Multivector strategy vs quantum strategy by Apple Inc

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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


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):

\[
\text{Board of Directors} = \begin{bmatrix} d_{1,1} & d_{1,2} & d_{1,j} \\ d_{2,1} & d_{2,2} & d_{2,j} \\ d_{i,1} & d_{i,2} & d_{i,j} \end{bmatrix},
\]

where \(d_{i,j}\) 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 \(t_i\),

\(board_{c,t}\) 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.”


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).

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


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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