovation*. New York, NY. Oxford University Press. 1988.

844 Webber, A. M. New math for a new economy. *Fast Company* (News Letter). January-February 2000.

845 Welbourne, T. *Business School*. Ann Arbor, MI, University of Michigan. 2005.

846 Wikipedia. A380 family press kit. (January 01, 2012). Retrieved February 08, 2012.

847 Wikipedia. Taking the lead: A50XWB presentation. EADS. (December 2006). Archived from the original
848 on 27 March 2009.

849 Wikipedia. A 380 superjumbo lands in Sydney. *BBC*. (October 25, 2007). Retrieved: August 3, 2010.

850 Wikipedia. Boeing 747-8 Family background. Boeing.com. (November 14, 2005). Retrieved May 21,
851 2011.

852 Wikipedia. Boeing partners expected to scrap Super-Jet study. *Los Angeles Times*. (10 July 1995).
853 Retrieved December 30, 2011.

854 Wikipedia. 747. *The Boeing Company*. (Retrieved January 9, 2012).

855 Wikipedia.org/wiki/Boeing_787_Dreamliner. 2013.

856 Wikipedia. Summary, [1]. Airbus, (October 2013). Retrieved October 31, 2013.

857 Wikipedia. Competition between Airbus and Boeing. December 02, 2013.

858