



AGILE ORGANIZATIONS AND SUSTAINABILITY

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Abstract

The corporate competitiveness is constantly being shaped by the explosive evolution of technology, globalization and hyper-competition. Volatility and complexity are difficult elements for track and deal for a traditionally organized company. Meanwhile, the disruptive innovations are transforming whole industries. Most of them gained a demonstrable competitive advantage thanks to their agile way of working. However, this competitive advantage is also worth mentioning in terms of sustainability as an agile organization makes optimal use of resources. It can intervene in time if a development or process is not going in the right direction.

The agility, the agile organism is a young construction, so I started to investigate with an exploratory research. The purpose of my research is to clarify that agility is the personality trait or a methodology and to understand the difference between the aspects of agility. My hypotheses examine the interplay between the different personality types and the characteristics of agile functioning. The personality traits were measured by the Big5 typology questionnaire, including conscientiousness, openness and extraversion factors. To address the changes and problems, I used the Lazarus coping questionnaire.

Key words: VUCA, competitiveness, agility, personality typology, coping strategies.

1. Introduction and literature review

1.1 Global trends

The Earth is finite and no growth can last forever. The boundaries of expansion are given by the continuous stream of energy and substance needed for the living conditions of the population. (Magda S. et al.,[12])The significant changes at the macroeconomic level, such as the global labor flows, the increasing competition, the explosion of the technology, the collective acting and the integration of a sustainable approach, are fundamentally rewriting the previous rules of competitiveness. Considering the frequently changing business environment, staying competitive on the current markets takes more efforts from companies in the 21st century. Fogarassy et al.,[7]

Vinge[19]formulated the phenomenon of the technological singularity: as a result of the emergence of technology and the artificial intelligence, the social changes (working, communication, processes) are accelerated beyond human scale and have become an integral part of our everyday lives. Meanwhile, the human nature, the personality traits cannot easily change. Kurzweil [11] in his dissertation on the law of accelerating results, illustrates the exponential tendencies in his analogy: today a laptop can process tens of thousands of years of human-thinking material in a nanosecond. In the meantime, the knowledge of people, the hierarchical organizations become obsolete and their capability structure needs to change. The corporate competitiveness is constantly being shaped by the Fourth Industrial Revolution, the explosive development of technology, the globalization, the hyper-competition and the dumping of information. The social scientists use the term VUCA for these phenomena, which stands for (Sullivan, [18]):



- V - volatility, the rapidly changing things, environment that are unpredictable and may not recur
- U - uncertainty, the frequent changes that can be confusing, there is no predictability and reliance on the past, the analysis are not given valid point of references
- C - complexity, the multiple effects at the same time, which are difficult to handle on their own and can generate novel twists by their complexity
- A - ambiguity, no cause, cause, who and what you did, for what purpose, why, which makes it difficult to develop good answers

The VUCA phenomenon has become our permanent reality: the volatility and the complexity cannot be tracked by the traditional corporate operations. In addition, or as a cause, Industry 4.0 anticipates physical, digital and biological mega-trends such as advanced robotics, artificial intelligence, new base materials, personalized healing, self-driving cars. Schwab [17] mentions in his book Fourth Industrial Revolution that there are scientists and professionals who see this still as part of the Third Industrial Revolution. By arguing, Schwab highlights three key points to prove the differences:

- velocity: unlike previous industrial revolutions, this development has an exponential, non-linear rate. This is the result of the deeply connected, diverse, global and cooperative world. The new technologies can create newer, nonexistent and better technology again and again.
- breadth and depth: combine complex technologies based on the digital revolution which have led to a paradigm shift in the economy, in the business, the level of society and the individual.
- systems impact: the transformation of the entire system across and within countries, companies, industries, societies.

One of IBM's lectures was presented what a strange business concepts have evolved in the last decade (Szilárd Molnár, [14]):

- no cab owned by the world's largest taxicab company (Uber)
- the largest hotel agency does not have a single property (Airbnb)
- the largest telephone company has no telecommunication infrastructure (Skype)
- the world's most valuable retailer has no stock (Alibaba)
- the most popular media does not create its own content (Facebook)
- the fastest growing bank has no real money (SocietyOne)
- the world's largest movie theater has no movie of its own (Netflix)
- the major software vendors do not develop any applications (Apple or Google).

These are service companies whose have no usual investment, production capacity, fixed costs, in exchange reach huge profits, business influence and information capital. The answer to the VUCA phenomenon can be global, virtual and innovative thinking. Therefore, it is necessary to set up new operating models. Google, Twitter, Netflix, Apple, Amazon, all are powerful innovative companies. They operate fundamentally different way versus their elder market predecessors and competitors. Schumpeter [16] distinguished five basic cases of innovation: creating a new product, introducing a new production process, entering a new market, exploring new raw materials, creating a new industrial organization. Christensen [6] introduced the concept of disruptive innovation. The following types of innovation strategy are distinguished by him:

- sustaining - development does not affect the established market
- evolutionary - the product evolves, providing a new solution to a consumer need
- revolutionary - a new, unexpected solution whom creates a new market, but does not affect existing
- disruptive - creates new value that transcends and breaks existing markets.



The disturbing companies are characterized by the creation of a new market while destroying old ones, providing new value, and being able to react quickly. All companies mentioned above are the flagships of disruptive innovation technology. Amazon (Forbes, 2018) sold books online and killed partial of bookstores sales. Then launched Kindle what revolutionized the book production and printing sector. Today, Amazon has grown to become one of the most dominant companies in the world. Now it is targeting the pharmaceutical industry. A huge team of developer and analyst, its economies of scale and its digital systems gives the power to transform sectors on our globe.

Human workforce, artificial intelligence, drones, robots are working together in full synergy. No matter what sector, market, country, region you are in, nobody is in safe anymore: well-crafted, centuries-old processes and market-leading positions can collapse in minutes.

In the Accenture's study [1] the 63% of CEOs stated that their companies have been hit by a disruptive "attack". 68% of these executives feel that such companies will destroy, distract their market in the next 3 years. Apple has sold 1 billion units of the Iphone since its 2007 release (Statista, 2018). From a whole new technology that users have never seen before. Since 2007, a total of 8.57 billion smartphones have been purchased. The customer base grows by 40-60% per year. These figures are impressive when we compare to other revolutionary technologies in the century. Table 1 below shows how many years have passed since innovation has been used by 25% of the total population.

electricity	45 years	computer	15 years
phone	35 years	cell phone	10 years
radio	30 years	internet	5 years
television	22 years	smartphone	2 years

Table 1: Spread of innovation, own editing

As a result of better resource use and the knowledge sharing, the economies in the global world are experiencing mutations such as sharing and peer to peer economy, gig economy in the labor market and bigdata in the planning. Everything is simpler, faster, data-driven and customizable. An adaptive corporate structure and leadership, a self-organizing group, the agile working methods can empower the companies for develop continuously in a sustainable way.

1.2 Agility

The terms of agility mean that a company is able to forecast, detect and react to market volatility by creating value to its customers. Accenture study [1] describes agility: agility = adaptive skill + quick response + execution. All three elements are very important: the adaptability is linked to change management, the rapid response to accurate recognition of an unexpected situation, and execution to high quality action. According to Goldman [8], agility is the ability to react quickly to fragmented world market situations, dealing with continuous and unexpected changes, and the ability to thrive in a competitive environment.

The agility is not a recent concept. The major milestones in its development were the launch of Toyota's Lean, Kanban from 1943, followed by NASA's iterative increment, then from the Scrum until the creation of the Agile Manifesto [2]. The manifesto shifts the focus from previously accepted and well-functioning elements on the individual and personal communication over methodologies, working product over final documentation, involvement of the customer over contract negotiation, readiness to change against strict plans. An important step for HR and organizations was the creation of the HR Agile Manifesto [3]: organization development experts stated that collaboration and networking are more important than hierarchical structure, transparency, flexibility versus standards, involvement in management, internal ambition and drivers over external rewards.

One more concept related to innovative functioning which is holacracy (Koestler [10]). A holon is itself a unit, but also part of a larger organization. In the case that a holon group does not function properly, the others take over their role and do not jeopardize any functions. These units are autonomous and cooperative, structured, rule-based organization: a complex system that can use its resources most efficiently, flexible and fast, and can maintain stability. The roles of the smallest unit, the individual, are clear and well defined. Its need to hold the hand of the market in its own area, notices immediately any changes, finds the opportunities, and detect the problems. There is no hierarchy in the classic sense, there are no managers, no jobs, the control is in everyone's own hands. The world's leading innovative companies works in this way.

1.3 Agileoperation

The basis goal of every company is to create value. The value creation is the process of converting a company's resources into consumer value (Chikán[5]). See Figure 1.

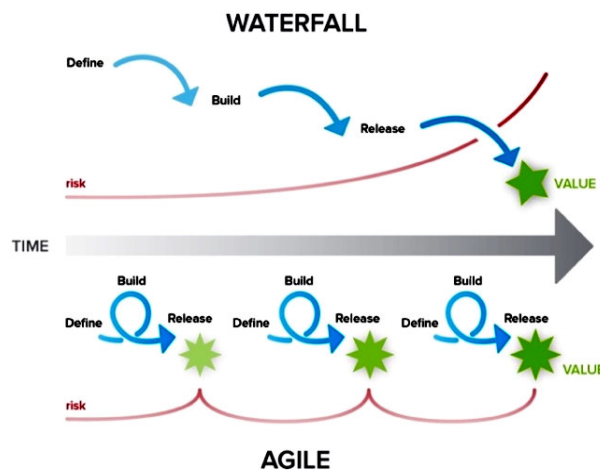


Fig. 1. Comparing Value Creation in Waterfall and Agile Development, source Cindagroup

The concept of value stream is known from the lean methodology (Ries[15]). It refers to the actions that create value during the production flow: production itself, logistics, marketing, sales, customer service. Everything else is needed but whom are not value-creators (like HR, finance). In the classic hierarchical model, leaders, management, are the most valuable part of the human capital. They are the ones who decide about everything. However, their information, ideas, opinions are based on numbers from the past. In contrast, the agility encourages servant leadership: leaders' role is to eliminate all obstacles and to ensure the team productivity. In a hierarchical organization, the colleagues work in silos, they do not see the value creation process, the big picture, the final goals. The flow of information between the silos is intermittent. In contrast, the agile project team circles are well-informed, they think together, solve the problems and transfer their knowledge. Comparing the agile method with the traditional waterfall model we can see major differences: in a waterfall operation the project starts, then comes a series of rigorous, successive steps. In this case, if the environment and the market suddenly change, it cannot go back in the process or change any factors. In contrast, in an agile operation a sprint is terminated at intervals of 2-6 weeks. During this time, it is clear that the direction is right or not, the market, the conditions have changed. Please find below a comparison of the value proposition represented by traditional (waterfall) and agile value creation (Ries,[15]). See Figure 2.

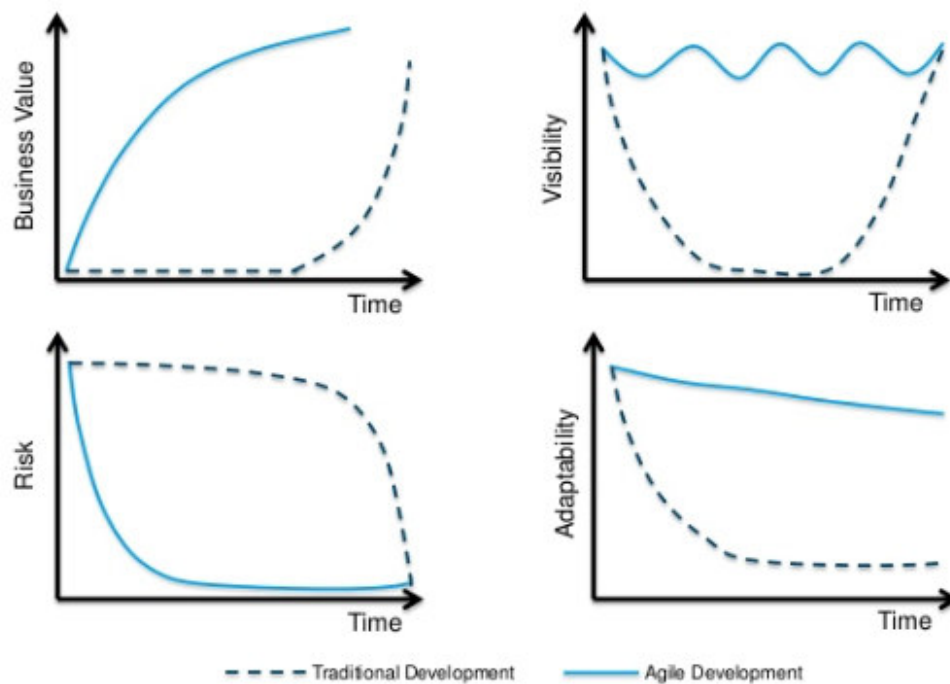


Fig. 2. Comparing Value Creation in Waterfall and Agile Development, source Ries *The lean startup, Flowless*

1. Visibility - Time axis

In traditional operation, the product is shipped after a long period of time without being able to handle changes. In agile operation, the client is part of the project team from day one, they can decide about direction change in case of a new comer conditions.

2. Business value transfer - Time axis

In the agile model, delivery is made at regular intervals so both parties sense the value. The waterfall model transfers business value at the end of the project.

3. Adaptability - Time axis

In the traditional development mode, it is impossible to change the business scenario unless you start the project again. In the agile model, the adaptation is consistently at high level.

4. Risk - Time axis

The risk is always the highest at the beginning of any project. Those who work in the traditional way face many unknown factors. In the case of agile operation, the risk is significantly reduced because of the high adaptability of the team during the short sprints.

The agility is an umbrella term for the iterative development methodologies used in the software development world. Most widely used is the Scrum, but also XP, Kanban, DSDM, Scumban, Design Thinking, Lean Startup, Teal are also popular. I selected the Scrum methodology to present.

The principle is that the buyer, client can change his predefined requirements during the development. The method is assumed that at the beginning of the project the problem cannot be fully understood and the expectations cannot be defined precisely and can change during the iterations. It is important for the team to be able to make quick adjustments. Agile is a practice driven methodology: it says the working product cannot be create in the head with planning, just by doing it. The goal is to not lose any valuable idea. This model encourages each team member to continuously express themselves and represent their ideas and thoughts without any fear (Figure 3.)



Fig. 3. Comparing Values of Scrum team, source Scrum.org

Features of Scrum method:

- iterative operation, continuous validation
- not consecutive, but parallel development phases
- customer works as part of the development team
- intermediate deliveries
- daily status meeting
- transparent planning for who is responsible for what with deadline
- no classic job profile, no working time frame
- group Structure: Scrum Master, Product Owner, team members

Working in races (Sprint):

- the race planning meeting is held before the race
- one race lasts 2-6 weeks
- during this time, an existing working product is created
- at the end of the race, the team will show the product

Self-organizing teams:

- members of each team are selected individually
- group members apply for that project team in they want to work on attractive tasks
- group members know who to consult daily
- clear communication and responsibilities

Start the day talk

I highlighted it because it is a crucial element of the effectiveness. It is a tool for constant feedback.

Each team members need to answer three questions on by one:

- What have I done since yesterday's meeting?
- What I did not do? Are there any obstacles that prevent you from reaching your goal?
- What do I plan to do today?

In this way they do not lose information, time, focus. They can help each other via ideas and they can a personal responsibility towards tasks and team.

Retrospective

At the end of the sprint, they have a closing conversation, named retrospective.

They are highlighting the best parts and issues they need to improve during the next sprint. The individual confronts with the group member's opinion and feedback: what he/she did well, what he/she need to change, how was work with them. Without feedback, this method will not work at all. As a person, it is not easy to handle it. But the team itself contra select its members to reach the optimal speed and performance. This method is an excellent tool for organizational learning. The self-knowledge and self-reflection are crucial elements of agile functioning. The frequent feedback and, consequently, self-reflection facilitate dual-loop learning. Argyris [4] in his double loop learning concept, means that organizations detect, analyze, and correct mistakes that have been made. The organizational learning is a process and the result is the knowledge. In the agile way of working the knowledge spreads and integrates into organizational memory. Then it becomes available to anyone as well who arrives later.

Comparing the agile and the hierarchical operation we can see radical difference (Table 2).

AGILE	HIERARCHY
common decisions	director said the tasks
small steps	long projects
self-organized team	silos, directions
speed	slow reaction
daily feedback	yearly feedback
quick and clean communication	no newtwork
responsibility is shared	personal performance awarded
team inspiration, team results	no up and dawn communication flow
automatic knowledge transfer	knowledge loosing
fail is a part of success	not allowed to fail
2-6 weeks iteration, quick decision	decisions are very slow

Table 2: Features of hierarchy and agile way of working method, own editing

2. Presentation of my research

The market situation suggests that organizations should change. McKinsey[13] consulting company in his study talks on agile organization: become a living organization rather than a machine-like operation. A living organization is always in motion, changing, reformulating by the external and internal interactions.

My research questions were the following:

- an organization can be agile if individuals are not
- the agility arises by working in a team
- the agility is an attitude or personality trait
- in agile functioning, the individuals are more satisfied with their work, they can provide better performance, they can use better their abilities
- the agile operation depends on the leader itself



2.1 Sample and methodology

My hypotheses were:

- that a company can operate in agile way if the manager has agile approach (leadership style: familial, innovative, performance-oriented, rule-oriented).
- the employees are more satisfied and better performer in agile organization
- there is the correlation between agile attitude and age
- I researched my hypothesis in three steps: started by test research, then managed deep interviews and executed final research.

2.2 Test research

The method

I used qualitative method as a research tool by self-questionnaire survey. The questionnaire consisted from 12 questions: demographic, assessment of their current workplace and leader, evaluation of some statement of agile structure.

The sample

- the sample size was 166 people
- by sexes: 66% female, 34% male
- by age: 75% were between 20 and 45 years of age (active in the labor market)
- by education: over 80% graduated and 50% come with a corporate background

The result

I could evaluate two hypotheses: first that younger employees prefer more to work at an agile workplace versus older. The second is that employees are more satisfied in a family-friendly / innovative company versus performance or rule oriented.

First, the age was correlated with the total score of the scale created by Spearman's correlation. The correlation trial showed no significant correlation between age and importance of agile workplace

($r(166) = 0.125$, $p = 0.114$). For further investigation I compared the total scores of the 5 age groups I created on the scale of agility by the Kruskal-Wallis test. According to the results of the trial, there is no significant difference in the importance of agility in the five age groups ($F(4) = 5.65$, $p = 0.23$). It is confirmed my assumption that agility is not age dependent, but rather a mentality, personality trait.

Then I compared against the people's satisfaction with their workplace (people-oriented / familiar, innovative and dynamic, performance-focused, rule-oriented). My hypothesis that those who described their workplace as family-friendly or innovative are more satisfied than those who work for a performance- or rule-based company. To test the hypothesis, I compared the total scores of the 4 groups on the job satisfaction scale with the Kruskal-Wallis test. I found a difference between the 4 groups ($F(3) = 22.12$, $p < 0.001$). My preliminary hypothesis does not seem to be true, because colleagues at performance-oriented companies are most satisfied. The reason can be the well-defined expectations or the respondents were more competing type. Another reason can be that most of the respondents had already spent 10-15 years in a traditional organizational, that would be familiar to them. The second in the rank was the company with a family atmosphere, so my hypothesis was partially fulfilled.

2.2 Main research

The method

I chose the Big Five (Normann 1950) personality model as my methodology, which was developed for a comprehensive personality survey. The model classifies different personality traits by



factor analysis into five groups of factors: extraversion-friendliness-conscience-emotional stability-openness. Each personality trait has two - extreme - dimensions. I used the original Big Five (BFQ) questionnaire (Normann, 1950). It contains 132 statements, on which the respondent uses a five-step Likert scale to determine whether or not it is typical for him/her. When I examined the aspects of agility, I highlighted three factors: conscience, openness and extraversion, because these are closest to agile behavior. So, in the final questionnaire, I included a shortened version of BFQ with 72 questions. In addition to the average of the total scores of the scales, I used the following data for the analyzes: based on the results obtained on the Hungarian standard sample, it is possible to divide the participants into 2 groups along the respective scales according to their score below or above the standard average. Thus, in the analyzes, I divided the participants into groups based on extraversion, openness and conscientiousness scores, and compared the results of the groups obtained in this way.

One of the key abilities to alive in the VUCA world is the change management. To investigate this, I examined personality coping strategies (Folkman and Lazarus, 1980). The dimensions of adaptation to stress (not opposites to one another): problem-focused approach, emotional-focused approach. To measure coping styles (emotion- and problem-focused), I used the Coping Techniques Questionnaire (Folkman and Lazarus, 1980); 22-item Hungarian version: Kopp and Skrabsi, 1992). Each item of the test is rated 0 to 3 by participants, and the questionnaire contains a total of 7 sub-factors: analysis of the problem, purposeful action, emotionally motivated action, adaptation, help seeking, emotional balance, regression. Of these, problem analysis and purposeful action for problem-centered coping are included, while the remaining 5 are among emotion-focused strategies (Kopp and Skrabsi, 1992). In my research, I used data on problem / emotion-focused coping and the help-seeking sub-factor for the two main factors as typical features of agile functioning.

The sample

The trial was followed by in-depth interviews with a person who works in an agile organization. This way I specified my research hypotheses, which began to examine the relationship between personality trait and agility. My hypotheses were that agility requires the following key abilities and attitudes: change management, responsibility, collaboration, independence, deal with failure, feedback, willingness to learn. My research questions have been modified: which personality type likes to work in an agile environment. Respondent statistics (N = 125):

- 66% female, 34% male,
- age: 38% 36-45, 28% 29-35, 19% 20-28, 13% 46-55 years old and 2% was above 55 year.
- 92% of them are graduates
- 66% of them live in the capital, 11% in big cities, 17% in small and medium-sized towns and 9% in villages
- in terms of position, 49% were subordinate, 41% were middle or senior manager and 10% were consultants, interim expert.

The result

Some of my hypothesis have been confirmed. First of all, the operating principles of agile organizations are more important to extraverted individuals. I used Spearman's correlation to investigate the relationship between extraversion score and total score on agility. The results of the test run ($r(125) = 0.54, p < 0.001$) supported my hypothesis, as the importance of extraversion and agility for the person showed a positive, moderate strength, significant association. As a second step in testing my first hypothesis, I divided the participants into two groups (introverted and extraverted). They were placed in the group of extraverts who scored higher than the average of the Hungarian standard sample (76.58), and in the group of introverts who received a lower score. The two groups were compared by the Mann-Whitney test, the dependent variable was the total score measuring the importance of agility. According to the results of the trial, there was a significant difference in the importance of agile organizational functioning between the two groups ($U(125) = 890.5, p < 0.001$). The rank numbers show that the direction of the difference was in line with my hypothesis: the



extraverted subjects scored significantly higher on the scale measuring the subjective importance of agility, so my hypothesis was supported by the Mann-Whitney test.

To test my hypothesis that higher openness is more important for agile organizations, I correlated the total score on the Big Five Questionnaire Openness sub-factor with the importance of agility. The results partially supported my hypothesis, as openness showed a positive, weak, significant association with the importance of agile function ($r(125) = 0.34, p < 0.001$). As a second step in testing my third hypothesis, I divided the participants into two groups based on their scores on the openness scale: those who scored higher than the average (85.78) on the standard Hungarian sample, those who scored lower. The two groups were compared by the Mann-Whitney test, where the dependent variable was the score on the scale of subjective importance of agility. Based on the results of the Mann-Whitney test, there is a significant difference between the two groups regarding the importance of agile organizational functioning ($U(125) = 968, p = 0.002$). As the scores of the more open group were higher on the scale measuring the importance of agile functioning, it can be said that the direction of the difference was also in line with my previous hypothesis, so the data fulfilled the hypothesis.

To test my next hypothesis, I correlated the total score for problem solving coping strategy by the Spearman's correlation with the importance of agility. The results of the test supported my hypothesis, because the problem-focused coping score showed a positive, moderate strength, significant association with the importance of agility ($r(125) = 0.42, p < 0.001$). To investigate the hypothesis, I also examined the relationship between emotion-focused coping strategy and the importance of agility, but the two variables did not show significant correlation ($r(125) = -0.05, p = 0.59$).

My further hypotheses were that help seeking attitude is commonest in an agile workplace, the younger generation prefer more the agile way of working than the older ones and the supporting / empowering leadership style creates a more agile workplace. These hypotheses did not show any significant association.

3. Conclusions and recommendations

The research on organizational agility is just in the beginning: there are no existing, well-established, validated, frequently used measuring tools for measuring agility. The aim of the present research was to initiate the exploration of the question, to investigate synergies based on correlation studies. In cases where significant synergies have been found, it may be appropriate a further research. The nature of the literature used also reflects the fact that agility is a very practical area for acquiring knowledge, but from a research point of view is not explored. I think it may be worth analyzing agility further along with personality types and organizational culture or operating principles. By mapping the corporate mutations of agility and examining the individual / group origin of agility, it is possible to model and measure agile factor. I am convinced that agile organizations contribute to sustainable economic growth and in the future, I would like to prove the model's competitiveness.

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