Proceedings Bali Bhuwana Waskita: Global Art and Creativity Conference
2024, Volume 4, pages 77-88, ISSN 3026-233X (online)

THE CONTRIBUTION OF DIGITAL TECHNOLOGY TO ART STUDIO BUSINESS IN JAKARTA

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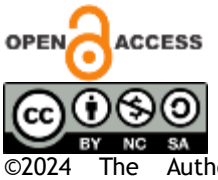
ABSTRACT
By leveraging technology, empowering people, encouraging innovation, and strengthening organizations, art studios can increase competitiveness while maintaining the relevance of arts and culture in modern society. To develop a business, the combination of technology usually consists of knowledge and physical equipment. Technoware (T), Humanware (H), Infoware (I), and Orgaware (O) are four basic components of development that interact dynamically in the development process. The purpose of this study is to analyze the contribution of digital technology through various digital media to art studio businesses in Jakarta in arts and cultural activities. This research uses quantitative methods, data sources are determined through a purposive sampling technique. Data were collected by direct observation, interviews, Focus Group Discussions, document reviews, and literature studies. The results of this study show the coefficient value of the contribution of digital technology for each technological component of the art studio business for the welfare of artists.

KEYWORDS
Contribution, Digital Technology, Art Studio, THIO



Introduction

An art studio is a place where people practice or learn art, always with the aim of preserving it in society. In an art studio we can learn various dances, music, vocals, theater, carving, painting, and others [1]. The existence of an art studio acts as a means for the growth and development of art, both traditional and creative, as well as a teaching and learning process that produces works of art. From the art studio emerged art education, a field of science that contributes to the development of students in their intellectual, aesthetic, social, emotional, and creative development. Researchers see that art studios play an important role as community movers in maintaining the values contained in the development of art and culture.

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As an organization, the art studio has a position as part of the socio-cultural system in society, where its presence also functions to preserve art and culture. Another role of the art studio, indirectly, is as one of the solutions in improving the quality of individuals to be able to compete and create new businesses and opportunities for artists and provide job opportunities for artists so that the presence of the art studio becomes a challenge in improving the quality of economic sector development and one of its impacts in reducing unemployment.

With the increasing globalization of the world, the rapid and dynamic development of technology, communication, and information, and the Covid-19 pandemic, many art studios have changed their activities. According to the researcher's initial monitoring, the phenomenon in the Jakarta, Bogor, Depok, Tangerang, and Bekasi areas during the Covid-19 pandemic was that many art studios experienced a decrease in the number of students, had no performance activities, and some even closed their operations or went bankrupt. The results of the researcher's initial observations through the Jakarta Culture (Bujaka) application show that there are many art studios in the Jakarta area; in fact, only a few art studios can survive in the midst of the Covid-19 pandemic and technological developments. The researcher realizes that global phenomena such as economic uncertainty, protectionist policies taken by Indonesia and several countries, and rapid technology influence art and culture.

The next phenomenon researchers saw was that several art studios that were able to survive during the Covid-19 pandemic were accustomed to using new media to be able to interact with the audience in their activities. Digital technology platforms have become a new media platform for sharing creative experiences with a wider scope and giving birth to artistic activities that are widely consumed by many groups. Researchers saw that these art studios were accustomed to using this media for learning, performances, promotions, and other innovations. One form of this activity is learning activities using Zoom, Gmeet, and Skype, and some even carry out hybrid learning activities. In addition, in their art performance activities, they use YouTube channels and live streaming from Instagram social media. In promotional activities, studios use Instagram, Facebook, TikTok, and other innovative activities such as cultural podcasts and participating in world festivals or competitions online.

This shows that the opportunities for art studios to produce cultural products using digital technology are increasing. According to [2], the use of digital technology through new media or digital media platforms will increase community participation, especially among young age groups, in the arts. Currently, people have media channels to share content because of cheap technology that can be accessed, internet networks, and digital media platforms. The development of digital media platforms is partly due to the development of internet access. Communities use the internet to create media [3]. The presence of technology in the form of digital platforms helps artists to share the

results of innovation in their work. So that the presence of new media can substantially change the business model, not only optimizing internal processes or incorporating new technologies [4]. Awareness of how important the role of art studios is for the preservation of arts and culture must be maximized in the use of digital technology. Based on its conditions, an organization must seek irreplaceable and sustainable resources to remain competitive in an era of change [5].

The purpose of this study is to analyze the contribution of digital technology to art studio businesses in Jakarta in carrying out arts and cultural activities. According to researchers, by knowing the results of digital technology contributions, art studios can strategize and find more accurate ways to be faster and one step ahead of today's dynamic global business competition. Currently, the main challenge for art studios is being able to follow changes and adapt to future organizational needs, which means improving the work capabilities of human resources [6].

This study began with the researcher's interest in the use of digital technology through various digital media for art studio businesses in Jakarta. How digital media-based digital technology is then able to meet the needs of art studios in creating a survival strategy. This study refers to the argument that the use of various digital technologies through various digital media is a solution for art studios to survive in artistic activities with an adaptation strategy [3].

This research is important to study because the results can prepare future generations, especially Generation Z or millennials, to be able to maintain arts and culture in their environment. The importance of this research academically is to enrich the study of digital technology by placing the development of information and communication technology, especially digital media technology, as a supporter of the production of arts and culture activities in art studios. In this study, the researcher adopted the principle of a descriptive analysis model, a business model canvas developed and published by Osterwalder in 2010, and a feedback grid, and used THIO analysis (technoware, humanware, infoware, orgaware).

Method

This study uses quantitative research, which is a research method that collects and analyzes data that can be measured using numbers and statistics. Quantitative research is a systematic scientific study of parts and phenomena and the relationships between them [7]. The research was conducted in selected art studio businesses registered in the Jakarta Culture (Bujaka) application, which are spread across 6 areas of Jakarta, namely South Jakarta, West Jakarta, Central Jakarta, East Jakarta, North Jakarta, and the Seribu Islands, according to their art fields [8]. The research was conducted at the art studio business premises or other places that had been agreed upon between the participants, informants, and researchers.

Data collection using questionnaires, surveys, interviews, and several guidelines/instruments to obtain the required data. The procedure for determining informants was adjusted to the data needs that were studied in the research. Samples were taken to identify 30 participants in this study; the number was taken from 5 art studio businesses from six areas in DKI Jakarta, namely South Jakarta, West Jakarta, Central Jakarta, East Jakarta, North Jakarta, and the Seribu Islands. The selection of studios was determined through purposive sampling techniques, with the provisions of the selected studios being seen from the number of participants/members, length of establishment (minimum 10 years), achievements during the pandemic, arts activities using digital technology before the Covid-19 pandemic, during the Covid-19 pandemic, and after the Covid-19 pandemic. The use of purposive sampling techniques only involved people who met a set of predetermined criteria [9].

The determination of five art studio businesses in each region, in addition to the researcher's monitoring, will also coordinate with the DKI Jakarta Cultural Service through the Cultural Sub-Services in six regional areas, namely South Jakarta, West Jakarta, Central Jakarta, East Jakarta, North Jakarta, and the Seribu Islands. The research also involves expert resource persons selected to participate who will provide perspectives on the analysis of the contribution of digital technology. Before the strategy is made, the resource person's experience will be used to determine the difference between the phenomenon (current conditions) and future conditions.

In this study, the data collection process was carried out in the field for art studio businesses that met the established criteria. By conducting in-depth interviews, information can be collected, which is then processed through the steps mentioned earlier. The research instrument was validated first, and all tools can be optimized to facilitate data collection and analysis up to the reporting stage.

The business model canvas helps the process to produce a picture of the nine business elements and their weaknesses in businesses managed by artists. Then, the results of the business model canvas are analyzed and mapped using descriptive analysis. This analysis is carried out by looking at the results of the feedback grid to see the current condition of the art studio business to identify good things that have been running well, questions that arise, and changes that need to be made. In addition, the analysis section is also equipped with technology, human, information, and organization (THIO) to find out how much technology contributes to the art studio business.

Discussion

To develop a business, the combination of technology usually consists of knowledge and physical equipment. Technoware (T), Humanware (H), Infoware (I), and Orgaware (O)

are four basic components of development that interact dynamically in the development process. The THIO concept is a strategic guide for art studios to develop in the digital era. By utilizing technology, empowering people, encouraging innovation, and strengthening organizations, art studios can increase competitiveness while maintaining the relevance of art and culture in modern society. The implementation of THIO not only helps art studios survive but also develop into influential artists in the global world.

Technoware is physical capital used for various activities (main and supporting) managed by various organizations in the private and public sectors. Humanware is everything that allows someone to do various things in their work and shows what can be done using the technoware provided by applying personal experience and qualifications. Infoware provides information about technical understanding of the process and function of production equipment and data storage methods. Orgaware is the coordination of task tools in actual practice carried out by the organization. Overall, the way the THIO variables work is as shown in Table 1.

Table 1. THIO Variable Operations Art Studio Business
[Source: Researcher, 2024]

Variable	Definition	Indicator
(1) Technoware	(3) Technoware is a manifestation of facilities or equipment in the production process.	(4) Equipment used in the production process
Humanware	Humanware is the embodiment of human resources as the implementer of activities or acting as a driver/operator.	Skills
Infoware	Infoware is a manifestation of the operational process or procedures in these activities.	Information
Orgaware	Orgaware is the embodiment of the process of managing an art studio / art studio management	Organization

The Technology Contribution Coefficient (TCC) value is the final result of the technometric method, which is then entered into the assessment scheme to determine the classification level. Research results from various fields that use technometric models to measure the level of technology components have shown that this technique can be used at various levels of industrial scale, such as small industries, medium industries, and large industries. Art studios are considered creative industries in this case. However, the contribution of technology applied on a medium to low scale should receive more attention because this type of business greatly helps the welfare of artists. Technoware, humanware, infoware, and orgaware are the technology components in question. Another term for combined contribution is technology contribution. The Technology Contribution Coefficient (TCC) is formulated as a multiplicative function: TCC = $\mathbf{T}^{\beta t}$ * $\mathbf{H}^{\beta h}$ * $\mathbf{I}^{\beta i}$ * $\mathbf{O}^{\beta o}$ ……. (1). Where : T,H, I, O = contributions of Technoware, Humanware,

Infoware, and Orgaware. $\boldsymbol{\beta t, \beta h, \beta i, \beta o}$ = intensity of THIO contribution to Technology Contribution Coefficient (TCC).

Art studios managed by studio entrepreneurs generally still have a limited level of sophistication. This is indicated by the lowest score for the technoware component used in the process of art activities, including dance, music, martial arts, fine arts, literature, theater, and cinematography. The process of art activities carried out is still simple, including learning, promotion, exhibitions, and art performances. For the humanware component, it is also still low because only a few artists have a level of knowledge in using digital technology, and some maintain the facilities they own. Art studio entrepreneurs play a very large role in running their businesses, from training and performances to exhibitions and art marketing.

Infoware shows better results when information is collected through digital technology activities, especially using social media, communities, and students in art studios. This applies to dance, music, martial arts, fine arts, literature, theater, and cinematography. Orgaware shows that this type of art studio business is mostly still micro, or simple, but they have a fairly good organizational management system. However, the task division system is still unclear, so that art studio entrepreneurs cannot focus on developing it. Clearly, the level of sophistication of digital technology in the art studio business is seen in Table 2.

Table 1. Degree of Sophistication of Digital Technology Components of Art Studio Business [Source: Researcher, 2024]

Technoware	Humanware	Infoware	Orgaware	Skor
(1)	(2)	(3)	(4)	(5)
Physical Equipment	Ability to use physical facilities	Information on understanding the use of equipment	Small art studio business, self-led, small capital, little manpower	1 2 3
Art Production Equipment	Ability to produce digital technology	Information on understanding the basics of effective use of facilities	Small art studio business that has been able to produce well	1 2 3
Digital Technology Adaptation	Ability to adapt digital technology	Information that enables knowledge to design and operate digital technology facilities	Art studio business is able to compete by maintaining the quality of art activities and media variations continuously	1 2
Digitalization of Technology	Ability to create content and market online	Market and consumer research information	Art studio business is able to identify the digital technology used according to the desires of consumers and new markets	1 2

The results of interviews with experts showed that the technoware component with the criteria of physical facilities, art production technology, and digitalization had a score of 9. This shows that the art studio business still uses simple physical facilities and existing tools, so that the use of digital technology in the arts is still limited according to the capabilities and needs of their studio business. The use of technology is still limited to WhatsApp, Instagram, Facebook, and TikTok.

The humanware component, based on the criteria of workers and art studio business owners, received a score of 13; this shows that the relationship between workers and owners is going quite well and that they can communicate and share information well. The familial nature of leadership is common. Other infoware components include market information standards, art community networks, and business development with a score of 15. This explains that the efforts of art studios to obtain information about the development of similar art products, market changes, and business trends are already quite sufficient. Meanwhile, the community network in each art studio is the mainstay for gaining access for cooperation needs (partnership), expanding channels, and strengthening relationships with clients or consumers. Furthermore, the orgaware component with the criteria of profit, capacity utilization, and forward orientation each received a score of 9, indicating that art studio businesses are still very few and pay less attention to aspects of profit and capacity utilization. Art studio business owners are busier with operational activities, including creating artwork and marketing to the right market.

In the THIO assessment using the concepts of technoware, humanware, infoware, and orgaware. The STI (Score of Technoware Intelligence), SHI (Score of Humanware Intelligence), SII (Score of Infoware Intelligence), and SOI (Score of Orgaware Intelligence) values describe aspects of intelligence and ability that are relevant to the four main components. Overall, the results of expert interviews related to THIO can be seen in Table 3.

Table 2. Interview Results with Expert Sources About THIO
(Source: Researcher, 2024)

	Criteria	Criteria Value	Score
(1)	(2)	(3)	(4)
Technoware	Physical Facilities	Rather fulfilling	4
	Production Technology	Rather fulfilling	3
	Digitalization	A little fulfilling	2
	Total Score		9
	Sti		3
Humanware	Workers	Quite fulfilling	5
	Owner	More fulfilling	8
	Total Score		13
	Shi		6,5
Infoware	Market Information	Quite fulfilling	5
	Community Network	More fulfilling	7
	Business Development	Rather fulfilling	3

	Total Score		15
	Sii		5
Orgaware	Profit	Rather fulfilling	3
	Capacity Utilization	Rather fulfilling	4
	Future Orientation	A little fulfilling	2
	Total Score		9
	Soi		3

In the table above, the STI value measures the extent to which a person has technical intelligence in terms of hardware, software, and the ability to adapt and implement technology in various situations. The SHI value measures human intelligence, which includes the ability to communicate, work in teams, and understand and manage social and emotional relationships in the workplace or in an educational context.

The SII value measures a person's information intelligence, namely the ability to collect, analyze, manage, and utilize information effectively and efficiently. This includes skills in data processing, information analysis, and the use of information for better decision-making. The SOI value measures organizational intelligence, which includes the ability to plan, organize, and lead in an organizational context to achieve greater. It also includes an understanding of existing organizational processes and structures, as well as the ability to respond to changes and challenges in the organizational environment.

Furthermore, the contribution of components for technoware, humanware, infoware, and orgaware is calculated. The results show a contribution for technoware of 0.24, humanware of 0.33, infoware of 0.26, and orgaware of 0.26.To calculate the contribution of components involves UL (upper limit), which is the best value that can be achieved by technology in a particular component and is the ideal target or peak of technology performance. While LL (lower unit), which is the lowest value that indicates the lower limit of technology performance, or the point where technology does not provide the desired contribution. State of the art, is the condition of technology that has reached the highest level that can be achieved in the field, referring to the best practices used in the art studio business.

The importance of this calculation is because it must take into account the contribution of each factor based on an evaluation of the current condition of technology. Compared to the ideal condition or state of the art. In this case, we will assess how well each component of Technoware, Humanware, Infoware, and Orgaware functions in achieving or approaching the UL condition and how the difference between the existing technological conditions and LL or state of the art. The assessment of the overall calculation of component contributions is as in Table 4.

Table 4. Calculation of Component Contribution for Each Technology Component (Technoware, Humanware, Infoware, and Orgaware)
[Source: Researcher, 2024]

Technology	UL	LL	State of The Art	Contribution
(1)	(2)	(3)	(4)	(5)
Technoware	1	3	0,42	0,24
Humanware	1	5	0,5	0,33
Infoware	1	4	0,55	0,26
Orgaware	1	3	0,32	0,26

The next stage is the calculation of the contribution coefficient value of the art studio business at this time. The weight value is obtained by the value $\boldsymbol{\beta t = technoware}$, $\boldsymbol{\beta h = humanware}$, $\boldsymbol{\beta i = infoware}$, $\boldsymbol{\beta o = orgaware}$ so that it is obtained $\boldsymbol{\beta t = 0.13}$, $\boldsymbol{\beta h = 0.29}$, $\boldsymbol{\beta i = 0,39}$, $\boldsymbol{\beta o = 0.20}$. Then the Technology Contribution Coefficient (TCC) calculation was carried out as shown in Table 5.

Table 5. Technology Contribution Coefficient (TCC) Calculation Results
[Source: Researcher, 2024]

Technology	Contribution	Intensity	TCC
(1)	(2)	(3)	(4)
Technoware	0,24	0,13	0,272
Humanware	0,33	0,29	
Infoware	0,26	0,39	
Orgaware	0,26	0,20	

The TCC calculation results show that the contribution coefficient of dance, music, martial arts, fine arts, literature, theater, and cinematography studio businesses from art studio entrepreneurs in Jakarta is currently low, only 0.272. In addition, the smallest value related to technology shows that art studios are currently lacking in adopting technology, and this is clearly because art studios are still classified as small businesses, so adaptation to technology is not good enough.

On the other hand, art studio entrepreneurs in the future must pay attention to technological advances so that their businesses can grow faster. One thing that is still lacking is orgaware, or organizational awareness, which means there is no clear division of tasks. All activities are still carried out by art studio entrepreneurs, so to advance further, they must work together, and there needs to be specialization in the field of digital technology so that they can focus more on developing their businesses. For humanware and infoware, these two things are the core of the work that has been done so far. The following is a THIO diagram as shown in Figure 1.

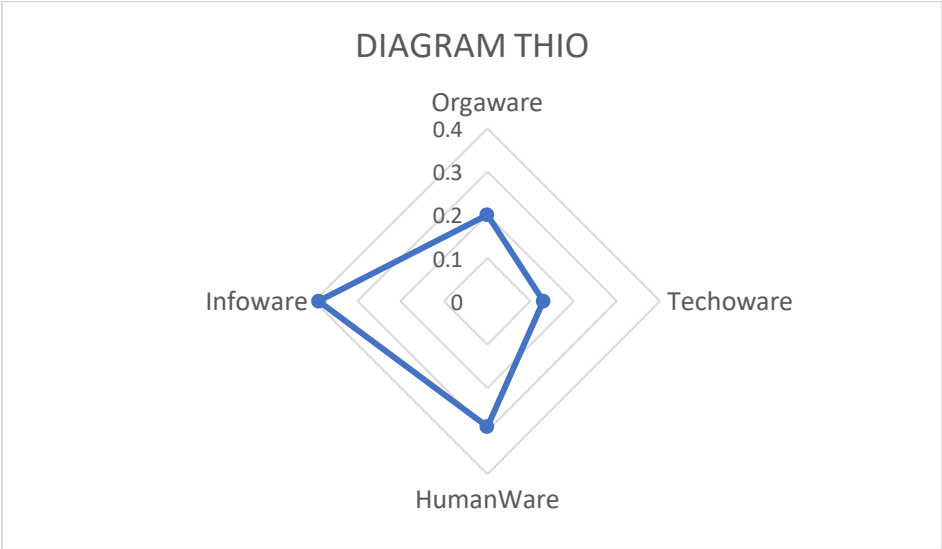

Figure 1. THIO Diagram Image
[Source: Researcher, 2024]

Based on the contribution of technology, it is proven that digital technology is very important for the progress of the country and industry. Various industries also use technology, which is certainly very important to improve their business in this case, the art studio business. The absence of a map of the level of digital technology capabilities that are relevant to market needs, especially for art studios, has caused low growth and development at this time. This map is important for fostering art studio entrepreneurs so that they can continue to develop towards a clearer direction. This must be very helpful for art studio entrepreneurs to be able to survive in the era of digital technology.

The technometric method provided by the United Nation Economic and Social Commission for Asia Pacific (UNESCAP) is used to assess the level of technological capabilities possessed by art studio entrepreneurs. According to UNESCAP, technology as a basis for improving company competence is important for the success of the company in order to compete in the long term. Success in developing an art studio business in the future requires a good planning strategy for art studios in the future with the help of technology.

The results show that the contribution of technology (technoware, humanware, infoware, and orgaware) is still low for dance, music, martial arts, fine arts, literary arts, theater, and cinematography studio businesses in the DKI Jakarta area, through the calculation of the Technology Contribution Coefficient (TCC) of 0.272.

The lowest component in this finding is the adaptation of technoware and orgaware. In addition, the humanware and infoware components are better, and these two compo-

nents are the backbone of the art studio business that has been run by art studio entrepreneurs. Therefore, art studio entrepreneurs need to maintain and develop the humanware and infoware components so that the sustainability of the art studio business can run well in the long term.

The orgaware and technoware components need to be given top priority in development, considering that the failure rate in the art studio business that is run is quite high so that various breakthroughs are needed in terms of orgaware and technoware regarding this digitalization era.

The presence of digital technology is the result of the modernization of information technology, which is developing as fast as the fading of traditional arts. For example, contemporary technological advances include not only the use of new techniques and tools but also transformations in the way people think and act. In addition, social relations, economic transactions, and cultural interactions are increasingly carried out on digital platforms, which no longer require direct interaction between humans. As a result, this poses a number of new challenges for the order of life of art studios.

Therefore, the main problem facing Indonesia today is its status as only a user of technology and its not being actively involved in the creation and control of technological developments. Art studio entrepreneurs usually do not have sufficient knowledge and knowledge to utilize digital technology for the benefit of their studios.

Not many efforts have been made to overcome the limitations of knowledge and increase knowledge about digital technology in art studios, and these efforts have not matched the development of technology itself. According to the Main Thoughts of Regional Culture (2018), the greatest effort is made to educate the public to be able to understand and use technology. This is done not to innovate or contribute to the development of technology. In addition, there is no policy plan that prioritizes national interests to regulate and supervise the development and use of digital technology.

Modernization cannot be avoided or prevented. However, for elements of modern life to contribute to cultural progress, people must have the ability to choose and place them correctly. Along with the general reduction in space for expression, the problem of people's access to traditional knowledge and life practices is also very limited. Data from the Regional Cultural Thought Center (PPKD) shows that many traditional practices are threatened with extinction because the practitioners are elderly and there is no mechanism to transfer the practices to the next generation. To protect traditional knowledge and life practices, different institutions sporadically collaborate to record and document them.

The development of traditional knowledge and life practices in modern life is also not widely carried out. The modern world and tradition seem like two different worlds. In

many places around the world, it has been proven that modernization guided by the richness of tradition can make a significant contribution to world culture. On the other hand, the advancement of technology and modern knowledge is very helpful in the preservation of art studios. This is clearly seen in the management of intellectual property of art studio businesses, where advances in digital technology enable the protection and development of art studios by utilizing the use of digital technology to enable extensive use of intellectual property.

Conclusion

The highest aspects of the THIO component (technoware, humanware, infoware, and orgaware) are infoware and humanware; for that, in the future it is necessary to make an effort to improve the lowest aspects, namely technoware and orgaware, in the art studio business in Jakarta. The orgaware and technoware components need to get top priority in development, considering that the failure rate in the art studio business being run is quite high so that various breakthroughs are needed in terms of orgaware and technoware regarding this digitalization era.

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