

British Journal of Economics, Management & Trade
4(5): 804-821, 2014

SCIENCEDOMAIN *international*
www.sciencedomain.org



Enterprise Excellence through Growth Strategy and Risk Management

Dhirendra Kumar^{1*}

¹North Carolina State University, Raleigh, NC, USA.

Author's contribution

This whole work was carried out by the author DK.

Original Research Article

Received 5th September 2013
Accepted 14th January 2014
Published 30th January 2014

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

*Corresponding author: Email: DhirendraKumar1000@yahoo.com;

industry and analyzed their products and market data of more than fifty years. This analysis will demonstrate how business leaders are trying to achieve the enterprise excellence (EE) through the enterprise growth strategy while mitigating the enterprise risk.

Keywords: Enterprise excellence; growth strategy; risk management; core competency; enterprise transformation; economic impact.

1. INTRODUCTION

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 elements under each top level elements, e.g., business vision and mission; innovative growth ideas; market growth and core competency are some of the elements under 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 the enterprise transformation, and at the same time mitigating the enterprise risk elements. For example, 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 and the plane went in flights in 1970s.

The conceptual model of the EE Fig. 1 was developed based on the above identified elements by Kumar [1]. Therefore, EE is achieved by developing and executing a sustainable growth strategy as well as mitigating the enterprise risk [2] 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. 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 [3]. 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 discussed utilizing the concepts presented in the top elements (Enterprise Growth Strategy and Enterprise Risk Management) as well as some other elements of the model which are discussed in the second section 'Model Elements.'

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 [2].

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 [2]. There are several questions that have to be answered during development and execution of enterprise growth [4], 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) [1].

1.2 Enterprise Risk Management

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 [3]. Pullan and Murray-Webster [5] 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 [6], operational risk, political risk [7], customer risk [8], ethical risk [9], technology/product and competitive risk.

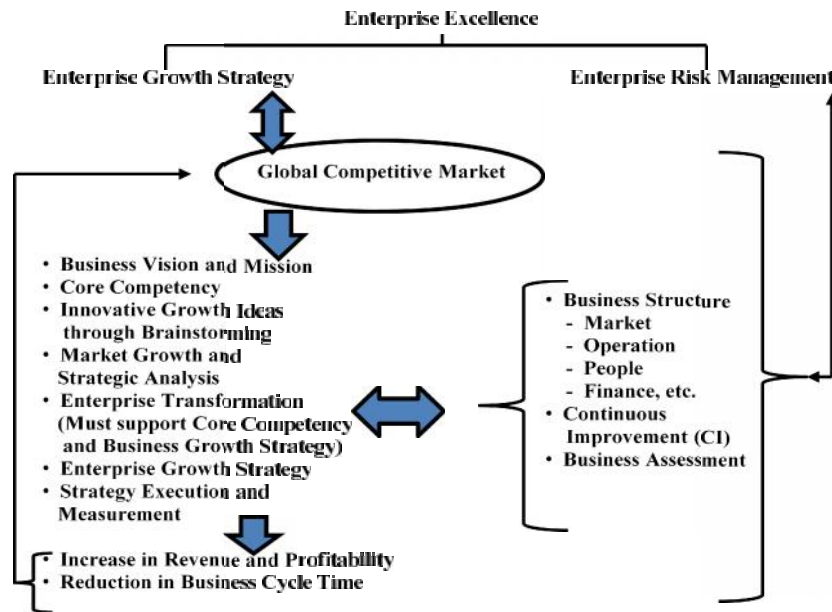


Fig. 1. The Conceptual model of the enterprise excellence

2. MODELS ELEMENTS

It is stated earlier that the top level elements of the EE model are the enterprise growth strategy and the enterprise risk management Fig. 1. There are various elements under each top level element. For example, Fig. 1 is listing the commonly utilized elements under the enterprise growth strategy which are also linked to the global competitive market. There is always some business risk attached to all of these elements as business decisions are made which finally adds-up to the enterprise level risk. As these elements are utilized in any business to achieve the EE, the performance measurement would be through revenue, profitability and the business cycle time. This represents a high level view of the EE model.

Some of these elements are discussed in this section. Whenever there is a discussion about a business achieving their enterprise excellence, the elements listed in Fig. 1 should be evaluated asking the following questions:

- What was the business vision and mission in the last several years and how it was evolved with time and market needs? This period could be 5-20 years depending on the business type, for example, in aerospace industry could easily be 15-20 years.
- 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 Fig. 2. This product curve is also known as 'S' curve. Trade [10] 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.

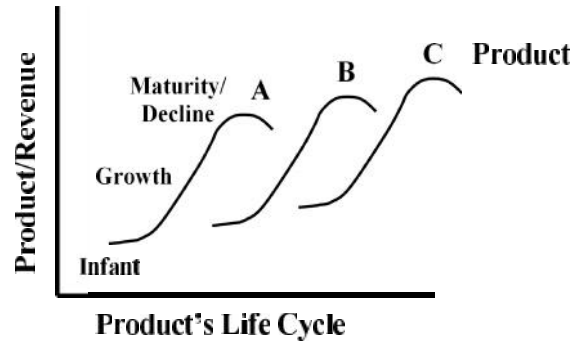


Fig. 2. Product life cycle 'S' curve

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

2.1 Core Competency

History reveals that 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 [11] 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: Resources and capabilities are important for understanding the sources of sustained competitive advantage for firms [12]. When formulating business strategy, resources based strategy provides the competitive advantage [13]. Resources competence provides the competitive advantage [14] and Competitive advantage is due to assets, processes and evolutionary methods [15].

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. [16]. 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 [17], Network view [18] and Harmony view [19].

Therefore, 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. 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. These are the skills that the organization possesses and sets it apart from its competition. 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 [20]. These stakes define the standard level of competency needed to sustain operations. There are various basic competencies including marketing; product design, development and manufacturing; human resources; fund raising; financial; and administration.

2.2 Innovation Growth Ideas

Innovation is the development of new product/value/idea through solutions that meet/exceed existing/new customer requirements (needs) as per Kumar [1]. 'Innovation generally refers to renewing, changing or creating more effective processes, products or ways of doing things,' Australian Government Initiative (business.gov.au). For businesses, this could mean implementing new ideas, creating dynamic products or improving existing services. Innovation can be a catalyst for the growth and success of any business and help 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. [21]. 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. [22]. There are various innovation approaches in the literature, for example, end-user-innovation [23], chain-linked model of innovation [24], companies' growth through innovation [25] and research and development innovation model [26]. Robotic engineer Engelberger [27] 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. 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. 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 [28].

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 [29].

Several other authors have made their recommendations [30,31,32,33,2].

2.3.2 Growth strategy measurement

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. Therefore, before business leader should be measuring their growth strategy performance, it is important to search the literature.

Kaplan and Norton [34] 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 [35] and AICPA [36] 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, [37]. Measurement system was linked with the strategy and also with the cause-and-effect relationship that described the hypotheses of the strategy [38]. 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 [38].

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 [39]. 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 [40]. By the end of the 20th century, the book value of tangible assets accounted for less than 20 percent of companies' market values (Webber is quoting research by Baruch Lev) [41].

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 [42]. 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 [43] has logically linked intangible assets to business cycle time. Business cycle time is defined as 'Order booking through payment.'

Business cycle time is one of the measuring elements of the enterprise excellence model as shown in Fig. 1.

3. BUSINESS CASES AND DISCUSSION

Business cases of two aerospace companies (Boeing and Airbus) are presented in relation to some of the elements of the enterprise excellence Fig. 1 and their impact in achieving and sustaining the EE in these two enterprises. Two model elements evaluation questions are written in general format in section 2 'Model Elements' are rewritten specifically for these companies which are going to be discussed in relation to their business strategies.

- What was the business vision and mission during 1950s and 1960s (specifically for the Boeing, since Airbus was not established until 1970) 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 commercial airplane product innovations and core competencies in these two companies supported the enterprise growth strategy while mitigating the enterprise risk in achieving and sustaining the enterprise excellence?

Before discussing the two companies (Airbus and Boeing), it is important to provide their brief background. Both the companies are in aerospace industry where Airbus is primarily in commercial aircraft business while Boeing is not only in commercial aircraft business but also in defense and space programs.

Airbus S.A.S. Company Profile: Airbus S.A.S. (commonly known as Airbus) was established in 1970 by a consortium of French and German companies. The Spanish company CASA joined the consortium in 1971, while British Aerospace became a full partner of the consortium in the late 1970s. Airbus is a subsidiary of European Aeronautic Defense and Space Company (EADS) and is one of the largest commercial aircraft manufacturers in the world. It is headquartered in Blagnac Cedex, France. Airbus manufactures and sells A300/A310, A320, A330/A340, A350 and A380 family aircrafts. (Source: Airbus S.A.S Company Profile, Market line, www.marketline.com).

Boeing Company Profile: The Boeing Company is the world's leading aerospace company. Boeing manufactures commercial and military aircrafts, electronic and defense systems, missiles, rocket engines, satellite launch vehicles and advanced information and communication systems. The company operates in 145 countries. It is headquartered in Chicago, Illinois. The commercial airplanes division of Boeing manufactures and sells 737, 747, 767, 777 and 787 family aircrafts. (Source: Boeing Company Profile, Market line, www.marketline.com).

3.1 Products of Late 20th Century through the Early 21st Century

Boeing was the dominant player in the industry before the 1970's. Since then, Airbus has dynamically entered the market and has managed to compete with Boeing in the commercial aircraft industry. The two rivals have been going head to head in the last several years and more specifically, in total, in the last 15 years (1999-2013).

The Boeing 747 which was innovated during 1950s and 1960s 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 [44]. It was first flown commercially in 1970 [45]. 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 discussion 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 critical 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 discussion 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 Fig. 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 discussion 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 discussion 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 [46]. The Boeing 787 has been designed to be 20 percent more fuel efficient than the Boeing 767 it is to replace [47,48]. As per Wikipedia [49], 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 [50].

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 [51]. 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 [52]. The jet liner is scheduled to enter airline service in mid-2014 [53]. As of October 2013, Airbus has received orders for 725 aircraft from 37 different customers around the globe [52]. 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 [54] with Airbus launching it's 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 [55].

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 [56]. 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 [57].

Boeing 747 stayed in production for more than 30 years and as per Wikipedia [58], 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 Fig. 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 [59]. The discussion 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 Fig. 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 discussion 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.

Financial statements of Airbus are not available for public. Only some piece meal information about the balance sheets is available which would not provide data about revenue and profitability. Boeing's last nineteen years (1994 – 2012) of financial statements are available, therefore, revenue and profitability information is provided in Table 2. Revenue information could be separated into three categories: Commercial Aircraft, Defense and Space and Others. Total Net Earnings (Profitability) is after taxes and is not separated into three categories as the revenues are separated in their financial statements. Data clearly shows that the commercial aircraft's revenue went up from US\$16.9 Billion in 1994 to US\$48.8 Billion in nineteen years (in 2012) which represents the total growth for the period of 189 percent or the compounded average annual growth of 5.6 percent. The total net earnings (which include all Boeing products) have also grown from US\$856 million in 1994 to US\$3,900 million in 2012 which represents the total growth of 356 percent. Therefore, the commercial aircraft product validates the model.

Table 2. Financial data of Boeing Company

Fiscal Year (Ends December 31 st)	Revenue from Commercial Aircraft	Revenue from Defense and Space	Other Revenue Sources	Total Revenue	Net Total Earnings (After taxes)	Percent Increase in Commercial Aircraft revenue over previous year	Percent increase in Net Total Earnings over previous year
1994	16,851	5,073	183	22,107	856	Previous year (1993) data not available	Previous year (1993) data not available
1995	13,933	5,582	160	19,675	393	-17	-54
1996	19,916	14,934	603	35,453	1,818	43	363
1997	26,929	18,125	746	45,800	(178)	35	Loss
1998	35,545	19,879	730	56,154	1,120	32	Gain
1999	38,283	18,956	754	57,993	2,309	8	106
2000	30,672	19,912	737	51,321	2,128	-20	-8
2001	34,530	22,483	1,185	58,198	2,827	13	33
2002	27,961	24,583	1,525	54,069	492	-19	-83
2003	21,803	26,622	2,060	50,485	698	-22	42
2004	20,827	30,160	1,470	52,457	1,872	-4	168
2005	22,424	30,483	1,938	54,845	2,572	8	37
2006	28,152	32,082	1,296	61,530	2,215	26	-14
2007	33,303	32,000	1,084	66,387	4,074	18	84
2008	27,980	31,727	1,202	60,909	2,672	-16	-34
2009	33,924	33,535	822	68,281	1,335	21	-50
2010	31,712	31,820	774	64,306	3,307	-7	148
2011	36,135	31,944	656	68,735	4,018	14	21
2012	48,783	32,379	536	81,698	3,900	35	-3
Boeing's forecast for 2013	15 percent jump in Commercial Aircraft Revenue					Projected 15 percent	

- All revenue and earnings data in Table 2 are in US\$ in millions.
- Other revenue resources (Table 2): Sales of services, Notes receivable, Sales type leases and Customer and commercial finance.
 - Information source (Table 2): Boeing Company's archived financial data

4. CONCLUSIONS

The discussion of over sixty years of information from Boeing and Airbus is validating the EE model Fig. 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" Fig. 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.

More testing would be needed to generalize the model, for example,

- This model should be tested for some other products in the same industry, for example, jet engines.
- This model should also be tested in other industries, such as heavy equipment, electronics, etc.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Kumar D. Enterprise Excellence Certificate (EEC) Program. Raleigh N: North Carolina State University; 2009. (Unpublished notes).
2. Kumar D. Enterprise Growth Strategy: Vision, Planning and Execution. Farnham, England: Gower Publishing Limited; 2010.
3. Hubbard DW. The Failure of Risk Management: Why It's Broken and How to Fix It. Hoboken, New Jersey: John Wiley & Sons, Inc; 2009.
4. Kumar D. Role of Enterprise Excellence Initiative. International Journal of Business and Management. 2010;5(8):3-12.
5. Pullan P, Murray-Webster R. A Short Guide to Facilitating Risk Management. Farnham, England: Gower Publishing Limited; 2011.
6. Morden T. A Short Guide to Equality Risk. Farnham, England: Gower Publishing Limited; 2011.
7. McKellar R. A Short Guide to Political Risk. Farnham, England: Gower Publishing Limited; 2010.
8. Truel C. A Short Guide to Customer Risk. Farnham, England: Gower Publishing Limited; 2010.

9. Patetta Rotta C. A short Guide to Ethical Risk. Farnham, England: Gower Publishing Limited; 2010.
10. Trade G. The laws of imitation (E. Clews Parsons, Transaction). New York, NY: H. Holt & Co; 1903.
11. Prahalad CK, Hamel G. The core competence of the corporation. *Harvard Business Review*. 1990;79-81.
12. Barney JB. Firm resources and sustained competitive advantage. *Journal of Management*. 1991;17(1):99-120.
13. Grant RM. The resource-based theory of competitive advantage: Implications of strategy formulation. *California Management Review*. Spring. 1991:114-135.
14. 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.
15. Teece DJ, Pisano G, Shuen, A. Dynamic capabilities and strategic management. *Strategic Management Journal*. 1997;8(7):509-533.
16. Hafeez K, Zhang Y, 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.
17. Leonard-Barton D. Core capabilities and core rigidities: a paradox in managing product development. *Strategic Management Journal*. 1992;13:111-125. (Summer Special Issue).
18. Klein JA, Hiscocks PG. Competence-based competition: a practical toolkit, in Hamel, G. and Heene, A. (eds.). *Competence-based Competition*. New York, NY: John Wiley & Sons; 1994.
19. Sanchez R, Heene A, Thomas H. *Dynamics of Competence-based Competition: Theory and Practice in the New Strategic Management*. Oxford, Pergamon; 1996.
20. McIntire JT. *Discover and use your core competency*. Three Sigma, Inc; 2008.
21. Bowonder B, Dambal A, Kumar S, Shirodkar, A. Innovation Strategies for Creating Competitive Advantage. *Research-Technology Management*. 2010;53(3):19-32.
22. Meyer MH, Anzani M, Walsh G. Innovation and Enterprise Growth. *Research-Technology Management*. 2005;48(4):34-44.
23. Von Hippel E. *The Source of Innovation*. New York, NY: Oxford University Press; 1988.
24. Kline. *Research, Innovation and Production: Models and reality*, Report INN-1, Mechanical Engineering Department, Stanford University. CA; 1985.
25. Davila T, Epstein MJ, Shelton R. *Making Innovation Work: How to Manage It, Measure It and Profit from It*, Upper Saddle River, NJ: Wharton School Publishing; 2006.
26. Mark M, Katz B, Rahman S, Warren D. *Metro Policy: Shaping a New Federal Partnership for a Metropolitan Nation*. Brookings Institution: Metropolitan Policy Program Report. 2008:4-103.
27. Engelberger JF. *Robotics in practice: Future capabilities*. *Electronic Servicing & Technology Magazine*; 1982.
28. King K, Kosminsky F. *Maximize Strategy Execution by Aligning Organizational Resources*. Korn/Ferry International. 2006. Available at: <http://www.kornferry.com>
29. Chan Kim W, Mauborgne R. *Blue Ocean Strategy*. Boston, MA: Harvard Business School Press; 2005.
30. Kaplan RS, Norton DP. *The Strategy Focused Organization*. Boston, MA: Harvard Business School Press; 2000.
31. Surowiecki J. *The Wisdom of Crowds*. New York, NY: Random House; 2004.
32. Welbourne T. *To build execution into strategy*. Business School. Ann Arbor, MI: University of Michigan; 2005.

33. Donlon BS. Strategy Execution: five major domains critical to any organization. DM Review Magazine; 2007.
Available at: http://www.dmreview.com/article_sub.cfm?articleId=1075123
34. Kaplan RS, Norton DP. The Balanced Scorecard: Measures that drive performance. Harvard Business Review. 1992;71-79.
35. Porter ME. Capital disadvantage: America's failing capital investment system. Harvard Business Review. 1992;65-82.
36. 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.
37. Kaplan RS, Norton DP. Putting the Balanced Scorecard to Work. Harvard Business Review. 1993;2-15.
38. Kaplan RS, Norton DP. Using the Balanced Scorecard as a strategic management system. Harvard Business Review. 1996;75-85.
39. Chandler AD. Scale and Scope: The Dynamics of Industrial Capitalism. Cambridge, MA: Harvard University Press; 1990.
40. Blair MB. Ownership and Control: Rethinking Corporate Governance for the Twenty-First Century. Washington, D.C: Brookings Institution; 1995.
41. Webber AM. New math for a new economy. Fast Company (News Letter); 2000.
42. Charan R, Colvin G. Why CEOs fail. Fortune. 1999;21.
43. Kumar D. Enterprise Excellence Certificate (EEC) Program. Raleigh, NC: North Carolina State University; 2012. (Unpublished notes).
44. Wikipedia. 747. The Boeing Company. Retrieved. 2012;9.
45. Wikipedia. A 380 superjumbo lands in Sydney. BBC (October 25, 2007). Retrieved. 2010;3.
46. Norris G, Thomas G, Wagner M, Forbes Smith C. Boeing 787 Dreamliner – Flying Redefined. Aerospace Technical Publications International. ISBN 0-9752341-2-9; 2005.
47. Croft Jon. Powering the Dream: A typical paths to Boeing 787 EIS. Flight International. (October 17, 2011). Retrieved 2013;20.
48. Schofield, Adrian. ANA Says 787 Exceeding Fuel Efficiency Target. Aviation Week (subscription article). (June 12, 2012). Retrieved. 2012;13.
49. Wikipedia.org/wiki/Boeing_787_Dreamliner; 2013.
50. Boeing 787: Orders and Deliveries (updated monthly). The Boeing Company. (September 2013). Retrieved. 2013;4.
51. Wikipedia. Taking the lead: A50XWB presentation. EADS. (December 2006). Archived from the original on 27 March; 2009.
52. Wikipedia. Summary, [1]. Airbus, (October 2013). Retrieved. 2013;31.
53. Airbus advances towards first flight of A350 twinjet. Flight International. 23 Oct 2012.
54. Wikipedia. Boeing partners expected to scrap Super-Jet study. Los Angeles Times. (10 July 1995). Retrieved 2011;30.
55. Wikipedia. Boeing 747-8 Family background. Boeing.com. (November 14, 2005). Retrieved. 2011;21.
56. Wikipedia. A380 family press kit. (January 01, 2012). Retrieved February 08, 2012.
57. Saporito Bill. Can the A380 Bring the Party Back to the Skies? TIME magazine. (September 19, 2010). Retrieved. 2010;21.

58. Wikipedia. Competition between Airbus and Boeing. 2013;2.
59. Davies Alex. Here's The Boeing 777X Series that Airlines are Buying Like Crazy. November 18, 2013. Available at: <http://www.businessinsider.com/>

© 2014 Kumar; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/3.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:

The peer review history for this paper can be accessed here:

<http://www.sciencedomain.org/review-history.php?iid=402&id=20&aid=3496>