

An Integrated Framework for “Art Thinking” : How to utilize the process of art for business innovation

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1. Introduction

1.1 Background

“Art thinking” has been gaining greater interest in business contexts that aim to put the thinking behind and creative artistic processes to use. This concept is founded on the supposition that diverse art forms and creative art processes can engender novel business ideas beyond conventional frameworks, particularly when uncertainty arises in society. This increasing attention reflects the situation that many businesses encounter in which business innovations are deeply affecting our society through, for example, how we acquire information, communicate with each other, and work. The term “digital transformation (DX)” also emphasizes how deeply digital technologies are changing a broad spectrum of society, from organizational structures to the services that change lifestyles. The deep impact of digital technology is causing the “deframing” of society—that is, the destruction of existing frames and the dynamic reintegration of

elements that used to be in the old frameworks (Takagi, 2019).

Given the deep impact of digital technology on society, there is a growing need to rethink social systems and norms without being bound by existing common sense. In this regard, art is expected to provide a unique perspective and opportunity to rethink the challenges of our society, thus leading to new business opportunities. Carlucci and Schiuma (2018) explored what role the arts play in a rapidly evolving business environment based on literature and cases. They suggest that organizations need to be adaptable and resilient in their environment to achieve continuous growth. The use of arts in business is being practiced in a way that works on emotions from a human-centered perspective so that businesses can develop more human creativity when digitalization and smart technology cannot provide added value.

The practices to incorporate and take

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advantage of the arts in business and management are also called arts-based initiatives (ABIs). Schiuma (2012) defines ABIs as “any management action using one or more art forms to enable people to undergo an aesthetic experience within an organization or at the intersection between the organization and its external environment, as well as to embed the arts as a business asset” (p. 47). One of the major forms of ABI is artistic interventions, which attempt to intervene in business operations with various art forms to enhance inspiration, creativity, and communications. Such collaboration of the business and art sectors is being developed today.

As the field of contemporary art has expanded since the 1980s, the contact points between corporations and art, and between corporations and artists have also changed (Aichi University of the Arts, 2019). Particularly in Japan, against the backdrop of the country’s economic growth, corporations have supported exhibitions and artists’ production activities as part of their *mécénat* (cultural contribution) activities. With the economic downturn in the 1990s and beyond, many of these *mecenat* activities came to an end. Despite this, Spiral and the Intercommunication Center (ICC), operated by NTT East, continue to be influential cultural facilities for media art.

However, since then, there has been a shift from a form of unilateral support for art from

corporations to more active use of art and a shift in the way corporate teams collaborate with artists. In Dentsu Bijutsu Kairo (2019), following patronage-style management from the 1920s to the 1970s and management and cultural support activities from the 1970s to the mid-1990s, they point out that there was a shift from branding with contemporary art from the mid-1990s to the mid-2000s, next-generation art and innovation from the mid-2000s to the mid-2010s, and rising attention toward art thinking as “questioning” from the mid-2010s onward. In addition, Yaegashi et al. (2019) categorize the value of incorporating art in corporations as (1) using art in marketing, (2) using art in organizational development, and (3) using art for creativity and innovation creation.

As a representative example, we point out the efforts of Ars Electronica (Linz, Austria), a pioneering cultural institution for media art, which is known for its Ars Electronica Festival, an international media art festival that has been held since 1979. Since the 2010s, Ars Electronica has been deepening its ties with the corporate world, connecting artists and corporations, and using cutting-edge technology to contribute to the development of corporate innovation (Washio, 2017). The results of these efforts include the Drone 100 project, which uses swarm control of drones to draw pictures in space in collaboration with Intel (Ars Electronica, 2016). In addition, they have formulated art thinking as a methodology for

identifying questions and have begun to educate on this methodology and develop human resources through collaboration with advertising agencies and other organizations (Hakuhodo, 2021).

In the 2010s, Japan saw an increase in the number of companies, such as TeamLab and Rhizomatiks, that have gone beyond the scale of artist collectives to create artworks as corporate entities. They are not only engaged in art activities such as holding exhibitions but are also expanding their activities into peripheral areas surrounding art, such as entertainment and architecture. It can be said that the barriers between art activities and corporate activities have been lowered, and more equal and diverse developments can be seen.

As seen above, the role of arts is expanding from pure aesthetics to aiming to find social challenges and explore solutions. Even so, existing research that deals with art thinking is aiming to stimulate business persons through arts while retaining the arts as a black box. However, there is a great opportunity to provide fundamental solutions to social

1.2 The variety of art forms

There is a wide range of fields of art forms, from impressionist paintings and classical music to digital art and contemporary dance. Figure 1 shows the framework of art fields and is comprised of two axes: practical and non-

challenges if we can demystify the process of art creation and utilize it in day-to-day operations.

The question of how the features of the creative process surrounding art can be utilized in the business context has not been deeply studied. Many arguments and practices of art thinking are limited to activities such as artworks in offices, inviting artists to comment on businesses, and asking artists to produce inspiring artworks for businesses. In contrast, we suppose that it is important to demystify the process of art creation and utilize it in business in day-to-day operations to fully take advantage of arts for businesses that are encountering challenges.

To this end, this article attempts to combine knowledge on creativity demonstrated in psychology and management studies and to clarify the academic forefront of this topic. This article also constructs an integrated framework for innovation that incorporates the process of art creation. The remainder of this section discusses the background of this research in more detail and provides the approach of this research.

practical and social impact and pursuit of aesthetics. For the vertical axes, practical means that the primary aim of the artwork is to serve practical purposes, such as promotion (pop art), daily use for drinking and eating

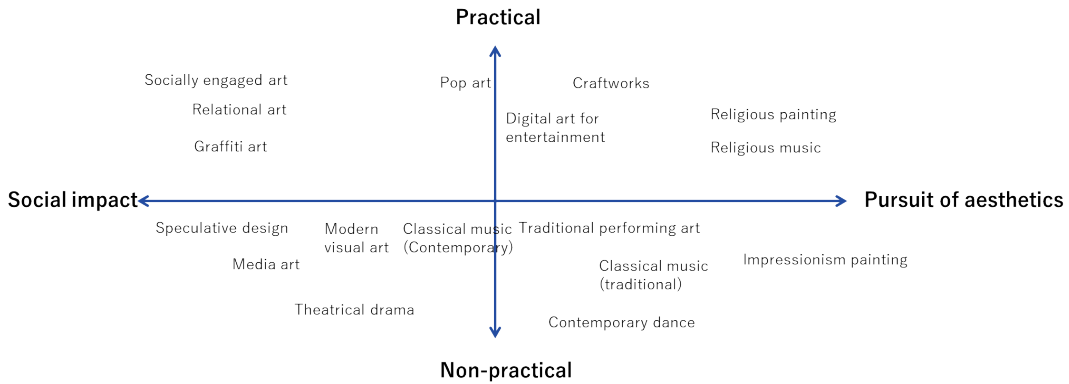


Figure 1. Variety of art forms

(craftwork), and a part of digital art (for staging concerts). For the horizontal axes, “pursuit of aesthetics” (right side) suggests that the primary emphasis of the artwork is on pursuing aesthetics and beauty rather than conveying a particular message. Conversely, social impact (left side) suggests that the artworks are oriented to raise concern toward specific social problems or related solutions, such as is seen in speculative design, socially engaged arts, and media arts.

Each specific art field, such as “media art” and “craftworks,” is shown as an example, and the authors acknowledge that there is a wide range of diversity, even in a single art field. Nonetheless, this framework can serve as a

1.3 Structure of the paper

This paper takes the approach of a combination of knowledge in management, economics, and psychology. Based on this interdisciplinary

pointer that shows how the artwork discussed at each point relates to society.

This research acknowledges that a wide range of art fields can potentially be utilized for social and business innovation. However, given that the study’s primary aim is to extract the core process of art creation for utilization in social innovation, this paper mainly focuses on art forms that aim to have a social impact, as shown on the left side of Figure 1. Additionally, this research focuses on the impact of arts on creativity and innovation; therefore, the use of arts to enhance brand image and marketing purposes, such as seen in Kim et al. (2018), was not included.

approach, the sections are structured as follows. Chapter 2 reviews the literature on the arguments on art thinking, including documents

written by scholars, artists, curators, and practitioners. It provides a general overview of the discussion on art thinking. Chapter 3 reviews the literature on creativity in contemporary visual art based on a psychological perspective. Chapter 4 reviews prior studies on creativity in business

innovation, mainly from management and economics perspectives. Based on these prior studies, Chapter 5 proposes the integrated framework of art thinking for social and business innovations. Chapter 6 concludes the paper with supplemental discussions.

2. The overview of art thinking

2.1 Growing attention toward art thinking in Japan

Recently, there has been a lot of attention focused on the idea of attempting to incorporate not only the interest in “art” itself but also the thoughts and experiences in the process of creating art into business. This section briefly reviews major arguments on art thinking.

Yamaguchi (2017) raises some major points as current changes. First, the limits of logical and rational information processing skills are being exposed from the commoditization of correct answers and the limits of methodology in the world of VUCA (volatility, uncertainty, complexity, and ambiguity). Yamaguchi also says that by combining “human resources who are responsible for art” and “human resources who are responsible for science,” the management quality of the organization improves, and when “art” and “science” are compatible within an individual, the individual’s intelligence can have a good performance. Yamaguchi (2020) points out that if businesses find and solve problems in society, this is

essentially what the artist is doing. In addition, Yamaguchi says that innovators are realizing innovation through strong impulses that go beyond economic rationality, and this strong urge is often similar to that common to artists.

Akimoto (2019) says that unique perspectives and insights that can ask the right questions will be required more than the ability to elicit answers. He states that art thinking has great potential for business persons who want to be creative and try new things. He adds that today’s art is a place for thought experiments that make new proposals for social issues linked to technology and design and considers how our society should be linked to contemporary thinking. He also says that contemporary art, which is said to be projected ahead of the times, is loaded with hints to help with understanding this ever-changing world, and contemporary art is like a compass that searches for the relationship between oneself and society. The contemporary arts have a

high affinity with the present age in which they exist and uncertainty increases.

Wakamiya (2019) states that “art thinking” is a way of thinking that creates “differences.” He describes that the maturity and saturation of the market have changed the value paradigm from a “factory” paradigm to an “art” paradigm. Regarding the relationship with business, he says that just as an artist creates a piece of work through inspiration, businesses are inspired by encounters with “foreign things,” and the organization can evolve and create a new “work.” According to Wakamiya, innovations that spread over time, are sustained, and change the lives of posterity are needed, rather than those based on short-term scales. He says that innovation is to increase the axis of new value, and it is necessary to create a new axis, doubting the axis of “speed and scale.”

In contrast, Dentsu Bijutsu Kairo (2019) states that by incorporating art power into the

2.2 Art thinking and design thinking

As a proximity area of art thinking, “design thinking” has also received widespread attention. This section describes the relationship and differences between “art thinking” and “design thinking.” Whitaker (2016) describes design thinking as “a framework for generating the process of designing a product into a creative problem-solving tool” and says that art thinking shares some similarities with

business, each business person will ask about the ideal way of doing business and will bring about a multidimensional art effect within the business. They say art power is fourfold (problem-raising power, imagination, practical power, co-creative power) and is a driving force of creation that is created through the process of creating artwork by an artist. They also say that the expected art effects are branding, innovation, organizational revitalization, and vision conception.

As seen above, the surge of the term “art thinking” in Japan since the late 2010s reflects challenges in the business environment that are required to provide disruptive and transformative services and the expectation that arts may provide a solution for it. This movement is generally understood as an expansion of the role of arts; however, leading efforts from management and business sides and empirical research are still limited.

design thinking. However, she states that product design starts with an external brief, while art thinking emanates from the core of the individuals.

Wakamiya (2019) says that design thinking sympathetically finds and solves potential problems, and art thinking does not start from problems but innovative value by internal impulse. Akimoto (2019) says that design

thinking is used to solve the problems that customers have, but art thinking is characterized by starting with the question of what is the problem. In addition, Akimoto says that the concept of speculative design is drawing attention in the field of design, and designs that raise problems are beginning to be advocated and are becoming a trend of design in an era when the answer cannot be known.

In the intersection of arts and design, there is a field called speculative design. Dunne and Raby (2013) refer to speculative design as the use of design as a means of speculating how things could be. They say, speculative design uses your imagination “to open up new perspectives on what are sometimes called wicked problems, to create spaces for discussion and debate about alternative ways of being, and to inspire and encourage people’s imaginations to flow freely (p.2).” They suggest that speculative design can act as a catalyst for redefining our relationships.

Hasegawa (2020) describes speculative design as a design attitude that has a cross-border and

critical look and focuses on raising issues. According to Hasegawa, design is said to be a means of solving problems, but if the problem setting itself is wrong, the situation will not improve, and in today’s increasingly complex society, the ability to re-question from the root of things is crucial. Miyatsu (2017) says that “speculative design” is different from the conventional problem-solving design that pursues ease of use and beauty. He states that speculative design is a problem-raising type design that proposes a different possibility from the present world while envisioning the future.

As seen above, generally, design and design thinking are utilized when a goal or problem is already presented, and the challenge is to identify/devise a means to reach the desired outcome. Conversely, art and art thinking are used when the problem itself is not defined, and the main focus is to question people’s perception, raise a speculative discussion, and raise a concern on an issue. In this regard, speculative design is close to, or even a part of, the art domain.

3. Creativity in Art

This section reviews prior studies mainly based on those for contemporary art from

psychology’s perspective.

3.1 Contemporary art as problem-solving activities

Contemporary art is considered difficult to understand. One reason for this may be that

rather than simply reproducing what is in front of us in a realistic manner, contemporary art is

expected to create work that explores something new. Moreover, instead of searching for a fixed answer to a given problem, the exploration of open-ended problems—that is, a flexible way of dealing with challenges in new domains that are constantly changing—could be an important aspect of human intellectual

3.2 Psychological research background on creative activities in art

How can the creative activity of art be examined scientifically? Art creation involves unpredictable problem solving with an unfixed answer because the activity of creating artwork is the creation of something that does not exist. From the view of cognitive psychology, creative activities, such as modification of the elements of creation and analogy, are related to art activity in a complex manner (e.g., Gentner, 1983; Okada et al., 2009; Yokochi, 2020). Nevertheless, as these processes take place inside an artist and are thus internal and not visible, a widespread view suggesting that creativity is possessed only by geniuses and that gods give creative ideas to only a few people is proposed as an explanation for the phenomena that occur in the problem-solving process of art creation (Sawyer, 2006; Weisberg, 2006). This view refers to the image that emerged from the cases of many artists and scientists claiming that a creative problem is solved in an instant by a sudden revelatory event, such as is described in a letter by Wolfgang Amadeus Mozart as “thoughts crowd

activity.

Therefore problem-finding and its problem-solving activity constitute an essential part of human intellectual activity, and the creative process of expert contemporary artists can be said to be related to the central core of human intellectual and creative activity.

into my mind as easily as you could wish. When and how do they come? I don't know and I have nothing to do with it” (Weisberg, 2006, p. 75). Nevertheless, during the development of psychological research, it was revealed that the process of creating could be captured by an objective view (Weisberg, 2006). Currently, from a psychological perspective, creativity is considered an intellectual activity that anyone can perform. The following provides an overview of psychological research on creative activity.

Guilford (1950) incorporates the personality traits of creative individuals, such as artists, as a factor in his model of intelligence and argues that divergent thinking is located at the center of intelligence. Furthermore, Torrance (1974) developed a creativity test that captures creativity through a psychological measurement based on Guilford's model and attempted to measure creative performance. However, this creativity test's validity has been challenged because the results of expert artists' tests are not always as good as expected (Sternberg &

Lubart, 1999). In contrast, Simonton (1997, 2009) extends Campbell's (1960) blind-variation and selective-retention model of creative thought with a focus on the background of creative experts.

Next, regarding the evaluation of the creativity of ideas, recent psychological research mainly considers that an idea is creative if it satisfies both evaluation from the viewpoint of originality and novelty and evaluation from the viewpoint of practicality and appropriateness (Paletz & Peng, 2008). The Consensual Assessment Technique (CAT), proposed by Amabile (1983), considers creative work to be that which is unanimously rated as creative by appropriate raters who are familiar with the task domain. This method increases the reliability of the grade by emphasizing the degree of agreement among the raters.

According to Campbell's (1960) methodology, which was inspired by Darwin's theory of evolution, although many of the starting points required in the expansion of knowledge may fail, the ideas that function would remain and be generalized. Simonton (1997, 2009) refined this model; examined factors related to the success of many creators, such as Picasso, Da Vinci, and Goethe; studied their childhood environment using a quantitative approach; and identified their relationship with creativity. However, there is a limit to discussing the various creative activities in art, such as visual arts, music, literature, and performing arts,

based only on the information collected from the literature of the past. Accordingly, although research on art creation has progressed through experimentation and documentation, much of the process and method of creating artwork remains unclear, and its value and significance have not yet been recognized (Sternberg & Lubart, 1999; Weisberg, 2006).

In contrast to such quantitative studies, some studies examine human creativity qualitatively, such as Wallace and Gruber's (1989) study, which discuss detailed case histories of great people, such as Wordsworth and Darwin and Gardner's (1993) study, which uses an interdisciplinary framework that focuses on the social relationships surrounding great people, such as Picasso and Stravinsky. In other words, it is a way to understand creative activities through skilled research using Gardner's interdisciplinary framework that focuses on the social relationships surrounding great people. While quantitative research attempts to establish general laws of creativity, case study research attempts to capture creativity in a single case of a famous scientist or artist. In modern psychology, where quantitative and objective analysis is the norm, the qualitative approach of single-case studies has seen a resurgence in recent years. Although there are limitations to the objectivity and generalizability of explanations in single cases, their value is recognized, especially in creative discovery processes that are overlooked in

quantitative studies.

3.3 Problem-solving in the study of art

Based on this background, research on the relationship between problem-solving or problem-finding and domain expertise (e.g., Newell, Shaw, & Simon, 1962) developed through the cognitive study of creative activity. Early research on problem-solving dealt with well-defined problems in limited domains, such as puzzle solving. However, some of the problems were ill-defined and had no definite answers, such as the creation of a painting or composition of a symphony. These problems are said to be more creative than well-defined ones that seek appropriate or correct answers (Kozbelt, Beghetto, & Runco, 2010). In terms of solution uncertainty, art-making can be seen as ill-defined problem-solving (e.g., Ishibashi & Okada, 2010; Sato, 1998).

Contrastingly, problem-finding, another important aspect of creativity, can be seen as a criticism of the concept of problem-solving (Runco, 1994). As the problem is considered to be predetermined in the traditional view of problem-solving, creative activity such as painting cannot be explained because it is insufficient to illustrate how creators can be aware of the existence of problems in the problem space and what motivates them to actively understand the problem through subjective experience. In other words, a heuristic search does not apply to situations in

which elements constituting the problem space are not predetermined, such as the creation of artwork (e.g., Kozbelt et al., 2010).

Thus, problem-finding can be said to be an assertion that explains the creative process from a subjective perspective. In fact, the difference between the frameworks of problem-solving and problem-finding lies in the emphases and goals of each theory and the researcher's personal orientation, but it is not that significant in terms of the nature of these two concepts (Kozbelt et al., 2010). Hence, this chapter considers both aspects as problem-solving in creation.

The discussion so far, which has been examined from the psychological domain, suggests that the creation of art by expert artists is an activity of solving ill-defined problems that explores new knowledge through the process, and it includes the essence of human creativity, which is to organize creation by effectively using pattern recognition and reasoning and to create something new by confronting the unpredictable. It is suggested that the essence of human intellectual activity is contained in this. In other words, the actual process of a skilled contemporary artist during creation can be said to be the core of creative activity.

3.4 Problem-solving by visual artists

Next, regarding studies focusing on the creation of visual art, psychological studies of the creative process in art have examined the importance of setting up a problem space in the early stages of creation, including concept discovery (Getzels & Csikszentmihalyi, 1976) and the stages of creation (e.g., Mace & Ward, 2002).

Weisberg (1986) analyzed the creative process of Picasso's *Guernica* based on retrospective materials and found that creative solutions to ill-defined problems, such as art creation, arise from general cognitive processes and rational processes based on proficiency in specialized fields. However, this method is based on retrospective data, such as sketches and documents, and many of them are missing from the search for the problem space of artists in progress. In other words, it would be more realistic to deal with phenomena close to the on-time of artists in progress to clarify the gradual process.

In a pioneering study based on on-time data of the creative process, Getzels and Csikszentmihalyi (1976) conducted a psychological experiment on art students, focusing on early problem detection. In Getzels and Csikszentmihalyi's experiment, art students were asked to spontaneously select a motif from a large number of materials and draw it, and they found that the orientation toward "problem finding," in which students attempted

to grasp the motif from their own perspective, correlated with the high quality of their artworks. Further follow-up research after graduation showed that there was a correlation between such problem-finding orientation and success as an artist seven years later (Csikszentmihalyi & Getzels, 1989). As mentioned above, although there are limitations to the analytical methods used in this period, it is noteworthy that this study points out the importance of early problem finding in creative work.

Mace and Ward (2002), who point out that there are four phases in the creative process of artists, conducted a study of actual artists and examined the entire creative process. In their study, grounded theory was used to investigate this phenomenon and to develop a descriptive model of the art-making process, and they found that when artists come up with an idea for a work of art and develop it into a concept, they engage in activities such as developing the idea through drawing and gathering information from the outside. Specifically, four major phases were presented in chronological order: (1) concept generation, (2) idea development, (3) actual production, and (4) completion of the work. It is critical that their process model points out the function of returning to the previous phase between phases (2), (3), and (4) and in their sub-processes.

3.5 Cognitive processing in the creative process of artists

In the past, research on creativity has focused on brain activity and idea generation, while the body and its actions have often been overlooked. Now, however, the issue of the functioning of intelligence and the body is becoming more important than ever, and it has been pointed out that the body, traditionally regarded as a mere gateway to information and an outlet for cognition, is an important partner of intelligence (Abe, 2019). Freidman & Forster (2000) reported in an experiment using a visual task that the action of bending and stretching the arms influenced performance in creative problem-solving. It has also become clear that ideas do not emerge completely from the mind of one person but emanate with the help of others (e.g., Kiyokawa & Nagayama, 2007) and the environment as external resources (e.g., Suwa, Purcell, & Gero 1998). In recent studies on the creation of art, there have been widespread attempts to model the cognitive, emotional, action, and contextual factors involved (e.g., Cawelti, Rappaport, & Wood, 1992; Glück, Ernst, & Unger, 2002; Jones et al., 1997; Kay, 1991; Lubart, 2001; Mace & Ward, 2002; Sapp, 1995). However, very few studies have examined individual cognitive activities by dealing with the actual creative activities of artists, and most of them have proposed only conceptual models, analyzed past works, examined self-reported retrospective data, or given subjects creative tasks to perform in

artificial laboratory settings or under experimenter control. In addition to the above, there have been several other studies.

In this paper, the following distinction was used between two levels of cognitive action in creative work. For individual cognitive actions such as “constraints,” the term “cognitive processing” is used operationally, whereas dynamic cognitive actions, in which multiple cognitive processes act in relation to each other, are called “creative process” and are distinguished. In other words, “cognitive processing” is defined as an individual action that works under the “creative process.” In this section, we review research on cognitive processing in the activities of individual artists.

When discussing creative activities, it is necessary to clarify whether they are individual or group activities. When we focus on cognitive activities in art creation, there is a relationship between internal processes (covert process), such as creative intentions and analogies, and external processes (overt process), such as the actual use of modeling tools to modify the medium. The internal and external constraints of the individual are involved in this process. Here, the internal constraints of individuals refer to their preconceived notions about various events. External constraints, in contrast, refer to constraints placed on the individual from outside, such as others or the outside world.

Some studies have shown that intra-individual constraints are influenced by externally given frameworks; Ward (1994) points out that in the task of “imaging animals on a planet somewhere else in the galaxy,” many examples are generated that have something in common with actually existing creatures. This indicates that the existing categories and examples used by the experimental collaborators in accordance with the requirements of the task of thinking of “creatures” influence the ideas generated. It is also important to note that the experience of the individual is also a constraint. Leung et al. (2008) point out that the experience of living abroad is positively correlated with creativity. This result suggests that the range of available

knowledge influences idea generation.

Although the above study was conducted on laypeople, the fact that creativity is influenced by internal cues, such as personal interest and attention, and that the extent of available knowledge through experience is related to the outcome of creative activity is similar to studies of creative activity in expert individuals (e.g., Franklin, 1989; Gardner, 1993; Raina, 1997; Wallace & Gruber, 1989). For these reasons, it is thought that expert individuals have a wider range of knowledge available to them and are more likely to be inspired in their creative activities and that these activities lead to the development of richer internal processes than groups.

3.6 Details of the creative process and function

Okada et al. (Okada et al., 2007; Okada et al., 2009) examined the generation of the concept of artworks as one of the few examples that dealt with the field of artistic creation (Okada et al., 2007; Okada et al., 2009). Okada et al. show that the development of a long-term series of works by a contemporary artist can be explained by the concept of analogical modification. Analogical modification refers to the process of creating something new by applying the general framework of the structure of the case in the existing knowledge and changing some features in it. In the case of art creation, this means that an artist uses the

framework of his or her existing work and creates a new work by changing some of its features. Based on interviews with contemporary artists, Okada et al. found that three types of displacements were used in the development of a series of works: thematic displacements, structural displacements, and conceptual displacements. Displacement in art creation activities is basically considered to be one of the effective ways to intentionally change some of the conditions of the current search space involved in one’s creative activities and to discover a new problem space (2007). Okada et al. (2009) point out that in

addition, there are analogical shifts performed only on the subject, technique, or concept of a piece of work, as pointed out by Mace and Ward (2002), for example, in the collection of visual information of the external world to develop an idea. In addition to inferential shifting, this also includes changing the values of the elements of the action, as pointed out by Mace and Ward (2002), which may play an important role in generating the concept of the work.

Regarding constraints in creation, Finke, Ward, and Smith (1992) explain the involvement of constraints between the two cognitive processes of generation and interpretation in the Geneplore model (Figure 2). Finke et al. (1992) point out experimentally that generation and interpretation constitute a cycle with

generative and exploratory cognitive processes and that constraints are involved in each cognitive process. However, this model does not address the issue of changing the conditions of the search space, such as analogical modification. Finke et al. (1992) point out through experiments that the model does not address the problem of changing conditions in the search space, such as slippage.

Takagi, Okada, and Yokochi (2013) synthesized and interpreted the claims of Okada et al. (2007; Okada et al. (2009) and a model by Finke et al. (1992) and explain it as a cognitive process, as shown in the following figure on the creation of expert artists (Figure 3).

Takagi et al.(2013). clarify the processes by which unexpected “surprises” occur when the

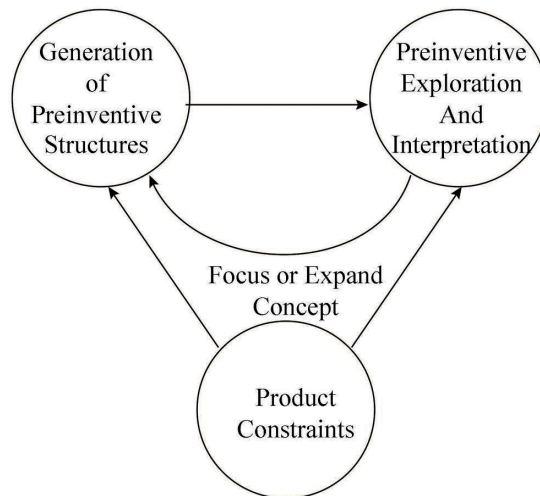


Figure 2 Basic structure of the Geneplore model (Based on Finke et al., 1992)

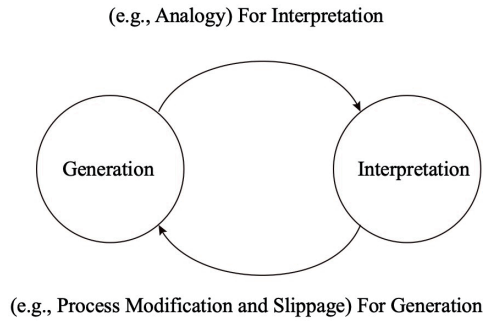


Figure 3 Process of generating art concept by expert artists
(Modified from Finke et al., 1992 and Takagi et al., 2013)

conditions of creation are changed by intentional “process modification” or unintentional “slippage” using specialized domain knowledge or when a new thing is created, and the meaning of the new thing is interpreted by “analogical thinking,” in which similar examples in existing knowledge are recalled and applied (Takagi et al., 2013, see below). In this paper, we use this framework (Figure 3) to understand the process of concept generation in the creative activities of experts.

While focusing on the expert creation from the perspective of constraints, Stokes (2008) points out the existence of paired constraints that have the functions of hindering and facilitating (Stokes, 2006, 2008). Based on the analysis of the documents and works of eminent modern artists such as Monet, Cézanne, and Rothko, Stokes described that artists discover the paired values on the axis of thought contained in the current ideas; that is, they suppress the existing constraints and

adopt new ones, which leads to the creation of new ideas. Stokes applied this perspective to a wide range of creative activities, from fine arts to music, literature, and clothing design, and examined the factors that drove the creative process forward in each of these fields. Stokes points out the axes of content that can be treated as a pair from the fragmentary results of creation in chronological order. For example, Stokes finds that Mondrian’s alteration of his motifs from the figurative nature of trees to the abstract nature of horizontal and vertical composition can be treated as a pair. However, this does not mean that Mondrian himself deliberately changed the figurative element of his creations from restraint to promotion during his creative process. Stokes (2008) rather pointed out the axis that figurativeness acts as a restraint and abstraction acts as a promotion, based on the characteristics of the evolution of Mondrian’s archival works over a long period of time. Therefore, the pair of constraints that

Stokes points out is an external view of the result and not a pair of constraining functions that the artist themselves deals with in their actual creation. This is because we are dealing only with the resultant work and the fragmentary records left in between, and there is still a lot of room to examine what and how the artists confront the constraints in the actual creative process.

The phenomenon of inspiration has been also discussed through statements and case studies of experts in various creative domains (Chemi, Borup Jensen, & Hersted, 2015). In psychology, inspiration is conceptualized by focusing on mental experience rather than a trigger or consequence (Thrash & Elliot, 2004). Nevertheless, most studies on inspiration from a psychological perspective focus on inspiration that occurred in ordinary people's appreciation of artworks, discussion of conceptual models, and development of psychological measurement. Few have examined the relationship between inspiration and experts' creative process, although many experts have been shown to be supportive of revealing that the mechanism of inspiration is inseparable from art creation. Thrash and Elliot (2004) dealt with the core mechanism of inspiration. Although their focus was on ordinary people, it was clarified that inspiration consists of three features: transcendence that takes us from the present status to something better, evocation triggered by something external, and motivation that

conveys that something had been comprehended, and two processes involving creative insight and social comparison.

In terms of research on the relationship between the creative process and inspiration in novices, there have been studies on the creative process of imitation (Ishibashi & Okada, 2010; Okada & Ishibashi, 2017). Ishibashi and Okada (2010) revealed that ordinary people could relieve the cognitive and physical constraints of the existing framework of concept and be inspired to form a new perspective through deep engagement with external objects, such as imitating the works of others in an unfamiliar style or spending a long time observing those works. Further, Ishiguro and Okada (2018) proposed a cognitive model to describe the process from art appreciation to inspiration, and they argue that individuals would compare their own works with those they have viewed and become more motivated and inspired to create.

What is the actual interrelationship between these cognitive activities occurring within an artist? Suwa (2008) advocates an argument that exploring art and skills is an act of "designing" one's own body. Suwa argues that in the cognitive activities of experts through bodily practices, new learning is generated, and new points of view and awareness are renewed through the interaction of three modes in a cycle: external representation of words that express movement and bodily functions, the

function of association and inference, and control and re-cognition with newly generated words. However, this is presented as a study on a first-person view with descriptions, not a model.

One of the previous studies of models related to artistic creation was Okada's (2013) proposal of a dual-process model that shows the flow and involvement of internal and external cognitive processes, which is suggestive. However, this model was conceptually constructed to organize ideas about expression that include ordinary people and does not focus primarily on the creative process of expert artists.

Takagi, Okada, and Yokochi (2013, 2019) and Takagi, Kawase, Yokochi, and Okada. (2015a, b) empirically identified that newly generated

products would be interpreted by similarity thinking, which is applicable to similar cases from prior knowledge, to understand the reason for surprise from unexpected discoveries and the phenomena within the surprise through a case study of the actual process of art-making by an artist.

This shows that the creation of artworks is developed through the interaction of activities such as process modification, slippage, and similarity thinking. Considering that previous studies on modification and analogy have focused on a single process, taking the perspective of multiple cognitive processes is critical to reveal the actual process of the creation of art. The interaction of these cognitive processes is modeled by Takagi, Okada, and Yokochi (in progress).

4. Creativity in Business Innovation

4.1 Creativity and innovation in the business context

From a management perspective, creativity has been studied as a key enabler of innovation that leads to the success of business organizations. The definition of creativity as the "production of novel and useful ideas by an individual or small group of individuals working together" (Amabile, 1988, p. 126) is widely known (Tierney, Farmer, & Graen, 1999, p. 593). As Shalley and Gilson (2004) suggest, creativity is different from innovation in that innovation refers to the implementation of ideas, and

creativity is supposed to be the production of conceptual ideas and does not necessarily require the production of tangible products. In more detail, Anderson, Potočnik, and Zhou (2014) suggest that creativity and innovation are in a sequential relationship that generates ideas and implements those ideas (Anderson et al., 2014). Hughes et al. (2018) also confirm that creativity involves the cognitive and behavioral processes used to generate novel ideas, whereas innovation involves the processes to

implement new ideas.

In relation to art thinking, it is important to decompose creativity in detail because art thinking is expected to contribute to generating ideas that are beyond the ordinary trail of business innovations. In this regard, Unsworth (2001) provides an important framework that decomposes a concept of creativity with a consideration of two dimensions: whether the problem is open or closed and whether the motivation is external or internal. Particularly, creativity for open problems, where “participants are required to find, invent, or discover the problems” (Unsworth, 2001, p. 290), is closely related to creativity in artwork.

In contrast, from a management perspective, uncertainty is analyzed as an obstructive factor. Lingo and O’mahony (2010) discovered that ambiguity is an inherent part of the collective creative process. Directors are the brokers on networks that control various kinds of ambiguity. Of course, ambiguity does not mean uncertainty. According to them, ambiguity can be understood as having multiple meanings at the same time and is open to interpretation. Uncertainty is removed by obtaining information, while ambiguity cannot be resolved by obtaining information. Either way, it is a factor that needs to be addressed in creative situations. Creative decision-making processes

follow the complexity level of ambiguity. Directors have a role in fostering generative networks where individuals can perform their creativity fully. Hence, they build their networks according to their degree of ambiguity.

Taking the arguments in the previous section on creativity in art production, how to utilize the process of art production in the business context would require understanding how to handle problem finding and open questions, how to deal with uncertainty and ambiguity, and how to transform individual creativity into creativity at the team and organizational level.

Looking at the inner side of business organizations, according to Amabile et al. (2005), positive affect relates positively to creativity in organizations. They constructed an affect-creativity cycle model. If there is positive feedback from others on generated ideas, and the individual gets positive feelings about them, then the generation of ideas continues in a virtuous cycle. If the cycle continues, organizational intervention is not always necessary. When an individual has negative feelings about feedback on the generated idea, however, creativity is in danger. In such a situation, organizations are required to manage personal emotions.

4.2 Creativity of individuals and organizations

In the business context, the work environment

and relation to teams have also been studied as

important factors that affect creativity in organizations. Bush and Hattery (1956) argue that teamwork is the cornerstone of creativity. These views reflect that most studies from the management perspective on creativity are aimed at improving creativity in business organizations and the achievement of the collective efforts of members.

Among them, Amabile et al. (1996) describe the framework and measurement scales for organizational creativity as KEYS: Assessing the Climate for Creativity. KEYS is based on the conceptual model whose conceptual categories are encouragement of creativity, autonomy or freedom, resources, pressures, and organizational impediments to creativity. It should be noted that its emphasis is on the organizational environment, not personal attributes, to harness creativity in organizations. On the other hand, Pirola - Merlo and Mann (2004) examined the relationship between individual creativity and team creativity and found that team creativity scores can be explained by the aggregation both of individuals and teams. Particularly, team creativity is explained by the aggregation of the creativity of members, while the creativity of project outcomes is explained by the aggregation of team creativity across time points.

Taggar (2002) examined the relationship between an individual's creativity and a group's creativity and found that "team

creativity-relevant processes" play a significant role in transforming aggregated individual creativity into group creativity. These processes include organizational culture and management, such as voluntary contributions and supportive discussions.

Organizational structure and governance characteristics are also examined as determinants of creativity. Schepers and Van den Berg (2007) expanded research on organizational characteristics and their impact on creativity. They present four types of organizations: cooperative team, adhocracy, stable hierarchy, and rational firm, and they confirmed that a work environment with adhocracy leads to more perceived creativity in the organization. In terms of leadership, Tierney et al. (1999) empirically assessed the significance of leadership and communication between leaders and members on organizational creativity and found that an employee's innovative cognitive style and intrinsic motivation and the exchange between leaders and employees play important roles in employee creativity. However, as a trait of leaders, strong intrinsic motivation interactively enhances an employee's creativity, but his or her innovative cognitive style does not increase employee creativity interactively. Fillis and McAuley (2000) reviewed previous research on creativity and analyzed the interface between creativity and marketing/entrepreneurship. Based on the analysis, they proposed a

framework of the creative process that incorporates the individual's skills with creative problem solving and also the environment, suggesting the need for direction and leadership.

Weinzimmer, Michel, and Franczak (2011) analyzed the effect of creativity on firm-level performance, such as is measured by revenue growth, and they found that the action orientation of firms mediates the relationship between financial performance and creativity. In this case, action orientation suggests the behavioral tendency and encouragement of

actions to solve problems. Without any brokers, building an evaluation system can overcome uncertainty from diversity. Harvey and Kou (2013) identify problem construction as a key element of the collective creative process. They argue that evaluations enable groups to synthesize members' diverse perspectives into a shared problem framework. On the other hand, Amabile and Conti (1999) assessed the change in creativity during the downsizing process and found that creativity supporting aspects declined significantly during downsizing but increased modestly later.

4.3 Arts-based initiatives and creativity in organizations

How can we enhance creativity in organizations through the arts? Here, we would like to point out some specific studies that have attempted to use art for organizational development. These are mainly discussed as artistic interventions. In particular, there are cases in which art is used to resolve conflicts within an organization. This does not mean management for developing individual creativity but for shaping the organization for creative individual capabilities. Schiuma (2011) provides the Arts Value Matrix, which shows the intersections of organizational and individual development through arts-based initiatives (ABIs). It shows how ABIs impact not only personal experience but also enable the incorporation of these initiatives into organizational capability.

At an individual level, An and Youn (2018)

tested how involvement in the arts can affect inspirations and creativity in the business context empirically. They suggest that an open mindset toward aesthetic experience and experience of the arts can enhance inspirations and raise creativity in the business context. Related to the replication of the art creation process, a study by Botella et al. (2013) can also be utilized for future examination. They analyzed the factors that are important for artistic creativity and describing the creative process in art. They conducted interviews and administered a questionnaire to professional artists and extracted a process of creating art in six stages: vision, documentation and reflection, sketches, testing the forms and ideas, provisional objects, and series.

Springborg and Ladkin (2018) analyzed the

impact of arts from embodied view of cognition, based on the theory that an understanding of a concept is defined by the experience of interaction with physical things, and if those experiences differ between people, the formulated concepts would also differ between people. They suggest that art creation can offer new embodied experiences as a simulation and can bring new perspectives to business activities.

Regarding how to utilize the process of art production, Tran, Goulding, and Shiu (2018) attempted to utilize the process of composing music to the product innovation, focusing on the “fuzzy front end,” an initial stage of innovation. They followed the process of composing music and created a prototype of a software application collaborating with a technology company and suggest that using the composing process helps the initial stage of innovation.

In terms of team building and communication, Ippolito and Adler (2018) empirically examined how artistic interventions with music in a group can affect the mindset of its members. They suggest that creating playlists related to a conflict, attending a rehearsal of a string quartet, and the experience of playing music together can change the participants’ mindset from being adversarial to being more cooperative and can make them perceive the importance of emotions and relationships. Similarly, Sorsa et

al. (2018) conducted interventions with music with a Finnish ice hockey team. They suggest that synchronization and collective participation with musical performance can enhance an understanding of themselves and members and enable them to do what is difficult to express with words. They showed the usefulness of music for the collaboration of members.

In terms of initiatives that affect both individual and organizational aspects, Nisula and Kianto (2018) point out problems of previous research that has focused on creativity in problem-solving situations, while little attention has been paid to efforts to improve creativity in everyday work. Videos, post-workshop feedback, and journals from the 20-month improvisational theater intervention were used to track how individual and collective creativity was enhanced, resulting in ongoing organizational change at various levels.

Yams (2018) designed a long-term artistic intervention that could impact the strategic level of the organization. This study conducted two-year action research in a Swedish municipality, and through contemporary dance choreography, this study was able to achieve innovation while balancing the goals of the organization with the needs of the individuals. Specific to the choreography, a creative process was modeled by Yams (2016) that explored the possibility of transferring dancers’ choreographic know-how to project design.

4.4 Collaboration with artists

There are also initiatives to collaborate with artists in various forms, such as creating artworks on an issue and “artist in residence.” Simeone, Secundo, and Schiuma (2018) showed that art and design are powerful tools as translational mechanisms. They reported that the artworks on digital archives at metaLAB of Harvard University could enhance communication and mutual understanding among various stakeholders, such as researchers, business persons, and investors, and resulted in entrepreneurship from the university. This study suggests how art can be utilized as a translational tool that mediates communication among diverse groups with different interests.

Lee, Fillis, and Lehman (2018) conducted a case study. Semi-structured interviews with an aquaculture laboratory at a UK university revealed that the on-campus residence of

artists can enhance creativity at both the individual and organizational levels. Categorizing values as intrinsic, instrumental, and institutional and effectively working with the elements contained within them were also found to enhance competence and learning.

Meisiek and Barry (2018) examined the effectiveness of artistic interventions. Nineteen companies that invited artists to improve the innovativeness of their employees were included in the study. Just the right entitlement between manager and artist is important for maximizing organizational capacity through artistic intervention. According to them, the sweet spot of the maximum effectiveness of collective decision-making in assessing outcomes lies at three levels: emphasis, facilitation, and training, and it depends on the power balance between managers and artists.

4.5 Evaluation of the use of arts in business

The utilization of arts or the process of art production in the business context is still in its infant stage, but as long as it aims to increase any business outcome, it should involve some assessment and evaluation of the initiatives. According to Strauß (2018), a meta-analysis of evaluation studies found that while artistic interventions can bring improvements to individuals, they rarely have an impact on an organizational scale. Strauß (2018) suggests that

Keeping in mind that artists and business persons have very different values, norms, and practices, it is important to consider that interventions by artists are long term, which means they exist before and after inventions. In addition, this paper suggests that value should be created not by finding value but by questioning the mindset of the organization.

According to Antal and Strauß (2016), the added value of artistic interventions depends

not only on the quality of the intervention but also on organizational follow up. However, while the effects of interventions have been most prominently documented at the individual level, there is little mention of organizational follow up. A transformation from results-oriented management to management that explores and collaborates on evaluation is required.

Based on the premise that ABIs are an effective tool for managing the aesthetic dimension at the organizational level, Schiuma

and Carlucci (2016) presented a process for their effectiveness. The Arts Value Map, proposed by Schiuma (2011), is a way to measure the effectiveness of ABIs. They associated ABIs with this map and applied the analytic hierarchy method from strategy to assessment. As a result, they concluded that ABIs focus their evaluation on employee change and the development of organizational infrastructure.

5. Integrated Framework for Art Thinking

5.1 Implications from the literature

As seen in the previous sections, there are a wide range of preceding studies that analyze the process of art production and how to use arts in the business context. A summary of the major implications is as follows.

First, the initiatives to utilize arts for creativity can be seen as ABIs since the early 2010s, trying to enhance inspiration and communication in organizations. There has been a booming interest in so-called “art thinking” since the late 2010s in Japan, but most of the literature includes works aiming at general audiences to stimulate interest in the arts in the hope that the arts can enhance the capability to cope with an uncertain business environment. However, the academic and empirical backing of these interests is still insufficient. On the other hand, practical

methods and education to find and express problems on social perspectives have been developed, such as is seen in speculative design.

Second, previous studies on art production propose that contemporary arts, in particular, focus on problem finding and tackling open-ended questions, which suggests such art processes can be utilized in finding social problems and constructing totally new businesses. In addition, the process of art production is cyclical and attempts to improve artworks with modification, slippage, and similarity thinking. It should also be noted that embodied experience is important for stimulating creativity in arts production.

Third, studies from a management perspective suggest that the creativity issue in the business context involves both the

creativity of individuals and that of organizations and the interaction between the two. In terms of art utilization, there have been a wide range of studies on ABIs that aim to enhance inspiration and communication in organizations. However, these studies handle arts as a “black box” and assess the impact of using the arts as interventions, thus

demystifying the process of the arts, and incorporating it in the business context is significantly missing.

Taking the abovementioned points into consideration, a comprehensive framework of creating innovation based on the art production process is proposed.

5.2 Arts-Based Innovation Process

Based on the literature review in previous sections, we developed an integrated framework for art thinking. Schiuma (2011) presents the Arts Value Map, which illustrates the relations of the value of adopting ABIs through value creation at a firm level. On the other hand, given that the primary purpose of this paper is taking the process of art creation

into business and social innovation, the focus of this process is placed on the micro level of creating products or services, incorporating the process of art creation. We call the process of innovation based on art thinking the arts-based innovation process (AIP), which is shown in Figure 4.

The AIP defines the process of innovation

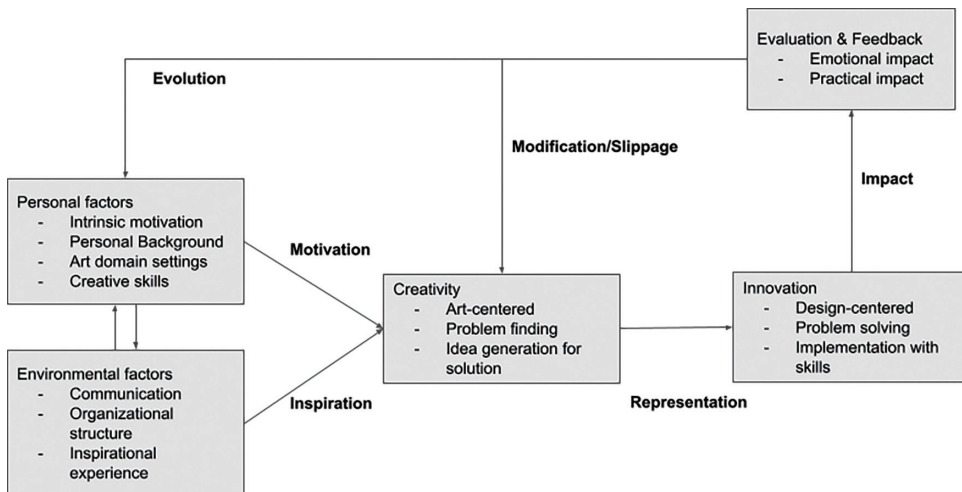


Figure 4. Integrated Framework of Arts-Based Innovation Process (AIP)

incorporating the process of art production. However, it is not simply a unidirectional process from input to output, but it rather defines a cyclical relationship of elements where arts-based innovation is produced and improved. It describes the creative process of individuals, but it can also be used as an aggregated process of individuals as a team.

First, we separate creativity and innovation in terms that the former suggests the generation of novel ideas, and the latter suggests the implementation of those. This dichotomy might seem to resemble the relationship between art and design: problem-finding and problem-solving. In the art-based innovation process, creativity plays the core role. From the perspective of art creation, as discussed in Chapter 3, art production can be seen as problem-finding and handling open questions, and this creativity focuses on problem-finding. The AIP also emphasizes creativity where the problem is not defined or presented clearly (open question), the capability to discover and define a problem, and to present it so that others can perceive that the solution for the problem should be worthwhile.

Creativity is affected by two components: personal factors and environmental factors. Personal factors mainly give a creator motivation in the domain of any type of activity. This includes intrinsic motivation in the field of the issue and personal background such as experience to affect the motivation. As An and

Youn (2018) suggest, an open mindset toward aesthetic experience and the experience of arts can enhance inspirations and raise creativity, and experience of arts is also one of these personal backgrounds.

Art domain settings and creative skills also belong to personal factors. Creative skills often include, but are not limited to, physical skills to create artwork such as visual arts or music. We emphasize these skills because in the ability to create actual artwork—whether it is visual art or music—the embodied experience and skills and the improvement of these can give a creator motivation and inspiration in the domain. Environmental factors mainly give a creator inspiration in the domain of activity. This includes communication with others on the topic that could also be influenced by the organizational structure that the creator belongs to. As seen in the literature on management studies, autonomy, freedom, and pressure play a significant role in personal creativity (Amabile et al., 1996). It is inferred that these environmental factors would affect inspirational experience through communication with others.

When creativity is demonstrated to find and define a problem, it is also utilized to generate ideas for solutions. This process results in the representation of problems and solutions, although in conceptual forms, such as a rough sketch, document, or presentation materials. This representation is utilized in the innovation

phase that realizes the solution for the problem. The realization process often involves the creation of works with skills, from shaping an object and coding software to composing a document. These outputs are expected to have some impact on society through clients, consumers, and general audiences. The outputs are subject to the evaluation of receivers from practical and emotional viewpoints. Particularly in arts-based innovation, the subject of the problem would involve ambiguous, complex, and contradictory issues rather than the simple pursuit of convenience and requires a change of the general public's behavior or mindset. For such issues, emotional impact is also an important factor to evaluate whether the works have a positive impact on society.

The impact on society is examined as feedback to the creator, and it contributes in two paths. One is analogical modification and slippage, as discussed in Chapter 3. Analogical modification and slippage are considered the continuous and cyclical improvement or evolution of works by the creator. The other path is the evolution of personal factors, such as through significant improvements in skills and stimulation of motivation. The evolution path represents a more long-term cyclical improvement of the arts-based innovation process.

While the AIP is a comprehensive framework used to describe the innovation process based on art production, there are several points that

should be emphasized. First, its core difference from the conventional innovation process is problem-finding with intrinsic motivation, particularly toward open-ended questions. It is particularly important to initiate innovation in a field that is not well-defined or has fierce competition, typically expressed as "blue oceans." The second emphasis is the cyclical improvement process with modification and slippage. This means that innovation is not unidirectional but rather involves trial and error and the free flow of ideas. It resembles a "pivot" of business models but also a part of deframing (Takagi, 2019) that abstracts a core essence of functions and combines it with other factors to form completely new business domains.

Thirdly, it emphasizes the importance of embodied experience and skills to stimulate creativity. As seen in Chapter 3, bodily experience is an essential part of creativity in art production. In addition, as Springborg and Ladkin (2018) suggest that art creation can offer new embodied experiences as a simulation and can bring new perspectives to business activities; embodied experience plays an important role in disruptive thinking on the existing concepts. In this sense, we emphasize the importance of implementation with skills and the trial-and-error process, which, in turn, will be reflected in the personal factors of the innovators.

6. Conclusion

This article reviews prior studies regarding how arts and the process of art production can enhance creativity and innovation in business context and constructed an integrated framework for innovation based on art thinking. Despite the rising interest in utilizing arts for business, academic research on art thinking is significantly limited, particularly focusing on utilizing the process of art production. Instead of dealing with art as a black box, this article attempts to demystify the process of art production and embeds it into the arts-based innovation process.

It should be noted that the impact of utilizing arts for business can take a long time, particularly when using it to enhance the individual and organizational capability of innovation. It is not a fast-acting drug to cure organizational challenges but rather takes time to be embedded in individuals and organizations through the repeated use of the process.

On the other hand, the importance of the incentives of artists who would participate in such programs should also be emphasized. Unless artists can expect new experiences and insights by collaborating with business organizations, no artists would seriously take part in those attempts.

One of the remaining challenges is to practically apply the AIP in the actual innovation process and empirically assess its usefulness and make continuous improvements. Particularly, the performance of the AIP would depend on various factors, such as the art forms, applied business domains, and challenges to be solved.

This article generally focuses on modern visual arts as an art domain that is referred to and analyzed, but other arts domains would be also important for consideration. For example, music provides rich implications for innovation, such as seen in the fusion of classics and modern in jazz, which can provide important insight into combining elements to create new experiences, and musical works can be studied as the design of emotional journeys, and the management of music sessions can be analyzed in the organizational management context (Takagi, 2020). The analysis of other art forms is another future challenge.

There is a growing demand to come up with transformative ideas to create new businesses and solve social problems. The authors hope this article can benefit all those who are interested in taking up this challenge.

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An Integrated Framework for “Art Thinking” : How to utilize the process of art for business innovation

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Recently “art thinking” has been attracting broader attention aiming to utilize the thinking and process of art creation in the business context. This concept is based on the assumption that various art forms and creative processes of arts can be utilized to generate new business ideas beyond traditional incumbents, particularly when uncertainty in the society increases. While there has been substantial research on arts-based initiatives that attempt to utilize various art forms as interventions in business organizations, the features of the creative process in the arts, how these features are related to creativity in the business context, and how this can impact business performance positively, both from theoretical and empirical perspectives, have not been studied deeply. This article reviews prior studies on creativity in art creation and business activities based on an interdisciplinary approach, including management and psychology, to clarify the academic forefront of art thinking. It also proposes a comprehensive framework to represent the process of creative innovation incorporating the process of art creation.

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