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Report

Should We Rely on Intelligence Cycle?

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Abstract- Intelligence cycle is a systematic process which is usually applied in order to obtain intelligence from raw data. Today the world has been experiencing dazzling changes on many fields as well as technology. With the help of the new emerging technologies the data that have to be handled for intelligence is much more than ever. In addition to new technological contributions, there are discussions about intelligence cycle whether it's being out-dated and old fashioned. Intelligence cycle was mainly prepared due Soviet threat. After the collapse of Soviet Union, concept of security has shifted drastically. And consequently, people have started to question its validity. The biggest question is about the intelligence cycle model. Does the process meet today's needs? If not so what should be done in order to attain more effective intelligence? Therefore, this paper deals with the knowledge hierarchy and intelligence cycle with view to state viability of intelligence cycle in today's condition and moreover examines new approaches to intelligence development process.

1. Introduction

Intelligence is crucial type of knowledge that has to be applied in order to be successful in decision making process. It may be widely used in many fields as well as organizations or the military. One has to remember that there is a big correlation between data, intelligence and knowledge, so DIKIW (Data, Information, Knowledge, Intelligence and Wisdom) pyramid has been defined for comprehending the relationship among them. Intelligence contains threats, risks as well as success. In this way it is needed to establish connection between events for reaching desired end.

The information age which was defined during the late 1980s has changed our perception far beyond guessed (Başaran, 2014). This shift has happened in a fast manner that it is difficult to follow the information flow. The transition of information has provided to obtain it easily and it also provided access to everyone (Rathmell, 2002). But the widespread use of data have led difficulties, accelerating changes and growing complexity. This complexity makes it difficult to acquire precise intelligence. So decision makers, especially for the military purpose (Goztepe and Kahraman, 2015), apply intelligence cycle to obtain intelligence. Intelligence cycle is applied for obtaining intelligence from raw data. This cycle generally consists of collection, evaluation, analysis and dissemination. Today, there are discussions about the method of intelligence cycle. The discussions have been continued about intelligence cycle for a long time.

We can categorize the discussions in two topics; one is about it is being process based and the other is its being outdated. In our opinion all discussions are correct and onsite decision making experts.

2. Intelligence Within DIKIW Hierarchy

Generally intelligence is necessary for decision-makers and for the leaders of groups. Main concern of intelligence is applying it in the right time and right

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place. The process of getting intelligence begins with collecting data. It is not easy to acquire intelligence because of massive amount of data. With the help of new technologies it has been very difficult to eliminate and evaluate data. So relationship between data and intelligence has to be understood in order to reach accurate intelligence. Recognizing this relationship is provided by DIKIW pyramid. This pyramid is vital, because each type of it has interrelated with others. Decision makers have react according to style of data or information. If they don't know the type of data, they won't react correctly. So the process from data to wisdom must be learned deeply in order to perceive related events.

2.1. DIKIW Pyramid and Hierarchy

Understanding this hierarchy is important, because it shows us the path from data to the wisdom phase. Many definitions have been made for explaining DIKW. The hierarchy has various names. It can be found as the 'Knowledge Hierarchy' or the 'Information Hierarchy' as well. Also some authors describe the pyramid as DIKIW. In this description "Intelligence" is included the pyramid. In fact intelligence is somewhere between knowledge and wisdom. Intelligence is directed to the purpose. One should make sense of all gathered information in order to succeed.
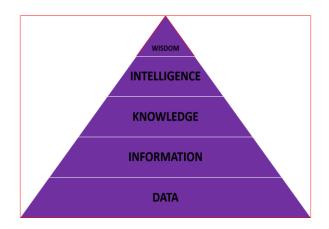

Fig. 1. The DIKIW Pyramid (Hey, 2004)

The DIKIW Pyramid (Figure 1) represents the main relationship from data to the wisdom. Every step has a meaning of its own. Data is the starting point of pyramid. The desired end is reaching wisdom, but it is not easy to reach, because it is obscure.

In Figure 2, we see that data and information is related to and concerns on the past. When we look at
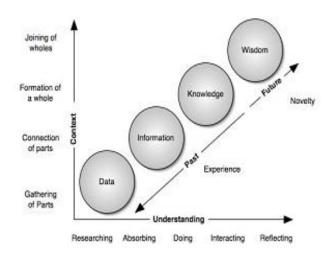

Fig. 2. The Continuum of Understanding (Cleveland, 1982)

knowledge, it is seen that knowledge is related with current time. As for wisdom, it is generally concerns to the future. Generally knowledge deals with interacting information and it intends to get experience. But wisdom has an intuitive side. It provides comprehending all events.

Famous scholar Ackoff defines data as symbols. It is widespread and has no meaning alone (Ackoff, 1989). According to Davenport and Prusak, if data can't be related to other events by itself, it has no specific purpose at all. Data have no interpretation and they can't be the mainstay of a certain events. Data don't give us the reason why something happens. Data are important to create information that is why collecting data are crucial (Davenport and Prusak, 1998).

Ackoff defines information as the answers of "who, what, where and when" questions. For information, meaning is crucial (Ackoff, 1989). Davenport and Prusak define information in accordance with its purpose. Information intends to change a specific subject. Information also must shape the recipient perception. It must affects and forms the person's view. In this aspect, the recipient is very crucial, because meaning can vary according to recipient's mind (Davenport and Lawrence Prusak, 1998).

As for knowledge, Ackoff calls it as a deterministic process which aims to be useful (Ackoff, 1989). Knowledge is dynamic process while information has a static process. Experience is momentous for knowledge (Cleveland, 1982). Davenport and Prusak say that knowledge is quite different from data and information, because knowledge occurs within the mind of the cognizant. Secondly, knowledge is shaped within the organization and processes. Knowledge is quite important, because it increases the efficiency of all

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processes. We must admit that however information and knowledge resemble each other, they are not interchangeable. The most important thing for organizations, the military or other institutions is to make a decision about needs and situations (Davenport and Prusak, 1998). So knowledge help us to decide and to react about situation.

We have mentioned the DIKW pyramid (knowledge pyramid as well), but not cited about intelligence. Intelligence is defined in the Oxford dictionary as "the ability to acquire and apply knowledge and skills". Karabekir defines intelligence as spreading false news at peace, as well as at war (Karabekir, 1998). According to Lowenthal "Intelligence refers to information that meets the stated or understood needs of policymakers... All intelligence is information; not all information is intelligence." (Lowenthal, 2000). This definition stresses that intelligence has a strong tie between information and knowledge. We can say that understanding the soul of intelligence lies underneath the knowledge as well as tacit knowledge.

Another topic within this hierarchy is the wisdom which distinguishes from described above. Ackoff describes wisdom as a non-deterministic process in which the answers are not clear. In wisdom, judgments between good and bad are done philosophically (Ackoff, 1989). Relationship between wisdom and intelligence is significant to evaluate events. It can be assumed that intelligence may stand for thesis, creativity may stands for antithesis. To make sense of something may describe wisdom. Creativity is vital for process, because creative people may recognize missing points or they may find underlying truths. At this point wisdom may help both for intelligence and creativity (Sternberg, 2011). So we must find way to establish link between DIKW and creativity. This link may provide to acquire pure intelligence. The process which data evolve towards to wisdom affects decision makers decree. Data collected from different sources have increased much more than ever. So decision makers have to apply proper methods to attain optimum result

2.2. Intelligence Process

Intelligence intends to accept/deny, evaluate, foster, and perceive information for the use of decision makers. The obscurity must be reduced for decision makers so a holistic approach must be applied for obtaining precise intelligence.

Albus states "intelligence is needed to make plan for the future. It also helps to comprehend, predict, prosper and recognize threats. He proposes world modeling and value judgment as elements of intelligence" (Albus, 1991). In his reviews intelligence

is in the core of decision making process. In order to eliminate risks, one has to acquire absolute intelligence.

Stephan Parker describes information, as well as intelligence, like water. He thinks that some characteristics of intelligences are similar to water. Such as, both come from different sources, both may be easy or hard to obtain, both must be prepared before use (gathering, handling, stocking up and delivering) and both may be falsified on purpose or accidentally. They are alike in some ways but the flow of information has to be managed in order to reach a desired result (Water, 2000). When we talk about intelligence, we mainly mean collecting the data, evaluating and disseminating them. But intelligence is far more than collecting, processing, analysing and disseminating.

Parker continues by making a comparison between water and information. Water is the main element for life and development. Even though it is obvious that there is water everywhere, it is hard to find. If it is found, it is hard to know how to attain it. If it is attained once, it can't be applicable for practical usage. So every organizations or governments seek clean water and they intend to share it with people as easy as possible. But there is a big dilemma in this point that people may tend to drink dirty water because it is tasty and close for them. So, as an organization you can direct people but you can't make them taste the water (Sternberg, 2011).

Intelligence has an intuitive side which is directly related to creativity and originality. As we mentioned about creativity of knowledge, it is directly related to tacit knowledge. So we have to focus on tacit knowledge for obtaining this intuitive side. Knowledge can be classified as tacit and explicit knowledge. Tacit knowledge is a kind of knowledge that cannot be expressed easily whereas explicit knowledge is known and learned by everyone. There is a strong correlation between tacit knowledge and intelligence.

Michael Polanyi is one of the most important participant to term "tacit knowledge". His initial point is the famous philosopher David Hume and John Locke's ideas. Michael Polanyi opposes the idea of objectivism which is about knowledge. According to Hume and Locke, knowledge must be experienced and testable. If not, it can't be named as knowledge. Polanyi also disagrees that knowledge must has personal judgment. He proposes "focal awareness" and "subsidiary awareness". Focal awareness has to be assisted by subsidiary awareness in order to understand the whole object. His theory is based on the fact that we normally have much more knowledge than we talk and mention. He has also described five elements of tacit knowledge: Tacitness, individuality, situationally,

stability, cultural and practicality (Polanyi, 1958). These elements help a lot for creating an organization culture. Also they provide us with holistic view of knowledge. So with the help of tacit knowledge it will be easy to obtain precise intelligence.

3. Discussions about Intelligence Cycle

There have been many arguments about intelligence cycle. Basically the main criticism is about their being outdated. Also another review is that interrelation of each phase has been ignored. However they mention about collaboration, in reality there are restrictions for sharing knowledge. Sharing knowledge is a topic that has strong correlation with knowledge.

The first one is conceptualist method, which refers to result oriented cycle. The second one is proceduralist cycle, which refers to follow process. Below above was mainly about the proceduralist. They have defined different cycles (nested cycles, feedback loops etc.) But I am one of the conceptualist that the process should dwell on results.

For comprehending intelligence cycle, distinction between intelligence and information has to be understood. Information as we stated above, refers to collecting data. It excludes interpreting as well as analysing. Analysing information is crucial, because it transfers information into intelligence.

Because of psychological barriers, security matters and organizational structures, collection and analyst sections do not work parallel in order to obtain intelligence. Also the intelligence cycle is harmed because crucial reports are held back. Communication during the whole process is important but generally it is missing. There is another reality that policy makers do not believe in the cycle's output (Hulnick, 2006).

Managing intelligence ability underpins many activities as well as military, economic, marketing or social activity. Intelligence also affects decision makers judgment. With the help of intelligence, decision making process shortens and becomes more quickly. The more situation conceived the more success gained. In order to get to situation, intelligence is needed first. The intelligence plays a vital role for decision makers who is in charge of any activities. Therefore military, many companies as well as universities have initiated "intelligence brunch" as their sub section.

3.1. Intelligence Cycle

If information is not mentioned clearly or not tackled properly, it will not be helpful for decision makers. Decision makers must have appropriate and precise information in order to take action. For a

reaction, the intelligence cycle must be applied in order to acquire intelligence from raw information (Pre Doctrinal Handbook, 2010).

The intelligence cycle (Figure 3) is the process to compose intelligence from raw data in order to help decision makers. Below at the figure 3 we see six steps. The process begins with intelligence consumers' needs and ends with dissemination of intelligence. Active collaboration is needed during the whole process ("Intelligence Cycle" n.d.). This process has been defined during the 1940's for military intelligence. In this cycle, information turns into intelligence after analysis phase. Finally process ends with dissemination.

Fig.3. Intelligence Cycle ("Intelligence Cycle" n.d.)

The intelligence cycle usually has a self-repeating process which is a continuous process. It usually consists of collection, evaluation, analysis and dissemination. For many years this process has been applied but it is hard to tell that this cycle meets today's needs. For instance, one of the biggest problems is that counter intelligence is missing in the cycle (Heibel, 2012). Another problem is big data, it can be named huge data as well. With the help of technology data have been around more than ever. Data being examined are much more than anticipated. In this point "Data Mining, Network Analysis and Sentiment Analysis etc." are applied to get information from these data.

For the intelligence cycle, Hulnick states two essential problems. The first one is that the process is not well defined and the second problem is about disregarding tacit knowledge and counter intelligence. When considering intelligence as a whole, it can be realized that politicians or intelligence managers expect the system to warn them about future or problem (Hulnick, 2006). But reality is not like that and will not be in the near future…

In this respect, intelligence managers evaluate policy makers demand then step forward. Usually they make a formulation about specific intelligence. Later on they send the topics to policy makers. As Secretary of Defense Donald Rumsfeld mentioned "we do not know what we do not know". So we can say that politicians do not lead intelligence services to obtain intelligence. In evaluating the second step the same situation applies. Collection managers have no time to wait for confirmation for policy makers. They have to collect intelligence whenever they see it. It will not be wrong to tell that the key element for intelligence is intelligence managers. In this process, the work of the analyst is very crucial. They evaluate raw material gathered from many sources then compare them with old data. The analyst and intelligence collectors work at the same time. Sometimes material goes directly to political official before being analysed. This causes problem for politicians, because they assume that the intelligence has been evaluated already (Hulnick, 2006).

3.2. Proposed Models for Intelligence Cycle

Recent discussions are held around concept of the intelligence cycle. Because this cycle has been defined more than 50 years ago, when considering the development of technology and communication, it is easy to say that the process should be redefined again. Discussions have been focused on its being process based or result-oriented. Here below shown some proposed intelligence cycles. Although every cycle suggest different style, they are not totally different. In this point it is important to apply correct cycle, but handling way of them make differentiations.

As stated above there have been defined various intelligence cycles. We can't say that one is better or worse. The most important thing is applying cycle in respect of the needs. But we have to decide which method to use.

With the help of the latest advances in technology, Treverton described a new intelligence cycle (Figure 4). It is based on pushing rather than pulling. The most important thing for this cycle is that it is timely and responses are faster than old ones. Also interrelation during the whole process continues (Treverton, 2001).
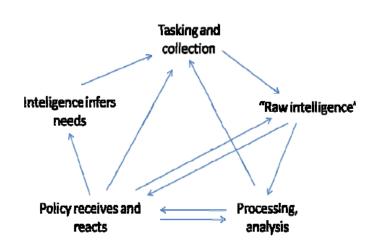

Fig. 4: Real Intelligence Cycle (Treverton, 2001)

Treverton's cycle is short and distinct. He has handled intelligence properly in general. His main purpose is to include leaders or commanders to the process. But there is one point lacking for analysing phase. He had better take into consideration of analysing phase. With emerging technologies, this phase will be more useful than ever. Also he did not mention about the importance of tacit knowledge at all.
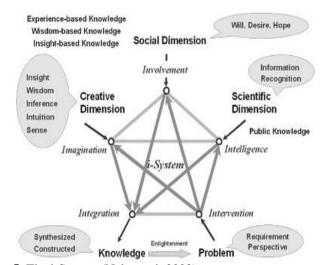

Fig. 5: The i-System (Nakamori, 2003)

Another scholar Nakamori suggested "i-System" to understand the intelligence and knowledge creation (Figure 5). This system consists of five structures: Intervention, intelligence, involvement, imagination, and integration. His starting point is intervention where the process begins. He views intelligence as a "scientific knowledge". Involvement refers to social factors that affect the all process. Imagination is about intuition and integration is all about the final step knowledge of itself (Nakamori, 2003).

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This system is very important to understand knowledge creation. Intelligence, which is named as a knowledge of science, has to be understood clearly for acquiring. Intelligence has to be applied in order to reach wisdom. Although there is a strong tie between knowledge and intelligence, intelligence is sometimes much more than knowledge. It would not be wrong to say that intelligence lies between wisdom and knowledge. When considering presenting big data, we can conclude that tacit knowledge will help much more than anything to understand the whole picture. During the whole process of i-system, tacit knowledge will associate with subsystems.

Those proposed cycles have been defined in order to increase effectiveness of intelligence cycle. The main purpose of these cycles are adopting to new situations. None of the proposed cycle knocking out intelligence cycle. So discussions continues.

Today new technologies facilitate every part of life as well as knowledge management. Sentiment analysis, network analysis and IT systems are some of them. This kind of tools will help us to conceive the intelligence more rapidly. Using new technologies by applying different type of intelligence cycle will provide situational awareness, this topic is vital to reach desired end. For any organizations situational awareness has a key role to adapt capabilities to the new situations. These awareness supports intelligence cycle deeply.

Discussion about intelligence cycle continues, because intelligence producers and intelligence demanders are not the same person. Also they have different view of expectations. Decision makers have to be included in all intelligence cycle process. By-passing steps may lead false results but, because analyst interpreting part is crucial (Duvenage, 2010).

Technological sharing platforms have changed perspective of intelligence. Technology has led to push and pull platforms that shortens the all process. The cycle should provide four results; creating new ideas, solving problems, making decisions and taking action for desired end (Bennet, 2004).

For the cycle, analysis phase is very crucial today. Because open sources like internet and media are excessively huge. However human intelligence is more valuable, open source information may be helpful and cheap. The cycle should be redefined again independently from cycle. The result oriented intelligence cycle may be more fruitful, because it enables interactions between different phases. Focusing on cycle will not change situation. Moreover any cycle defined to take full picture of intelligence will be imperfect unless counterintelligence is included. So we must define a different process which will guide us through intelligence concept. Whether the process depict cycle or not, the process should respect technology, interaction of groups, open sources such as internet and counter intelligence which must be at the core of intelligence cycle.

4. Conclusion

Intelligence requirements are crucial for all intelligence cycles. The requirements can be classified as standing requirement and spot requirement. Traditional intelligence cycle may be applied for standing requirement, which provides information for mid and long term. As for today's needs, they are usually spot requirement, which is specific and timely needed.

The basis of intelligence stems from knowledge and information. Intelligence is a sort of COA which consists of planning, obtaining, comparing, evaluating, envisaging, defining, formalizing, interpreting, authenticating and decision making process. So developing method of intelligence cycle is crucial. In this point, we must find way to define intelligence cycle. The faster intelligence flows to commanders, the faster proper decisions will be taken. In this point the process is not important at all. The most important thing is attaining intelligence timely and correctly. The overwhelming conceptualizations of intelligence cycle may not be useful, because of massive data. So we must dwell on the results apart from intelligence cycle. We must apply methods which can meet anticipated needs and filter non-relevant data. The discussions about intelligence cycle being viable seems to continue for the future.

Acknowledgements

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