

# How To Assess Your Subordinates' Creative Potential? The Development Of A Computational Modeling And Its Implementation In Creative Industry

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## ABSTRACT

The desire to stimulate the creativity of the workers also lies on the manager. Sometimes managers often lose their way in to provide the levels of creativity for their subordinates, and often justify the method which it built in the personality of the workers. Understandably, to develop attitude, mental and creative behaviour is not easy. This study provides insights on how the potential creativity of a person is measured from the aspect of personal (personality) using software applications that help companies or the management in choosing employees, develop workers, and identify potential talent. This measurement was formulated in the form of index scale. The use of this computational modeling provides a clearer picture through the identification of worker's creative characteristics that forming the nature of changes.

**Keywords:** *creativity, computational modeling, creative behavior, creative industry.*

## INTRODUCTION

There are a number of surprising information has been posted via the internet blogs about the characteristics of creative people. However, most seem to focus on the vision of the ideal of an artist or writer's ideal blog about self-image. What the authors are doing in this study is to see how creative people think-based on the understanding of the authors' study (Setiadi, Gautama, Suprayitno, 2013) and apply it to develop creative workers' life skills.

Keep in mind that the characteristics of creative people are not all concerned about positive things. There are both in good and bad creative people's characteristics. There seems to be some characteristics of creative people, such as dishonesty, which is certainly not very nice in social life. More controversial, some studies have shown a relationship between creativity and mental illness. In fact, as we found in our research (Boediprasetya, Setiadi, & Wahdianan, 2010; Setiadi, Boediprasetya, & Wahdianan, 2011a; Wahdianan, Setiadi, & Boediprasetya, 2011), apparently there is some doubt about how right it happened.

Enhance efforts to improve the lives of creative workers can be done by putting ourselves in a series of activities that can help better understanding and assimilating the values of mental character in our daily lives. This study provides a brief guide to measuring the potential and performance of one's creativity. The measurement results can be used as a correction to the way you've traveled in an attempt to infuse creativity to your workers. For new users, this gauge can be a valuable reference for understanding the core concepts behind the potential power of creativity which belonged to the worker or principal are the creative so as to enhance understanding of the values of work in creative industries. For advanced users who often use a variety of ways to measure the performance of creative person will also appreciate various measurement tools that have been developed.

## LITERATURE REVIEW

Approaches of the creativity study can be distinguished into three types, namely: a psychological approach, sociological and socio-psychological (Amabile, 1983). A psychological perspective review of creativity in terms of the powers of one's self as a determinant of creativity, such as: intelligence, talent, motivation, attitudes, interests and other

personality-disposition disposition. The assumption underlying psychological approach is, for example, human organism capable of changing their environment. The sociological approach is more looking at environmental factors of social culture in the development of creativity. The underlying assumption of this approach is that creativity is more than a function of environmental factors. Social-psychological approach called transactional approach. The assumption of this approach is that is, individual creativity is the result of a process of social interaction, where individuals, with all the potential and the disposition of his personality affects and is affected by the environment.

Measurements of creativity can be distinguished on the approaches that are used to measure it. There are five commonly used approaches to measuring creativity (Rimm, 2011), namely: 1) objective analysis of creative behavior, 2) subjective considerations, 3) personality inventory, 4) Biographical inventory, and 5) tests of creativity.

One of the five approaches that is personality inventory approach aimed to know the tendencies of creative person or creativity-relevant personal characteristics associated with creativity. Creative personality includes attitudes, motivations, interests, thinking styles, and the Customs Act. There are some instruments that have been developed, such as: Creative motivation inventory (Torrance, 1963), Creative Attitude survey (Schaefer, 1971), Imagination inventory (Barber & Wilson, 1979), How do you thing? (Davis & Subkoviak, 1975), Group inventory for finding creative talent (Rimm, 2011), Kathena-Torrance creative perception inventory (Kathena & Torrance, 1976), Scales for rating the behavioral characteristics of superior students (Renzulli, 1977), Creative personality scale (Gough, 1979), Creative attitude Scale (Munandar, 1999), a Creative assessment packet (Amabile, 1988), Creative personality Scale (Supriadi, 1994). These tools can be used to identify the differences characteristic of people who have higher or lower in creativity level. Scaling that usually use either forced choice (Yes or No) or Likert's scale (from strongly agree to strongly disagree).

A number of creativity assessments have been compiled and used, such as, the Torrance Test of Creative Thinking (TTCT) which had the form of verbal and figural shapes. One of these measurements is already adapted for Indonesia case study, that is Circles Test from Torrance. This test was first used in Indonesia by Munandar (1982) for her dissertation in term of 'Creativity and Education', with the aim of comparing the size of verbal creativity with creativity figural. Then in 1988, Department of Educational Psychology, University of Indonesia doing the research to standardize the Circle Test and then this test is called as Creativity Figural Test. For the sake of this test has been determined the basic value of creativity level for ages 10 up to 18 years. In 1977, she has introduced the first creativity test specifically constructed for Indonesia cases, that is a test of Verbal Creativity by Munandar (1982), based on the Guilford's Intellectual Structure Model. According to Munandar (1982), to be a creative individual, he/she has to takes the ability to think that flow smoothly, freely, and the original idea of the nature of his/her own mind. Creative thinking is also demanding in question has a lot of ideas, and that all is not easy. In other words, so that someone can think creatively, he/she must be able to be open and flexible in generated the idea. The more idea that can be generated indicates the more creative person. To find out the extent to which a person's level of creativity, the author seeks to develop instruments for measuring the potential creativity of workers in the creative industries.

## METHOD

Instruments that are prepared to measure the characteristics of the creative worker has been developed by the research team. This instrument was the self-assessment developed from the

results of testing the content validity by experts (when Focus Group discussion was held) and 220 workers of creative industries subsector (Design, advertising and Fashion in Bandung, Indonesia) are participated in this study. Each dimension of the measurement is measured through several statements. This measurement has been developed in the first phase of national strategic research projects in 2010. Exploring reliability and validity of this instrument has shown a good reliability and validity in order to measure the creative potential and performance based on the index value. There are 27 characteristics that reliable to assess the creative worker's behavioral characteristics (Setiadi et.al, 2011a). This measurement was formulated in the form of index scale, then we called ad Creative Worker Characteristics Index (CWCI). The index of this measurement can be used to measure whether an individual creative worker shows a high potential for creative performance. The index value of this measurement range between 0 (zero) up to 1 (one). If the index value is getting close to 1 (one) indicates the higher potency of individual creative worker to show his/her creative performance. Formulation of the index is as follows:

$$CWCI = \frac{\left[ \left( \frac{n_{pos}}{n} \right) (\alpha_{pos}) + \left( \frac{n_{neg}}{n} \right) (\alpha_{neg}) + 2r \left( \frac{n_{pos}}{n} \right) \left( \frac{n_{neg}}{n} \right) \right]}{\left( \frac{n_{pos}}{n} \right) + \left( \frac{n_{neg}}{n} \right) + 2r \left( \frac{n_{pos}}{n} \right) \left( \frac{n_{neg}}{n} \right)}$$

where, n = number of item properties;  $n_{pos}$  = number of items that support the nature of creative behavior;  $n_{neg}$  = number of items that do not support the nature of creative behavior; and r = the correlation between the properties of positive and negative in favor of creative behavior. The value for the level of reliability ( $\alpha_{pos}$ , and  $\alpha_{neg}$ ) is calculated based on the weighted composite technique.

## ANALYSIS AND DISCUSSION

This research has been done for the reason that a creative mindset is the result of an underlying the whole idea (creative thinking) and action (creative action) in their life, not just how to get fresh ideas for making creative works such as poster design, brochure or other promotional media. The basic of creative thinking is very important, and their implementations in real daily life beneficial used for career development, managing ideas and promote the achievement of the creative worker performance, improve the welfare of their achievement of individual and organization goals. To identify the characteristics of the people and creative behavior among creative workers in Indonesia, the instrument has been prepared. This instrument was developed in self-assessment version (Setiadi et.al, 2011a). The validity of the instrument is based on the content validity involving experts (namely, P. Tabrani, R. Farid, and B Yustim when the Focus Group discussion has been held).

Table 1 presents the results of factor extraction. The results of this formulation determine the characteristic which supports and does not support the nature of creative workers' characteristics. This result is a step further after measuring the adequacy of samples that demonstrate the value of KMO and Bartlett (0.737) are significant.

Table 1. The results of factor extraction (2 dimensions of creative workers' characteristics).

Creative workers' characteristics that	
support the nature of creative behavior	do not support the nature of creative behavior
1. Fantasy	15. Deliberation
2. Aesthetics	16. Trust
3. Feelings	17. Straightforwardness)
4. Ideas	18. Altruism

- |                          |                        |
|--------------------------|------------------------|
| 5. Warmth                | 19. Compliance         |
| 6. Gregariousness        | 20. Modesty            |
| 7. Activity              | 21. Tender-mindedness  |
| 8. Excitement-seeking    | 22. Anxiety            |
| 9. Positive Emotions     | 23. Angry Hostility    |
| 10. Competence           | 24. Depression         |
| 11. Order                | 25. Self-consciousness |
| 12. Dutifulness          | 26. Impulsiveness      |
| 13. Achievement Striving | 27. Vulnerability      |
| 14. Self-discipline      |                        |

This instrument has been developed in such a way that is easy to use. A simple piece of software has been developed to be free of manual activities like sifting through positive and negative questions, calculate score and calculate the index using the formula CWCI. With filled in the appropriate properties and answering questions with answers that reflect the condition of the person being measured, the computer will calculate the indices and descriptions that interpret the measurement results. Software developed using Java, a software developer that is included in the Open Source Software (OSS). Therefore, to be able to run this program you need to have a computer program Java Runtime Environment (JRE) is installed. Figure 1 shows an example of how to use this computational modeling to assess individual creative potential. As shown in instruction section, select the nature of your characteristics by clicking the boxes in front of the characteristics (you can choose more than one nature).

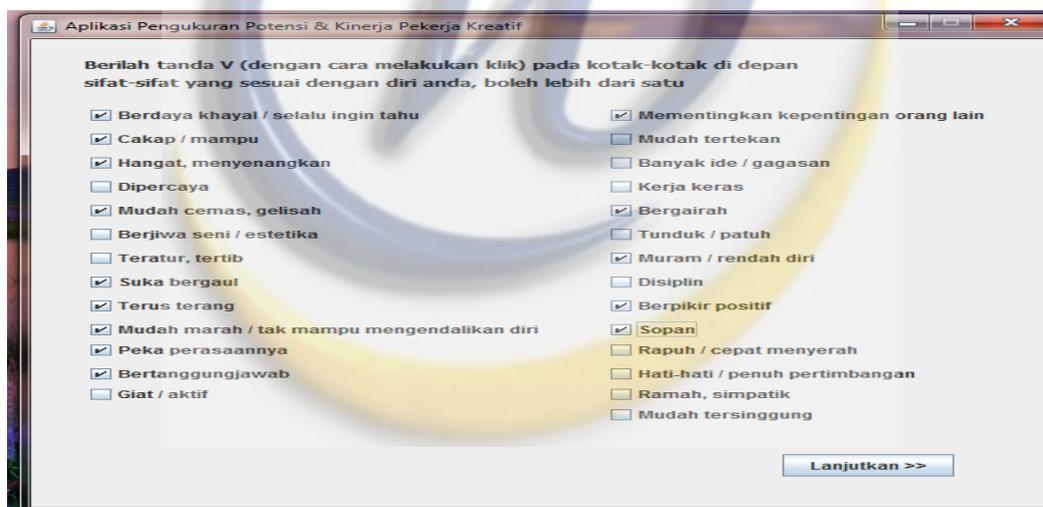


Figure. 1. Software application measurement to assess individual's creative potential (a sample of on-line assessment in Bahasa Indonesia version).

After clicking the boxes of your characteristics, the result is shown as Figure2.

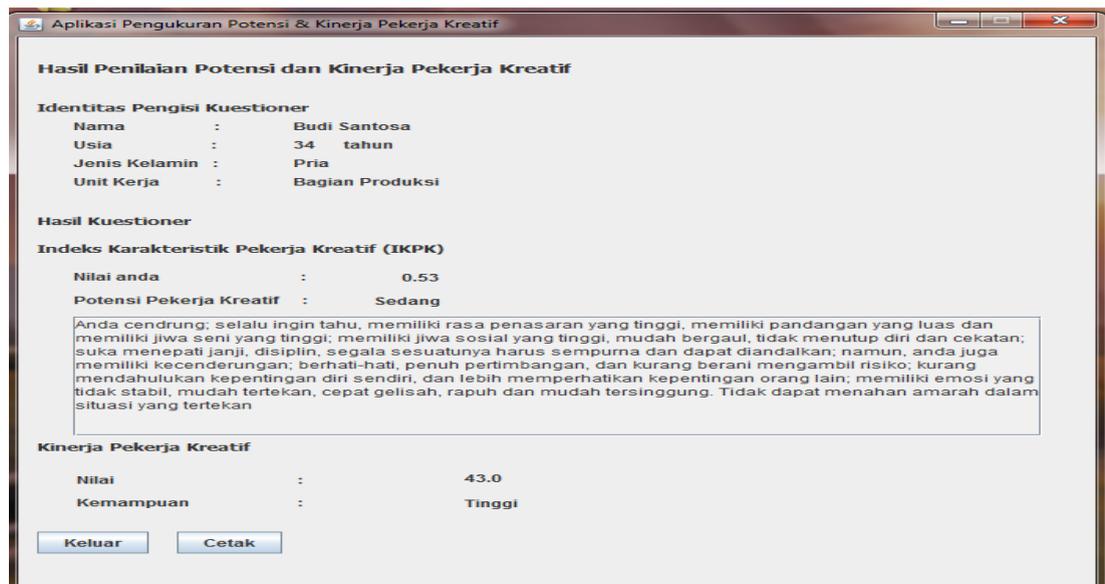


Figure. 2. Result of individual's creative potential (a sample of on-line assessment in Bahasa Indonesia version).

Development of software application instrument for identifying the potential of creative workers in the creative industries have been preceded some research activities by the authors (Boediprasetya et.al, 2010; Setiadi et.al, 2011a; Wahdianan et.al, 2011; Setiadi et.al, 2012; Setiadi et.al, 2013; Setiadi et.al, 2014). Here is the track record of the activities of the research by the authors who has done some years before. Some previous studies have been initiated when the authors did a study about the identification of the elements forming the nature of changes (change of DNA) in the formulation of the business students' mindset and way of thinking (Setiadi, 2009). Similarly, results of the Wahdianan's study (2009) about the visual expression of a growing medium in the form of art based on space and time. Both of these studies were inspiring for sustainability studies relating to the efforts to find out the factors that encourage the creation of creativity and the creative industries. Based on studies conducted by Guilford (1978) as well as Horng and Lin (2009), the implications of the development of this measuring instrument are produced measurement tool to measure the potential of creative people. Target of the façade is the realization of creative potential of the measurement instrument makers in the creative industries. Then, after testing gauge creative behavior made against objects the actors or creative workers in the creative industry, the continued application of the empirical study of performance measurement instruments and creative development of operational models for construction and development of creativity in the creative industry. A manual book to guide of using this assessment has been published in bahasa Indonesia version (Setiadi, et.al, 2011b).

In the organizational context, the worker is a strategic focal point for completion of the work's success in who rests. However, it should be realized that workers have the potential and diversity of their respective abilities, they are unique with all potential and existing capacity on themselves and the uniqueness of this cannot be uniform zed. Managers should appreciate the differences that exist on them. The uniqueness of the workers is indeed cause its own problems, one that must be known and solved so that managing workers in one integrated framework of absolute attention, particularly the consideration on the development of creativity. Discover the creative potential of someone is not easy. However, this instrument has helped to provide an overview of the creative potential of your workers. After recognizing the potential and creative performance of a person, then the necessary follow-up to manage and develop its potential.

In the paradigm of thinking society about creativity for Indonesian people, anyone has the view that the creativity requires a climate of openness and freedom, so that often creates conflict, as opposed to the discipline. This perspective is not right. Creativity thus demanded discipline in order to be transformed into products that are real and meaningful. Disciplined here consists of the discipline in a particular field of expertise because after all a person's creativity is always associated with a particular field or domain, and creativity are also demanding internal discipline attitude not only has ideas but can also come to the stage of development and specified the responsibilities of an idea until it has been completed.

The need for creativity in the work context today is the perceived needs of each organization. In an era of increasingly globalizing and competitive environment, this individual is required to prepare the mentality to face the challenges in the future. Therefore, the development of the creative potential that basically exists on every human being, especially in those who have the ability and superb intelligence to note, whether it is for yourself personally and embodiment to the continuity of the organization.

In the development of the potential and creativity must be left characteristics and also the creativity that needs to be optimized on the workers from the aspect of cognitive (thinking), affective (feelings), and psychomotor (behavior). Internal motivation grown with attention to the potential and creativity of individuals and creating a climate that guarantees the freedom of creative expression for psychological workers in environmental work.

It is a challenge for managers to be able to nurture and develop optimally talents, interests, and abilities of each employee so that they can fully realize the potential of his/her self so you can eventually provide a meaningful contribution to the company (Organization). The management may develop ways through their support to creativity in the form of attention, gifts or awards and confession for employees who show good ideas. Employees might try to be creative when they feel that their creativity is valued and supported by the organization. In such circumstances, the likelihood of the risks connected with the stagnation of creativity is a little, and the perception of creative ideas to be effective will be high.

After identifying approach or style that best matches performed by management in managing and developing creative workers in work context will be more helpful in the process of solving the problem in a more efficient and effective. In addition to help with problem solving, creativity can also help a person identify problems which makes others have failed to do so. Foster intrinsic motivation and problem solving are two areas in which the employer can increase the creativity of his workers. To promote creative thinking, managers need to identify what can motivate their workers and how things around it. Provide them the opportunities with a wide choice of activities to complete the work enabled them to be more motivated intrinsically their creative performance and therefore will appear in completing the task.

Training and development programs that need to be implemented in the participating developing creative industries have been compiled. One of the public service programs has been directed so that its benefits can be felt directly by the people or community. The goal is a society that is economically productive (micro enterprises) on some of the creative industry subsector in creative cities in Indonesia. Programs offered include:

- Measuring the performance of creative workers in the creative industries so that they can be identified in its tendency to behave, feel, think and act in a patterned embody her creative works.
- Give understanding to creative workers in the creative industries on business ethics.
- Encourage creative workers in the creative industries to develop its business.
- Gives insight and training to creative workers in the creative industries about the design.

- Provide training to creative workers in the creative industries of entrepreneurship with bringing in scholars in his field.

## CONCLUSION

From the use of this computational modeling trials during the period of development of the instrument, measuring creative potential is useful in mapping the creative potential and performance of the workers in the Indonesia creative industries. The use of this gauge provides a clearer picture through the identification of elements forming the nature of changes (Change of DNA). So creative workers in the creative industries can be prepared armed with his/her creative skills excellence in analyzing problems, communicate and trust yourself.

Everyone basically has the potential of each. Potential, someone could come from his carriage from birth and his experience. If bringing someone could reach the level of creativity, not necessarily he was able to realize its potential. Especially when the environment where he works is poor stimulation, such as his superiors that being authoritarian, limiting or overwhelming lack of freedom on his subordinate, and not accustomed to listening to the opinions and ideas of others. You as a leader have to strive to develop the character of your subordinates to desired outcomes for their live with passion and lead them with compassion.

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## REFERENCES

- Amabile, T.M. 1983. *The Social Psychology of Creativity*. New York: Springer-Verlag.
- Amabile, T.M. 1988. A model of creativity and innovation in organization. In B.M. Staw & L.L. Cummings (Eds). *Research in Organizational Behavior*, 10, 123-167.
- Barber, T. & Wilson, S. 1979. The Barber suggestibility scale and the creative imagination scale: Experimental and clinical applications. *The American Journal of Clinical Hypertonic*, 21(2-3), 84-108.
- Boediprasetya, A., Setiadi, N.J. & Wahdaman. 2010. Identifikasi unsur pembentuk sifat kreatif mahasiswa DKV. Paper presentation at *Seminar Nasional Penelitian dan Pengabdian Masyarakat (SNP2M)*, tema: “Penelitian dan Pengabdian kepada Masyarakat Berbasis Industri Kreatif untuk Mendukung Kemandirian Masyarakat”, in *Politeknik Negeri Jakarta (Indonesia)*.
- Davis, G.A. & Subkoviak, M.J. 1975. Multidimensional analysis of a personality-based test of creative potential. *Journal of Educational Measurement*. 12, 37-43.
- Gough, H.G. 1979. A creative personality scale for the Adjective Check List. *Journal of Personality & Social Psychology*, 37(8), 1398-1405.
- Guilford, J.P. 1978. Creativity: Its Measurement and Development. in Parnes and Harding, A *Source Book for Creative Thinking*.
- Hornig, J. & Lin, L. 2009. The development of a scale for evaluating creative culinary products. *Creativity Research Journal*, 21(1), 54-63.
- Kathena, J. & Torrance, E.P. 1976. *Manual for Kathena-Torrance Creative Perception Inventory*. Chicago, IL: Stoelting.

- Munandar, R.C.U. 1982. *Anak-Anak Berbakat: Pembinaan dan Pendidikannya*. Jakarta: Rajawali.
- Munandar, R.C.U. 1999. *Pengembangan Kreativitas Anak Berbakat*. Jakarta:Depdiknas dan Rineka Cipta.
- Renzulli, J.S. 1977. *The enrichment triad model: A guide for developing defensible programs for the gifted and talented*. Mansfield Center, CT: Creative Learning Press.
- Rimm, S. 2011. Creativity Identification Instrument. Retrieved from <http://www.sylviarimm.com/cii.html>, at August 21<sup>st</sup>, 2011.
- Schaefer. 1971. *Creative Attitude Survey*. Jacksonville, IL: Psychology and Educators, Inc.
- Setiadi, N.J. 2009. *Identifikasi Unsur-unsur Pembentuk Sifat Perubahan (Change DNA) dalam pembentukan Cara dan Pola Pikir Mahasiswa FBM Universitas Widyatama*. Laporan hasil penelitian (unpublished research report), BPPM-Universitas Widyatama.
- Setiadi, N.J., Boediprasetya, A. & Wahdianan. 2011a. Pengembangan Model Pengukuran Kinerja Pekerja Kreatif pada Industri Desain, Periklanan dan Fashion di Kota Bandung. *Report of National Strategic research grant*, (funded by Directorate of Higher Education of Indonesian Ministry of Education and Culture).
- Setiadi, N.J., Boediprasetya, A., & Wahdianan., 2011b. *Seberapa kreatifkah pekerja Anda?: Panduan mengukur potensi dan kinerja kreatif seseorang (How creative your employee is?: A Guide to measure someone's creative potential and performance)*. Jakarta: Prenada Media, Publishers.
- Setiadi, N.J., Boediprasetya, A., & Wahdianan (2012). Boosting Indonesia's creative industries: Identification of people's characteristics and creative behaviour. *Quaestiones Geographicae*, 31(4), 53-62.
- Setiadi, N.J., Gautama So, I. & Suprayitno. 2013. Assessing Creativity Skill Development in Art and Design among Undergraduate Students: Implementing creative potential simulation software to capture creativity-relevant personal characteristics. Paper presentation at *the IEEE International Conference on Teaching, Assessment and Learning for Engineering (TALE 2013)*, in Bali, Indonesia.
- Setiadi, N.J., & Puspitasari, D.M. (2014). Empirical study of entrepreneurial attitudes and intentions among Indonesian business students. *DLSL Journal of Management*, 1(1), 145-162.
- Supriadi, D. 1994. *Kreativitas, Kebudayaan & Perkembangan Iptek*. Bandung: Alfabeta.
- Torrance, E.P. 1963. *Creativity*. Washington, D.C.: National Education Association.
- Wahdianan, Setiadi, N.J. & Boediprasetya, A. 2011. Mental attitude and creative behavior among Indonesian creative workers in design industry. Paper presentation at *the International Conference on Creative Industry 2011 in Bali (Indonesia)*.
- Wahdianan. 2009. *Ungkapan visual rangkaian tumbuh dalam wujud medium seni rupa berbasis ruang dan waktu*. Laporan hasil penelitian (unpublished research report), BPPM-Universitas Widyatama.