Quantum strategy creation by interlocking interconnecting directors in boards of directors in modern organizations at time of globalization

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Abstract – The research explores a scientific problem on the quantum strategy creation and implementation by the interlocking interconnecting directors in the boards of directors in the modern organizations at the time of globalization, solving the winning virtuous strategy search, the most effective strategy selection and the organizational strategy optimization paradigms. We know that, having the different mindset architectures, the directors in the interlocking interconnecting directors networks in the boards of directors in the modern organizations complete the information sensing, filtering, processing, resonant absorption, analysis, strategy decision making processes with the aim to create and implement the most effective optimal winning virtuous organization development strategy, applying the early researched deductive, inductive and abductive logics. We propose that the new quantum strategy can be considered as a most effective optimal winning virtuous organizational strategy, allowing the board of directors to set a right direction vector toward the business development, to establish a necessary actions plan and to reach the sustainable business profitability goals in the economies of the scales and scopes. We explain that the quantum strategy can be formulated, going from: 1) the new quantum logic principles in the Copenhagen interpretation in the quantum mechanics science, 2) the deductive, inductive and abductive logics existing knowledge in the philosophy science, and 3) the modern strategy research findings in the business administration science. We think that the directors in the boards of directors in the complex organizations can implement the quantum strategies with the ultimate goal to build the prosperous organizations in the economies of the scale and scope at the time of the disruptive changes and opportunities by the globalization.

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Keywords 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.
Introduction

In our innovative research article in Ledenyov D O, Ledenyov V O (2015b), we explained that, having the different mindset architectures, the directors in the interlocking interconnectin directors in the boards of directors in the modern organizations complete the information sensing, filtering, processing, resonant absorption, detailed analysis, and strategy decision making processes with the aim to create and implement the most effective optimal winning virtuous organization development strategy, applying the deductive, inductive and abductive logics. Let us note that a necessity to apply all the three logics such as the deductive, inductive and abductive logics in the strategy creation and implementation processes has been emphasized for the first time in Ledenyov D O, Ledenyov V O (2015b).

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, we think that the business strategies, formulated with the application of the deductive, inductive and abductive logics, cannot always be considered as the most effective optimal winning virtuous organization development strategy. One of the formidable challenges is that the modern economies of the scales and scopes have the quantum nature, hence they can only be accurately characterized by the quantum microeconomics theory in Ledenyov D O, Ledenyov V O (2015j) and the quantum macroeconomics theory in Ledenyov D O, Ledenyov V O (2015h). Therefore, it is logical to suppose that the directors in the interlocking interconnecting directors in the boards of directors in the modern organizations must be willing to create and implement the most effective optimal winning virtuous organization development strategy, applying the new type of logic: the quantum logic.

Thus, exploring the outlined research subject, we 1) define the quantum logic, 2) provide the examples of quantum logic and 3) explain how the directors in the boards of directors in the complex organizations can create and implement the quantum strategies with the use of the quantum logic, ultimately aiming both to build the prosperous valuable organizations and to reach a quantum leap in the organization market value in the economies of the scale and scope at the time of the disruptive changes and opportunities by the globalization.

Rommens, Cuyvers, Deloof (November 2007), Santella, Drago, Polo, Gagliardi (2009), Uddin (2012), we would like to focus our research attention on the limited aspects of the quantum strategy creation and implementation by the interlocking interconnecting directors in the boards of directors in the modern organizations at the time of globalization, solving the winning virtuous strategy search, the most effective strategy selection and the organizational strategy optimization paradigms. Speaking clearly, we explain that the quantum strategy can be formulated, using the following things:

1. the new quantum logic principles in the Copenhagen interpretation in the quantum mechanics science,
2. the existing knowledge on the deductive, inductive and abductive logics principles in the philosophy science, and
3. the modern strategy research findings in the business administration science.

In addition, we propose that the new quantum strategy can be considered as a most effective optimal winning virtuous organizational strategy, allowing the board of directors:

1. to set the right strategy direction vector toward the quantum strategy creation for the successful business development in the economies of the scales and scopes,
2. to establish the necessary actions plan for the quantum strategy implementation by the organizations in the economies of the scales and scopes, and
3. to reach the sustainable business profitability goals in the economies of the scales and scopes in the long time perspective.

Completing a short introduction, let us move forward with a more detailed consideration of research topic and uncover all our research thoughts on the subject of scientific interest comprehensively. Once again, we would like to be focused on the theory of the quantum strategy creation and execution by the interlocking interconnecting directors in the boards of directors in the modern organizations at the time of globalization.

**Interlocking interconnecting directors in boards of directors in modern organizations at time of globalization**

Beginning our research discussion, let us make a clear definition on the board of directors: The board of directors in the firm is an organized group of the business administrators, working together to create and execute the business strategy towards the successful business model development, the trade partnership relationships establishment and
the commerce interests promotion in time of infinite opportunities and challenges, which are created by the globalization.

We could also refer to another possible definition on the board of directors in Ledenyov D O, Ledenyov V O (2015b): “A group of elected appointed directors (institutional agents), who control all the business activities by the management team (corporate agents) toward the firm’s business development, constitute a board of directors.”

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

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

where \(d_{i,j}\) is the position of a director’s seat in the matrix.

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

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

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 \(t\),

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

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

c is the company,

i is the director.

As we know presently, the modern strategy creation algorithm has been described in Ledenyov D O, Ledenyov V O (2015b): “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...
It would also be interesting to refresh the important research theses and propositions on the accurate characterization of the boards of directors in Ledenyov D O, Ledenyov V O (2015b):

1. “The authors propose to use both 1) the transmitted information data-stream measurements, and 2) the existing bit error rate measurements (BER) in the overlapping interconnecting interlocking directors networks in the boards of directors in the firms to
accurately characterize the overlapping interconnecting interlocking directors networks performance and the director’s competence and effectiveness.

2. We propose to introduce the Quality of Service measurements scale for the directors’ competence and effectiveness measurements during their work performance evaluation in the boards of directors in the firms, going from the accurate characterization of the generated, transmitted and received information streams by the director in the boards of directors in the firms over a certain period of time.

3. We do believe that the generated, transmitted, and received information data streams in the interlocking interlinking interconnecting directors’ networks have a highly asymmetric nature, because of some reasons. In our opinion, every director has the different education, professional experience, accumulated knowledge base and can allocate the different amounts of time to work at the boards of directors in the firms, hence the director will generate, transmit, receive the various information data streams (the information data flows), resulting in the asymmetric information data streams appearance in the interlocking interlinking interconnecting directors’ networks in the boards of directors in the firms.

4. Speaking about the accurate characterization of the overlapping interconnecting interlocking directors networks in the boards of directors in the firms, we would like to emphasis that the conducted empirical research reveals another interesting fact that the positive and negative feedback loops, which can be created by the interlocking directors networks in the boards of directors in the firms, can quite possibly lead to the destructive coordination among the directors in the boards of directors in the firms by eliminating the randomness element and introducing the greater uniformity in the pursuing business strategies (the destructive coordination term is well described in Whitehead (2011, 2014)).

5. We think that the stability of interlocking interconnecting directors’ network depends on the nature of stochastic dynamic processes in the interlocking interconnecting directors’ network, hence it can be impacted by the election / appointment / introduction of a new directors into the overlapping interconnecting interlocking directors networks in the boards of directors in the firms in the time domain in Anishenko, Vadivasova, Astakhov (1999), Kuznetsov (2001).

6. We would like to mention that the excessive or insufficient levels of the information sensing, information filtering, information processing, information absorption, information analysis by the director may result in the bifurcations and chaos
appearances in the frames of a decision making process on the winning virtuous strategy creation in the case of presence of the considered overlapping interconnecting interlocking directors networks in the boards of directors in the firms."

Quantum strategy creation and execution by interlocking interconnecting directors in boards of directors in modern organizations at time of globalization


Researching the strategy theory, we think that the new quantum strategy theory must be formulated to account for the changing business administration practices and existing theoretical discrepancies by/in in the boards of directors in the modern organizations at the time of globalization. In this connection, we would like to make a theoretical proposition that the
interlocking interconnecting directors in the boards of directors in the modern organizations can apply the creative imperative integrative intelligent conceptual co-lateral adaptive logarithmic thinking with the use of the quantum logic instead of the inductive, deductive and abductive logics to create and implement the most effective optimal winning virtuous organization development strategies.


Now, let us say a few words on the quantum mechanics and explain that the Copenhagen interpretation of the quantum mechanics science considers a quantum phenomenon as a process, which takes place from the initial condition to the final condition. The evolving understanding of the quantum mechanics led to the new theoretical discoveries, particularly, to the introduction of the Schrödinger wave function, which can accurately probabilistically characterize the quantum system, using the probability distributions in Schrödinger (1926). One of the interesting facts is that the probabilities distribution depends on the system's quantum state at the instant moment of the measurement in the quantum mechanics 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), 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

Let us make the two examples to draw a clear boundary between the probability based logic and the value based logic:

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 comment that the practical implementation of the Quantum Strategy Creation Algorithm can be conducted in agreement with the early proposed business administration science practices in the information theory of firm in Ledenyov D O, Ledenyov V O (2015c).

We believe 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

The research article discussed a scientific problem on the quantum strategy creation and implementation by the interlocking interconnecting directors in the boards of directors in the modern organizations at the time of globalization, solving the winning virtuous strategy search, the most effective strategy selection and the organizational strategy optimization paradigms.

We reminded that, having the different mindset architectures, the directors in the interlocking interconnecting directors networks in the boards of directors in the modern organizations complete the information sensing, filtering, processing, resonant absorption, analysis, strategy decision making processes with the aim to create and implement the most effective optimal winning virtuous organization development strategy, applying the early researched deductive, inductive and abductive logics in Ledenyov D O, Ledenyov V O (2015b).

Then, we proposed that the new quantum strategy can be considered as a most effective optimal winning virtuous organizational strategy, allowing the board of directors to set a right strategy direction vector toward the business development, to establish a necessary list of business expansion actions and to reach the sustainable business profitability goals in the conditions of the irrational human nature and the inefficient global markets.

We explained that the quantum strategy can be formulated in accordance with the following accumulated knowledge:
1. the new quantum logic principle in the frames of the Copenhagen interpretation of the quantum mechanics science;
2. the existing knowledge base on the deductive, inductive and abductive logics in the philosophy science; and
3. the modern strategy research findings in the business administration science.

We proposed the **Quantum Strategy Creation Algorithm** with the purpose to describe the decision making process by the interlinking interlocking directors in the boards of directors in the complex organizations at the time of globalization.

We think that the interlinking interlocking directors in the boards of directors in the complex organizations can implement the quantum strategies with the ultimate goal to build the prosperous organizations at the time of the disruptive changes and opportunities by the globalization.

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