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Ledenyov, Dimitri O. and Ledenyov, Viktor O.

James Cook University, Townsville, Australia

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# Multivector strategy vs quantum strategy by Apple Inc

Dimitri O. Ledenyov and Viktor O. Ledenyov

*Abstract* – We propose that the quantum strategy can be considered as a most effective winning virtuous organizational strategy, allowing the board of directors to build a prosperous organization with the optimal business model in the economies of the scale and scopes at the time of the great opportunities and unexpected challenges by the globalization. We provide a concise definition on the quantum strategy: The organizational strategy, which can be derived with the use of the quantum strategy search algorithm by the interlocking interconnecting directors in the board of directors in the modern organization at the time of the global integration. We demonstrate that the quantum strategy search algorithm applies the quantum logic (the probabilistic logic) on the top of the inductive, deductive and abductive logics (the value based logics), aiming to create the most effective optimal winning virtuous organizational strategy by the interlocking interconnecting directors in the board of directors in the modern organization in the information century. We highlight the main existing differences between the multivector strategy (the multiple different strategies implementation at the selected time period) and the quantum strategy (the most effective optimal winning virtuous organizational strategy implementation at the selected time period), considering the real-life case study on the strategy formulation and execution by the interlocking interconnecting directors in the board of directors in the Apple Inc. We express a research opinion that the quantum strategy can be clearly defined/distinguished in line with the generally accepted scientific definitions/meanings/principles in the quantum mechanics science. We think that the prosperous organizations will create and implement the quantum strategies to increase their valuations and outperform the competitors in the economies of the scales and scopes at the time of globalization.

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**Keywords** multivector strategy, quantum strategy, winning virtuous strategy, strategy creation and implementation, strategy selection logics, strategy decision making, strategy optimization problem, most effective strategy search, quantum/inductive/deductive/abductive logics, board of directors composition, board of directors chairman, interlocking directors networks, boards of directors seats accumulation number, centrality, Freeman degree, Betweenness, information flows measurements, destructive coordination, information absorption, theory of firm, microeconomics, Schrodinger wave function, quantum mechanics, econophysics, Apple Inc.

## Introduction

The *fundamental theory of strategy* - a golden key to the successful organisation development – undergoes the process of scientific evolution in a century of information, being enriched by the new research ideas, proposals and conceptions, for example: by the *quantum strategy theory*, in the *business administration science* / the *microeconomics science* in Chandler (1962, 1998; 1977, 1993; 1994; 2001; 2005), Chandler, Daems (1980), Andrews (1971a, b, 1980, 1981a, b, 1984), Rumelt (1974, 1982), Porter (1979, 1980, 1982a, b, 1983, 1985, 1987a, b, 1991, 1994a, b, 1996a, b, 1997, 2001a, b, 2008, December 2013), Porter, Harrigan (1981), Porter, Salter (1982), Montgomery, Porter (1991), Porter, Rivkin (2000), Porter, Sakakibara (2004), Anand, Bradley, Ghemawat, Khanna, Montgomery, Porter, Rivkin, Rukstad, Wells, Yoffie (2005), Porter, Kramer (2006), Porter, Heppelmann (November 2014), Schendel, Hofer (1979), Yelle (1979), Dess, Davis (1984), Schwenk (1984), Pitol-Belin (1984), Hambrick (1985), Palepu (1985), Barney (1986, 1991), Huff, Reger (1987), Hill, Snell (1988), Hill, Jones (1998, 2004), Baysinger, Hoskisson (1989), Rue, Holland (1989), Fombrun, Shanley (1990), Pearson (1990), Ansoff (1991), Goold (1991), Goold, Luchs (1993), Goold et al (1994), Goold, Campbell (September, October 1998), Alexander, Goold, Collis, Campbell, Lieberthal, Montgomery, Palepu, Prahalad, Stalk, Khanna, Hart, Shulman, Evans (1992, 1995, 1996, 1997, 1998, 1999), Yip (1992, 1998, 2000, 2007), Campbell et al (1995), Johnson, Scholes (1997), Johnson, Scholes, Whittington (1998), Johnson, Scholes, Whittington (2002, 2003), McKiernan (1997), Child, Faulkner (1998), Martin (1998-1999, 2004, 2005-2006, 2007a,b, 2008, 2009), Moldoveanu, Martin (2001), Lafley, Martin (2013), Shiryaev (1999), Laffont, Tirole (1999), Grant (2001), Welch (2001a, b), Choo, Bontis (2002), Drejer (2002), Sadler (2003), Gavetti, Levinthal (2004), Gavetti, Rivkin (2007), Roney (2004), Thietart, Xuereb (2005), Godard (2006), Ireland, Hoskisson, Hitt (2006), Hitt, Ireland, Hoskisson (2007), Lorino, Tarondeau (2006), Besanko, Shanley, Dranove (2007), Sull (2007a, b, c, d, 2008), Teece, Winter (2007), Samuels (2008), Chamberlain (2010), Holt, Cameron (2010), Ledenyov D O, Ledenyov V O (2015b, n).

Indeed, the *quantum strategy theory* as a research subject of considerable scientific interest attracts an increasing research attention by the academicians and practitioners in the *business administration science* and in the *microeconomics science* around the World in Ledenyov D O, Ledenyov V O (2015n). Thus, let us explain that the *quantum strategy* represents an *organizational strategy*, which can be derived with the use of the *quantum strategy search algorithm* by the interlocking interconnecting directors in the board of directors in the modern organization at the time of the global integration. The *quantum strategy search algorithm*

applies the *quantum logic* (the *probabilistic logic*) on the top of the *inductive, deductive and abductive logics* (the *value based logics*), aiming to create the *most effective optimal winning virtuous organizational strategy* by the *interlocking interconnecting directors* in the *board of directors* in the *modern organization* in an *information century* in Ledenyov D O, Ledenyov V O (2015n).

In this research article, we would like to be focused on the *theory of the quantum strategy creation and execution* in Ledenyov D O, Ledenyov V O (2015n) by the *interlocking interconnecting directors* in the *boards of directors* in the *modern organizations* in the *modern economies of the scales and scopes* in the *time of constant introduction of the market-creating innovations, sustaining innovations and efficiency innovations* on a *global scale* in Christensen, Raynor, McDonald (December 2015), Christensen, Denning (December 2015), Rodin (2015), Dobbs, Woetzel, Flanders (2015), Barber (2015), considering the *Apple Inc real life business case study* as an example. A *real-life business case study* represents one of possible research approaches to understand an essence of the *quantum strategy theory* in the *business administration science / the microeconomics science*. Heracleous (2013) conducted an *interesting research* on the *quantum strategy* at *Apple Inc*, in which it was suggested that the *Apple Inc* has already created and executed its *quantum strategy*. In this connection, we would like to highlight the main existing differences between the *multivector strategy* (the *multiple different strategies implementation at the selected time period*) and the *true quantum strategy* (the *most effective optimal winning virtuous organizational strategy implementation at the selected time period*), considering the *highlighted real-life business case study* on the *strategy formulation and execution* by the *interlocking interconnecting directors* in the *board of directors* in the *Apple Inc* in Heracleous (2013).

It makes sense to say that, presently, the *leading scientists* from a number of *well established/funded research institutions/universities* make everything possible to find an *answer* on the *challenging question: How can the interlocking interconnecting directors create and implement the quantum strategy, which is considered as a most effective winning virtuous organizational strategy, allowing the board of directors to build a prosperous organization with the optimal business model in the economies of the scale and scopes at the time of the great opportunities and unexpected challenges by the globalization?* There is no *simple answer* on this *particular question*. We hope that our research will greatly improve the *quantum strategy theory*, which was proposed for the first time in Ledenyov D O, Ledenyov V O (2015n), and move the *frontiers of the business administration science / the microeconomics science* forward. Therefore, completing a *short insightful introduction*, let us begin a *more detailed insightful*

discussion on the comparative analysis of the multivector strategy vs. the quantum strategy by Apple Inc, presenting our original research thoughts on the subject of scientific interest in this research article.

## Multivector strategy vs quantum strategy by Apple Inc

The *board of directors in the Apple Inc* could be mathematically represented as a two dimensions matrix in Ledenyov D O, Ledenyov V O (2015b, n):

$$\text{Board of Directors} = \begin{vmatrix} d_{1,1} & d_{1,2} & d_{1,j} \\ d_{2,1} & d_{2,2} & d_{2,j} \\ d_{i,1} & d_{i,2} & d_{i,j} \end{vmatrix},$$

where  $d_{ij}$  is the position of a director's seat in the matrix.

The *change of the composition of the board of directors in the Apple Inc* over the time could be mathematically described as an integer in Santella, Drago, Polo (November 11 2007), Ledenyov D O, Ledenyov V O (2015b, n):

$$\text{board}_{c,t} = \text{board}_{c,t-1} + \int_t^{t+1} (en - ex) dt,$$

where

$$en(t) = \frac{d}{dt} en \cdot t = en,$$

$$ex(t) = \frac{d}{dt} ex \cdot t = ex,$$

$en(t)$  is the number of directors entrants at time  $t_i$ ,

$ex(t)$  is the number of directors exits at time  $t_i$ ,

$\text{board}_{c,t}$  is the board of directors size at time  $t_i$ ,

$c$  is the company,

$i$  is the director.

Let us begin our detailed insightful discussion and conduct a comparative analysis on the multivector strategy vs. the quantum strategy by Apple Inc, using the recently published research article in Heracleous (2013) and the knowledge base in Ledenyov D O, Ledenyov V O (2015b, n).

We would like to provide the below citation and to consider the research ideas on the quantum strategy, focusing on the following topics in Heracleous (2013):

1. the research statements on the electron in the quantum mechanics / the quantum physics; and

2. the *research statements* on the *quantum strategy* in the *business administration science* / the *microeconomics science*.

3. the *scientific remarks* on the *subject of interest*.

*Heracleous (2013)* writes: “Conversely, conventional wisdom holds that a company competing on innovation, outstanding design, or service excellence will not be able to reach intense levels of efficiency, since these capabilities are costly to develop and maintain. Apple, however, has achieved both — what might be seen as the holy grail of strategy — and it is worth asking how. The answer can help us gain insight into the trickiest of strategies to execute, and one that most companies do not even try to achieve. This strategy, if successfully executed, represents a shift of the iso-value curve to the right in any industry it is employed in, not just movement along the curve where most competitors are positioned. I call this Quantum Strategy, after the idea that at the quantum level of reality, the same electron can be at two places at the same time, and two different electrons can occupy the very same physical space. Both seem to be logical and natural impossibilities, but nevertheless do occur. An understanding of Quantum Strategy offers important lessons for executives. In particular, we can understand the principles are involved in breaking the trade-offs that are conventionally assumed to constrain strategic choices and to lock firms in single generic strategies.”

As we can see, *Heracleous (2013)* made the following *two meaningless mistaken statements*, related to the *quantum physics science*:

1. “the *same electron* can be at *two places* at the *same time*, and

2. *two different electrons* can occupy the *very same physical space*.”

Going from the *quantum physics science* in *Planck (1900a, b, c, d, 1901, 1903, 1906, 1914, 1915, 1943)*, *Einstein (1905, 1917, 1924, 1935)*, *Einstein, Podolsky, Rosen (1935)*, *Bohr (1922, 1924, 1933)*, *de Broglie L (1924, 1925, 1926, 1927, 1928)*, *Compton (1926)*, *Compton A, Allison S K (1935)*, *Schrödinger (1926, 1935)*, *Schiff (1949)*, *Akhiezer, Berestetsky (1953, 1964, 1980)*, *Berestetsky, Lifshits, Pitaevsky (1980)*, *von Neumann (1955)*, *Dirac (1958)*, *Merzbacher (1961)*, *Feynman, Leighton, Sands (1965)*, *Heisenberg (1967)*, *Petersen (1968)*, *DeWitt (1970)*, *Atkins (1974, 1977, 1978)*, *Landau, Lifshits (1977)*, *Bransden, Joachain (1983)*, *Resnick, Eisberg (1985)*, *Galindo, Pascual (1990, 1991)*, *Shankar (1994)*, *Ballentine (1998)*, *Bransden, Joachain (2000)*, *Liboff (2002)*, *Abers, Pearson (2004)*, *Blokhintsev (2004)*, *Griffiths (2004)*, *Vakarchuk (2004)*, *McMahon (2006)*, *Halliday (2007)*, *Hand, Finch (2008)*, *Teschl (2009)*, *Zettili (2009)*, *Laloe (2012)*, *Papirov (2013)*, *Rylov (2015)*, we can explain that there may be the *initial observation stage*, the *transition stage* and the *final observation stage* in the *quantum mechanics science* / the *quantum physics science*, hence:

1. In the *transition stage*, the *single electron* can be in a *superposition state*, in which the *single electron* cannot be characterized by the *certain physical parameters* in the *time – space domain*.

However, the *electron* can be accurately characterized by the *momentum*, *spin* and *other parameters* in the *final measurement state* only;

2. In the *final observation stage*, the *two different electrons* can occupy the *very same physical space*, if they have the *different spins* only.

Speaking about the *strategies* by *Apple Inc* in *Heracleous* (2013), it is difficult to understand: How can the *innovation strategy* by *Apple Inc* and the *efficiency strategy* by *Apple Inc* in the *strategies superposition state* in *Heracleous* (2013) relate to the *superposition state* by the *single electron* in the *quantum mechanics/the quantum physics* in *Blokhintsev* (2004)? We can hypothetically suppose that the *innovation strategy* and the *degradation strategy* can exist in the *strategies superposition state* in the *quantum econophysics science*. Also, we can hypothetically suppose that the *efficient strategy* and the *inefficient strategy* can exist in the *strategies superposition state* in the *quantum econophysics science*. However, it makes no sense to state that the *two absolutely unrelated strategies* (the *innovation strategy* by *Apple Inc* and the *efficiency strategy* by *Apple Inc*) in *Heracleous* (2013) can create a *superposition state* in the *quantum econophysics science*.

In our opinion, the fact that the *Apples Inc* successfully created and executed the *differentiation strategy*, the *cost leadership strategy* and the *efficiency strategy* at the same time in *Heracleous* (2013) does not mean the *Apples Inc* successfully created and executed the *quantum strategy*. The conclusion on the *quantum strategy* by *Apples Inc* in *Heracleous* (2013), which is derived, going from the *comparative analogy* between 1) the *successful creation and execution* of the *differentiation strategy* and the *cost leadership strategy* by *Apple Inc*; and 2) the fact that the *two different electrons* can occupy the *very same physical space*; is dubious, because the comparison is made between the *two unrelated different strategies* on one side and the *two similar quantum objects with distinctive parameters* (the *two electrons* with the *different spins*) on other side. It is not clear: What are the *main criteria* for the *quantum strategy characterization* in *Heracleous* (2013)? As we explained: “In the *final observation stage*, the *two different electrons* can occupy the *very same physical space*, if they have the *different spins* only.”

Therefore, making the *innovative research* on the *multivector strategy* vs. the *quantum strategy* at *Apple Inc*, we would like to make a research comment that it is necessary to remember that the scientific term “*quantum*” in the *quantum mechanics science* / the *quantum physics science* has its clear *scientific definition* and its *certain scientific meaning*, hence, we think that *Heracleous* (2013) has to clearly understand the *scientific terminology* in the *quantum mechanics science* / the *quantum physics science*, avoiding the use of the word: “*Quantum*” in the *inappropriate cases* in the research article in *Heracleous* (2013).

Using the knowledge on the *fundamental strategy theory* in the *business administration science* / the *microeconomics science* in Chandler (1962, 1998; 1977, 1993; 1994; 2001; 2005), Chandler, Daems (1980), Andrews (1971a, b, 1980, 1981a, b, 1984), Rumelt (1974, 1982), Porter (1979, 1980, 1982a, b, 1983, 1985, 1987a, b, 1991, 1994a, b, 1996a, b, 1997, 2001a, b, 2008, December 2013), Porter, Harrigan (1981), Porter, Salter (1982), Montgomery, Porter (1991), Porter, Rivkin (2000), Porter, Sakakibara (2004), Anand, Bradley, Ghemawat, Khanna, Montgomery, Porter, Rivkin, Rukstad, Wells, Yoffie (2005), Porter, Kramer (2006), Porter, Heppelmann (November 2014), Schendel, Hofer (1979), Yelle (1979), Dess, Davis (1984), Schwenk (1984), Pitol-Belin (1984), Hambrick (1985), Palepu (1985), Barney (1986, 1991), Huff, Reger (1987), Hill, Snell (1988), Hill, Jones (1998, 2004), Baysinger, Hoskisson (1989), Rue, Holland (1989), Fombrun, Shanley (1990), Pearson (1990), Ansoff (1991), Goold (1991), Goold, Luchs (1993), Goold et al (1994), Goold, Campbell (September, October 1998), Alexander, Goold, Collis, Campbell, Lieberthal, Montgomery, Palepu, Prahalad, Stalk, Khanna, Hart, Shulman, Evans (1992, 1995, 1996, 1997, 1998, 1999), Yip (1992, 1998, 2000, 2007), Campbell et al (1995), Johnson, Scholes (1997), Johnson, Scholes, Whittington (1998), Johnson, Scholes, Whittington (2002, 2003), McKiernan (1997), Child, Faulkner (1998), Martin (1998-1999, 2004, 2005-2006, 2007a,b, 2008, 2009), Moldoveanu, Martin (2001), Lafley, Martin (2013), Shiryaev (1999), Laffont, Tirole (1999), Grant (2001), Welch (2001a, b), Choo, Bontis (2002), Drejer (2002), Sadler (2003), Gavetti, Levinthal (2004), Gavetti, Rivkin (2007), Roney (2004), Thietart, Xuereb (2005), Godard (2006), Ireland, Hoskisson, Hitt (2006), Hitt, Ireland, Hoskisson (2007), Lorino, Tarondeau (2006), Besanko, Shanley, Dranove (2007), Sull (2007a, b, c, d, 2008), Teece, Winter (2007), Samuels (2008), Chamberlain (2010), Holt, Cameron (2010), Ledenyov D O, Ledenyov V O (2015b, n), ***we would like to point out to the fact that the that creation and implementation of the two different corporate strategies at Apple Inc at the same time in Heracleous (2013) has to be scientifically characterized as the creation and implementation of the multiple different corporate strategies at Apple Inc at the same time, in other words, we have the case of the creation and implementation of the multivector strategy by the Apple Inc at the selected time period.*** The multivector strategy is well studied in the frames of the *fundamental strategy theory* in the *business administration science* / the *microeconomics science*.

The ***quantum strategy*** as a new research topic has been introduced for the first time in Ledenyov D O, Ledenyov V O (2015n). In our opinion, the *quantum strategy* must be accurately characterized by the *quantum mechanics/quantum physics principles*. The new ***Quantum Strategy Creation Algorithm*** in Ledenyov D O, Ledenyov V O (2015n) has been proposed to



complement the *Modern Strategy Creation Algorithm* in Ledenyov D O, Ledenyov V O (2015b):

*“The Quantum Strategy Creation Algorithm: The Ledenyov theory postulates that the director with the highest information absorption capacity, who experience the phenomenon of resonant - type absorption of information, is able to create the winning virtuous strategies through the decision making process on the available business choices in the diffusion - type financial economic system with the induced nonlinearities, applying the econophysical econometrical analysis techniques in Schumpeter (1906, 1933), Bowley (1924), Box, Jenkins (1970), Grangel, Newbold (1977), Van Horne (1984), Taylor S (1986), Tong (1986, 1990), Judge, Hill, Griffiths, Lee, Lutkepol (1988), Hardle (1990), Grangel, Teräsvirta (1993), Pesaran, Potter (1993), Banerjee, Dolado, Galbraith, Hendry (1993), Hamilton (1994), Karatzas, Shreve (1995), Campbell, Lo, MacKinlay (1997), Rogers, Talay (1997), Hayashi (2000), Durbin, Koopman (2000, 2002, 2012), Ilinski (2001), Greene (2003), Koop (2003), Davidson, MacKinnon (2004), Campbell, Lo, MacKinlay (1996), Vialar, Goergen (2009) and using the creative imperative integrative intelligent conceptual co-lateral adaptive logarithmic thinking process with the application of the quantum logic above the inductive, deductive and abductive logics in Martin (1998-1999, 2005-2006) in the frames of the strategic choice structuring process, that is the winning through the distinctive choices process, in Porter (1979, 1980, 1982a, b, 1983, 1985, 1987a, b, 1991, 1994a, b, 1996a, b, 1997, 2001a, b, 2008, 2013), Porter, Harrigan (1981), Porter, Salter (1982), Montgomery, Porter (1991), Porter, Rivkin (2000), Porter, Sakakibara (2004), Anand, Bradley, Ghemawat, Khanna, Montgomery, Porter, Rivkin, Rukstad, Wells, Yoffie (2005), Porter, Kramer (2006), Hill, Jones (1998, 2004), Martin (1998-1999b, 2004, 2005-2006a, b, 2009), Moldoveanu, Martin (2001), Lafley, Martin (2013), Grant (2001), Choo, Bontis (2002), Drejer (2002), Sadler (2003), Roney (2004), Ireland, Hoskisson, Hitt (2006), Besanko, Shanley, Dranove (2007), Hitt, Ireland, Hoskisson (2007), Gavetti, Rivkin (2007), Teece, Winter (2007), aiming both to get an increased business valuation (a return premium) and to make a positive social impact in the local community and society in the frames of the socially responsible investment (SRI) process that integrates social, environmental, and ethical considerations into the investment decision making in the real sector of economy in Waddock, Graves, (1994), Arora, Gangopadhyay (1995), Sparkes (1998, 2004, 2008), Johnson, Greening (1999), Lydenburg (2002), Cox, Brammer, Millington (2004), Kotler, Lee (2005), Louche, Lydenberg (2006), McWilliams, Siegel, Wright (2006), Scholtens (2006), Cespa, Cestone (2007), Cumming, Johan (2007), Williams (2007), Hull, Rothenberg (2008), Reinhardt, Stavins, Vietor (2008), Renneboog, Horst, Zhang (2008),*

*Arjalies (2010), Crifo, Mottis (2010), Morrell, Clark (2010), Baron, Harjoto, Jo (2011), Crifo, Forget (February, 2012).*

We would like to illustrate the distinctions between the *quantum logic* (the *probability logic*) and the *inductive, deductive and abductive logics* (the *value based logic*, the *binary logic*) as in *Ledenyov D O, Ledenyov V O (2015n)*:

1. “We can illustrate the *probability logic*, using the *quantum mechanics* and by saying that the *probability* that the *Schrödinger cat* may be *alive* or *dead* (the *two possible choices*) in the *superposition state* in the *observable closed box* is *50%* until the *moment of the measurement* in *Schrödinger (1935)*. In other words, the *interlocking interconnecting director* in the *board of directors* in the *organization* must consider the *probabilities distribution* of the *various events*, related to the *particular business matter / situation*, before the *moment of the creation of the quantum business strategy*.

2. We can describe the *value based logic* by referring to the *inductive, deductive and abductive logics* and by showing that it operates with / converges to the values: *Yes* and/or *No*, hence it has some similarity with the *binary logic*: *1* and/or *0*. It means that, the *interlocking interconnecting director* in the *board of directors* in the *organization* must *inductively / deductively / abductively* come to the conclusion: *Yes* and/or *No*, related to the *particular business matter / situation*, before the *moment of the creation of the usual business strategy*.”

We would like to make a few research comments that the *practical creation and implementation* of the ***Quantum Strategy Creation Algorithm*** can be conducted by the *interlocking interconnecting directors* in the *board of directors* in the *modern organization* at the *time of the global integration/disintegration* in agreement with the *following simplified scheme*: the *interlocking interconnecting director* uses the *inductive, deductive and abductive logics* (the *value based logic*, the *binary logic*) to come to a certain *logical conclusion* on the *desirable corporate strategy of his/her choice*, and then applies the *quantum logic* (the *probability logic*) to evaluate the *corporate strategy of his/her choice*, with the *ultimate purpose* to create the *quantum strategy* or to disregard the *corporate strategy of his/her choice* as explained in *Ledenyov D O, Ledenyov V O (2015n)*.

Going from the *true meaning of the quantum strategy* in *Ledenyov D O, Ledenyov V O (2015n)*, we can assume that the *Apple Inc* had been able to create and implement its *quantum strategy* to outperform the *competitors* in the *global markets* of the *wireless computing devices*, the *laptop computers*, the *electronic timepieces* at the *certain time periods*, however we propose to clearly distinguish the *multivector strategy* in *Heracleous (2013)* from the *true quantum strategy* in *Ledenyov D O, Ledenyov V O (2015n)*.

The *authors' strategic vision* is that the *interlinking interlocking directors* in the *boards of directors* in the *complex organizations* will greatly benefit by creating and by implementing the *quantum strategies*, pursuing the *ultimate goal* to build the *prosperous organizations* at the *time of the disruptive changes and opportunities* by the *globalization*.

## Conclusion

We proposed that the *quantum strategy* can be considered as a *most effective winning virtuous organizational strategy*, allowing the *board of directors* to build a *prosperous organization* with the *optimal business model* in the *economies of the scale and scopes* at the *time of the great opportunities and unexpected challenges* by the *globalization*.

We provided a *concise definition* on the *quantum strategy*: *The organizational strategy*, which can be derived with the use of the *quantum strategy search algorithm* by the *interlocking interconnecting directors* in the *board of directors* in the *modern organization* at the *time of the increasing global integration*.

We demonstrated that the *quantum strategy search algorithm* applies the *quantum logic* (the *probabilistic logic*) on the top of the *inductive, deductive and abductive logics* (the *value based logics*), aiming to create the *most effective optimal winning virtuous organizational strategy* by the *interlocking interconnecting directors* in the *board of directors* in the *modern organization* in the *information century*.

We highlighted the *main existing differences* between the *multivector strategy* (the *multiple different strategies implementation at the selected time period*) and the *quantum strategy* (the *most effective optimal winning virtuous organizational strategy implementation at the selected time period*), considering the *real-life case study* on the *strategy formulation and execution* by the *interlocking interconnecting directors* in the *board of directors* in the *Apple Inc.*

We expressed a *research opinion* that the *quantum strategy* can be clearly defined /distinguished in line with the *generally accepted scientific definitions/meanings/principles* in the *quantum mechanics science*.

We think that the *interlinking interlocking directors* in the *boards of directors* in the *prosperous organizations* will continue to create and implement the *quantum strategies* to *increase their valuations* and *outperform the competitors* in the *economies of the scales and scopes* at the *time of globalization*.

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\*E-mail: dimitri.ledenyov@my.jcu.edu.au,  
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the overlapping interconnecting interlocking directors networks in the boards of directors in the firms during the Quality of Service (QoS) measurements process; and **3**) the software program to create the winning virtuous business strategies by the interlocking interconnecting directors in the boards of directors in the modern firms in the case of the diffusion - type financial economic system with the induced nonlinearities, using the patented recursive artificial intelligence algorithm *ECE James Cook University Townsville Australia, Kharkov Ukraine*.

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