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Abstract – We make the business at the time of great transition from the digital disruption to the quantum disruption, when the multiple quantum inventions in the natural/social sciences lead to the quantum leaps realization by the modern firms in the hi-tech industries in the quantum creative economies of the scales and scopes in the quantum disruption age. At this opportunities/challenges time period, a chairman of the board of directors must take a personal responsibility for the creation and execution of the quantum strategy - a most effective winning virtuous organizational strategy - toward the optimal business model design/discovery for the prosperous effective organization in the quantum creative economies of the scales and scopes in the quantum disruption century. The quantum strategy uses the quantum strategy search algorithm, applying the quantum logic (the probabilistic logic) on the top of the inductive, deductive and abductive logics (the value based logics) with the purpose to create the most effective optimal winning virtuous organizational strategy by the chairman of the board of directors with the interlocking interconnecting directors in the modern firms in the quantum creative economies of the scales and scopes in the quantum disruption time. We study the case on the quantum strategy formulation and execution by a chairman of the boards of directors with the interlocking interconnecting directors in the modern firms such as Alphabet Inc, expressing a great confidence that the quantum strategies will continue to be implemented by the prosperous organizations to increase their valuations in the quantum creative economies of the scales and scopes in the quantum disruption century.

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Introduction

The fundamental strategy theory - a pink diamond, which shines brightly and colorfully in a spectrum of illuminating lights of the business administration science, the microeconomics science, and the macroeconomics science – continues to attract a considerable scientific interest among the leading strategy thinkers and undergoes a natural evolution by making a chain of the scientific evolutionary visions transitions/transformations in the best minds of the leading strategy thinkers from:

1. The classical philosophical views on the fundamental strategy theory, which consider the continuous-time processes in the analogue economies of the scales and scopes in the analogue disruption century in Chandler (1962, 1998; 1977, 1993; 1994; 2001; 2005); further to

2. The digital philosophical views on the fundamental strategy theory, which deal with the discrete-time processes in the digital creative economies of the scales and scopes in the digital disruption century in Ledenyov D O, Ledenyov V O (2015b); and further to

3. The quantum philosophical views on the fundamental strategy theory, which focus on the discrete-time quantum processes in the quantum creative economies of the scales and scopes in the quantum disruption century in Ledenyov D O, Ledenyov V O (2015b, n, o).


At present time, one of the most interesting research problems to understand in the fundamental strategy theory is: Why do a chairmen of the boards of directors with the interlocking interconnecting directors in the modern firms need to change their approaches to the creation of the most effective optimal winning virtuous organizational strategies in the frames of the fundamental strategy theory, shifting their focus from:

1. The classical philosophical views on the fundamental strategy theory, which consider the continuous-time processes in the analogue economies of the scales and scopes in the analogue disruption century in Chandler (1962, 1998; 1977, 1993; 1994; 2001; 2005); further to

2. The digital philosophical views on the fundamental strategy theory, which deal with the discrete-time processes in the digital creative economies of the scales and scopes in the digital disruption century in Ledenyov D O, Ledenyov V O (2015b); and further to

3. The quantum philosophical views on the fundamental strategy theory, which focus on the discrete-time quantum processes in the quantum creative economies of the scales and scopes in the quantum disruption century in Ledenyov D O, Ledenyov V O (2015b, n, o)?

The most significant problem is that the process of the strategies creation and execution by a chairmen of the boards of directors with the interlocking interconnecting directors in the modern organizations takes place in the time of constant introduction of the disruptive innovations in the natural/social sciences, including the market-creating innovations, sustaining innovations and efficiency innovations, in the modern economies of the scales and scopes on a global scale in Christensen, Raynor, McDonald (December 2015), Christensen, Denning (December 2015), Rodin (2015), Dobbs, Woetzel, Flanders (2015), Barber (2015).

The disruptive innovations, having a considerable impact on the economy of scale and scope, are introduced at the certain moments of time in the time domain sharply, hence the disruptive innovations can be classified as the discrete – time processes. In agreement with the
business administration science, we think that these disruptive innovations may divided into the two big classes in Ledenyov D O, Ledenyov V O (2015b, n, o):

1. The **natural sciences disruptive innovations**, which trigger the multiple abrupt changes in the different industrial processes, because of introduction of the new advanced discoveries and technologies to design/develop the new products/services in the modern economies of the scales and scopes globally;

2. The **social sciences disruptive innovations**, which trigger the multiple sharp changes in the different social processes, because of introduction of the new advanced discoveries and technologies to manage the social interactions/processes in the modern economies of the scales and scopes globally.

Considering the natural/social sciences disruptive innovations, we would like to explain that the natural/social sciences disruptive innovations relate to a group of the discrete – time processes. Presently, we can observe that there are the great transitions from

1. a period of the analog natural/social sciences disruptive innovations, when the multiple analog inventions in the natural/social sciences lead to the analog devices/technologies introduction and the subsequent analog leaps realization by the modern firms in the hi-tech industries in the analog creative economies of the scales and scopes, further to

2. a period of the digital natural/social sciences disruptive innovations, when the multiple digital inventions in the natural/social sciences lead to the digital devices/technologies introduction and the digital leaps realization by the modern firms in the hi-tech industries in the digital creative economies of the scales and scopes, and further to

3. a period of the quantum natural/social sciences disruptive innovations, when the multiple quantum inventions in the natural/social sciences lead to the quantum devices/technologies introduction and the subsequent quantum leaps realization by the modern firms in the hi-tech industries in the quantum creative economies of the scales and scopes.

Researching the quantum strategy synthesis by the chairman of the board of directors at modern firm in the quantum creative economy of scale and scope in the quantum disruption century, we would like to concentrate our attention on the following propositions:

1. We think that, at this opportunities/challenges transition period, a chairman of the board of directors with the interlocking interconnecting directors must take a personal responsibility for the creation and execution of the quantum strategy - a most effective winning virtuous organizational strategy - toward the optimal business model design/discovery for the prosperous effective organization in the quantum creative economies of the scales and scopes in the quantum disruption century.
2. We believe that, at this opportunities/challenges transition period, a chairman of the board of directors with the interlocking interconnecting directors must understand that the disruptive quantum innovations may have multiple direct/indirect impacts on an professional ability/capacity by the chairman’s of the board of directors with the interlocking interconnecting directors to synthesis the quantum strategy - a most effective winning virtuous organizational strategy - toward the optimal business model design/discovery for the prosperous effective organization in the quantum creative economies of the scales and scopes in the quantum disruption century.

In this research article, we would like to discuss a process of the quantum strategy synthesis by the chairmen of the boards of directors with the interlocking interconnecting directors at the modern firm in the quantum creative economy of scale and scope in the quantum disruption century comprehensively. More clearly, we would like to focus on the following key research points toward the quantum strategy creation and implementation in details:

1. The quantum strategy synthesis, which is an organizational strategy, which can be formulated with the use of the quantum strategy search algorithm (QSCA) in the fundamental strategy theory by the chairman of the board of directors with the interlocking interconnecting directors in the modern firms at the time of quantum disruption;

2. The quantum strategy search algorithm, which 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 quantum creative economy of scale and scope in a quantum information century in Ledenyov D O, Ledenyov V O (2015n).

We hope that our research will formulate and greatly improve the quantum strategy theory, which was proposed for the first time in Ledenyov D O, Ledenyov V O (2015n, o), moving the frontiers of the business administration science and the microeconomics science forward. At the same time, we would like to comment that our innovative research on the strategy creation and implementation in Ledenyov D O, Ledenyov V O (2015b, n, o), attracted a considerable scientific interests among the academicians and the practitioners at the leading universities / corporations in the World, namely a statement that the knowledge is a new currency by Faust (2015) was made, and a new course on the disruptive strategy by Christensen (2015) for the senior executives at Harvard Universities in the USA was compiled.

In this connection, we think that the innovations can be disruptive, because of their disruptive nature. At the same time, we believe that it is better to say that the quantum strategy
is a most effective winning virtuous organizational strategy, because of its quantum nature. However, we think that the term: “the disruptive strategy” by Christensen (2015) is not scientific, because any strategy must be aimed to create something rather than to disrupt something. In our opinion, a chairman of the board of directors with the interlocking interconnecting directors works to create and execute the quantum strategy - a most effective winning virtuous organizational strategy - toward the optimal business model design/discovery for the prosperous effective organization in the quantum creative economies of the scales and scopes in the quantum disruption century.

Completing a short insightful introduction, let us begin a more detailed scientific discussion and present our original research thoughts on the subject of scientific interest in this research article.

Quantum strategy synthesis by chairman of board of directors at modern firm in quantum creative economy of scale and scope in quantum disruption century

We prefer to begin our scientific discussion by stating that the quantum strategy synthesis has to be performed by a chairman of the board of directors at the modern firm in the quantum creative economy of scale and scope in a quantum disruption century.

As we know the chairman chairs the board of directors in the modern firm at a certain time moment could be mathematically represented as a two dimensions matrix in Ledenyov D O, Ledenyov V O (2015b, n, o):

\[
\text{Chairman}_{c,t} = \left[\begin{array}{cc}
\text{Board of Directors}_{c,t} &=& \left[\begin{array}{c}
d_{1,1}d_{1,2}d_{1,j} \\
d_{2,1}d_{2,2}d_{2,j} \\
d_{i,1}d_{i,2}d_{i,j}
\end{array}\right]
\end{array}\right],
\]

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 modern firm 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, o):

\[
\text{Chairman}_{c,t} = \left[\begin{array}{c}
\text{board}_{c,t} = \text{board}_{c,t-1} + \int_{t}^{t_{+}} (en - ex) dt
\end{array}\right],
\]

where

\[
\frac{en(t)}{dt} = en \cdot t = en, \quad en(t) \text{ is the number of directors entrants at time } t,
\]

\[
\frac{ex(t)}{dt} = ex \cdot t = ex,
\]

\[
\text{where}
\]

\[
\text{board}_{c,t} = \text{board}_{c,t-1} + \int_{t}^{t_{+}} (en - ex) dt,
\]

\[
\text{en}(t) \text{ is the number of directors entrants at time } t,
\]

\[
\text{ex}(t) \text{ is the number of directors exits at time } t.
\]
$ex(t)$ is the number of directors exits at time $t_i$,

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

c is the company,

i is the director.


The inductive logic, deductive logic, abductive logic, quantum logic (the probability logic) have been described in Ledenyov D O, Ledenyov V O (2015n):

1. **Inductive logic** – the logic of what is operative — reasons from the specific to the general. Induction allows inferring \( a \) entails \( b \) from multiple instantiations of \( a \) and \( b \) at the same time.

2. **Deductive logic** – the logic of what must be — reasons from the general to the specific. Deduction allows deriving \( b \) as a consequence of \( a \). In other words, deduction is the process of deriving the consequences of what is assumed.

3. **Abductive logic** – the logic of what could possibly be true – reasons through successive approximation. Abduction allows inferring \( a \) as an explanation of \( b \), because of this, abduction allows the precondition \( a \) to be inferred from the consequence \( b \).
4. **Quantum logic (Probability logic)** – the logic of what may occur – reasons through computing of events probabilities distributions. Quantum logic allows $a$ and $b$ to be realized, depending on $a$ and $b$ events probabilities distributions equal to square of the Schrödinger’s wave function.

The practical realization of the **Quantum Strategy Search Algorithm** has been discussed for the first time in Ledenyov D O, Ledenyov V O (2015n):

1. **the interlocking interconnecting director** absorbs the information of interest on the particular business events/processes/ecosystems,

2. **the interlocking interconnecting director** applies the creative imperative integrative intelligent conceptual co-lateral adaptive logarithmic thinking process to analyze the particular business events/processes/ecosystems,

3. **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 the choice during the strategic choice structuring process in Ledenyov D O, Ledenyov V O (2015b),

4. **the interlocking interconnecting director** applies the quantum logic (the probability logic) to evaluate the corporate strategy of the choice, with the ultimate purpose to create the quantum strategy or to disregard the corporate strategy of the choice during the strategic choice structuring process, and then

5. **the chairman of the board of directors** with the interlocking interconnecting directors in the board of directors thinks on a set of the proposed strategies by the directors and creates / implements the quantum strategy in the quantum creative economies of the scales and scopes at the selected time period.

**Quantum strategy synthesis by Alphabet Inc in quantum creative economy of scale and scope in quantum disruption century**

The **Alphabet Inc organizational structure** in 2016 is well presented in Grant (2016), including the following organizational divisions:

- Google, which would comprise search, advertising, maps, YouTube, and Android;
- Calico, an anti-aging biotech company;
- Sidewalk, a company focused on smart cities;
- Nest, a maker of Internet connected devices for the home;
- Fiber, high speed Internet service in a number of American cities;
• Investment arms such as Google ventures and Google capital;
• Incubator projects, such as Google X, which is developing self-driving cars and delivery drones.”

The Alphabet Inc has been classified as a conglomerate, going from its organizational structure in Reeves (2015) Rosoff (2015), Waters, Platt (2015), Grant (2016).

The Alphabet Inc corporate strategy has been comprehensively discussed and analyzed in Reeves (2015) Rosoff (2015), Waters, Platt (2015), Grant (2016).

In our opinion, the quantum strategy synthesis by Alphabet Inc means that a set of most innovative successful unrelated R&D strategies has been created and implemented by a chairman of the board of directors at Alphabet Inc in the quantum creative economy of scale and scope in the quantum disruption century.

The Alphabet Inc transformation into some kind of conglomerate can be merely considered as the optimization efforts, aiming to successfully execute a set of most innovative successful unrelated R&D strategies, by a chairman of the board of directors at Alphabet Inc in the quantum creative economy of scale and scope in the quantum disruption century.

We think that the quantum strategy synthesis by a chairman of the board of directors at Alphabet Inc in the quantum creative economy of scale and scope in the quantum disruption century resulted in a situation, when the Alphabet Inc became a most valuable company with the market valuation of about US$533.4 billion in the World in La Monica (February 1 2016), of about $546.50 billion in Ghosh, Mukherjee (February 2 2016).

We would like to state that the chairmen of the boards of directors with the interlinking interlocking directors in the modern firms will greatly benefit by creating and by implementing the quantum strategies, pursuing the ultimate goal to build the prosperous organizations in the digital creative economies of the scales and scopes at the time of the disruptive changes and opportunities by the globalization.

**Conclusion**

We live and make business at the time of great transition from the digital disruption to the quantum disruption, when the multiple quantum inventions in the natural/social sciences create all the necessary conditions for the quantum leaps realization by the modern firms in the hi-tech industries in the quantum creative economies of the scales and scopes in the quantum disruption age.
We think that, at this opportunities/challenges time period, a chairman of the board of directors must take a personal responsibility for the creation and execution of the quantum strategy - a most effective winning virtuous organizational strategy - toward the optimal business model design/discovery for the prosperous effective organization in the quantum creative economies of the scales and scopes in the quantum disruption century.

The quantum strategy uses the quantum strategy search algorithm, applying the quantum logic (the probabilistic logic) on the top of the inductive, deductive and abductive logics (the value based logics) with the purpose to create the most effective optimal winning virtuous organizational strategy by the chairman of the board of directors with the interlocking interconnecting directors in the modern firms in the quantum creative economies of the scales and scopes in the quantum disruption time.

We study the real-life cases on the quantum strategy formulation and execution by the chairman of the board of directors with the interlocking interconnecting directors in the modern firm such as Alphabet Inc in the quantum creative economies of the scales and scopes in the quantum disruption period.

We express a great confidence that the quantum strategies will continue to be created and implemented by the prosperous organizations with the aim to increase the modern firms’ valuations and outperform the competitors in the quantum creative economies of the scales and scopes in the quantum disruption century.

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