



## The impact of digital transformation and the use of Whatsapp chatbot technology on the development of the creative economy in Deli district of Serdang

Anisah Salsabila Nasution<sup>1\*</sup>, Nurbaiti<sup>2</sup>, Rahmat Daim Harahap<sup>3</sup>

<sup>1,2,3</sup> Faculty of Economics and Islamic Business, State Islamic University of North Sumatra, Medan

E-mail: [anisahnasution13@gmail.com](mailto:anisahnasution13@gmail.com)\*

Article Information	ABSTRAK
<p>History of the article: Accepted: July 2023 Corrected: August 2023 Accepted: October 2023</p> <p><b>Keywords:</b> Digital Transformation, Whatsapp Chatbot, Creative Economy</p>	<p><i>In our current revolutionary era, the digital economy is a projection of new talent that can inspire competitiveness. The digital economy is currently growing rapidly around the world, including Indonesia, as evidenced by the increasing number of internet users. However, it is becoming increasingly clear that ongoing digitization is not only benefiting those economic actors who can thrive with technological advances, but also creating inequalities for those who cannot keep up. The purpose of this study was to determine the effect of digital transformation and the use of whatsapp chatbot technology on the development of the creative economy in Deli Serdang district. The type of research used in this research is quantitative research. The data source used is primary data by distributing questionnaires to respondents, in this case, creative economy actors in Deli Serdang district. The analysis technique used in this study is multiple linear regression analysis using the SPSS 26 program. The results of the study state that the digital transformation and whatsapp chatbot variables have a positive and significant effect on the creative economy</i></p>

### Introduction

The development of technology and the Internet is so rapidly evolving from time to time to this day, many areas are affected by the development of this technology and Internet, whether it is a positive impact or a negative impact. (Kangharnando and Adiya 2022). Indonesia has a great opportunity to boost national economic growth through the development of creative economies. Entrepreneurs in the field of creative economy, occupy the largest part of the entire economic activity of the Indonesian people. Indonesia will also experience demographic bonuses by 2035, where by 2030 the number of working-age population is estimated to be over 60 percent and 27 percent of them are young people aged 16-30. (Aysa 2020).

A creative economy is defined as an industry that emerges from the exploitation of individual creativity, skills and talents to create well-being and employment through the creation and utilization of the individual's creativity and creativity. One of them is the creative industries that provide business creative services, such as advertising, public relations and sales. (Daulay 2018). John Howkins was the first person to introduce the term creative economy through his book entitled "Creative Economy, HowPeopleMake Money FromIdeas". Howkins explains that a person's creativity arises when he says, works and creates something new, either in terms of creating something that originally did not exist or giving a new character to something that existed before. More precisely, Howkins pointed out that creative economics is an activity where input and output are ideas. (Khairina Tambunan 2022). There are 16 sectors of the creative economy that are developed: applications and development of games, architecture, product design, fashion, interior design, visual communication design, performing arts, animated films and videos, photography, culinary creations, music, publishing, advertising, fine arts, television and radio. (Reni Hermila Hasibuan, Muhammad Arif 2023). As the creative economy grows, there are a number of key issues that will be challenging the development of creative economies, including lack of jobs, lack of innovation in entrepreneurship, industry competitiveness in the market, product financing, braindrain in creative SDM, infrastructure and technology. (Marliyah, Daim, and Rahmi 2022). Because of its potential to boost economies on a global scale, creative economies play an

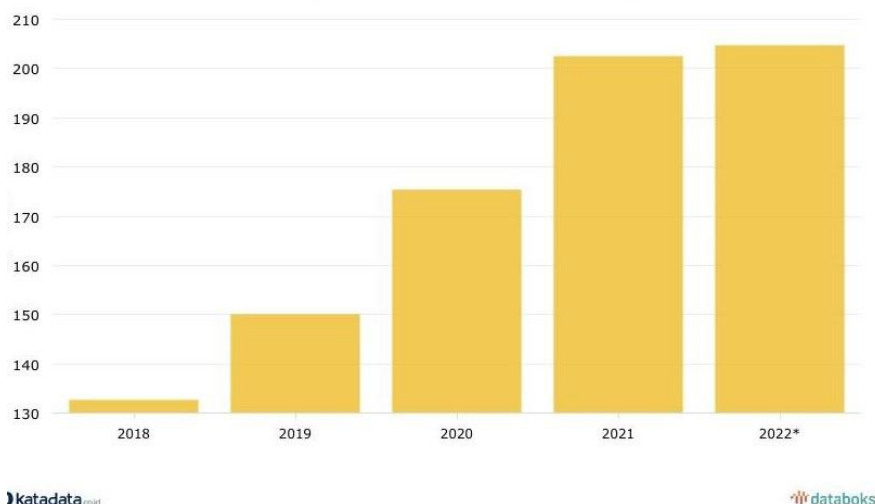


important role in the economies of a nation and region. From the industrial sector that has begun to emerge in Indonesia as a result of the creativity and innovation of human resources as well as technological advances that have contributed to the sustainability of the economy, every creative industry player must be creative, innovative, and capable of meeting the demands of the global society. (Anggri Puspita Sari, 2020).

According to the results of Statistics of the Creative Economy in 2020, the number of creative economic enterprises in Deli Serdang district is 14.94%. This puts Deli Serdang district in the second place among the creative economists in North Sumatra, where the center of the creative economy is the City of Medan with 54.93% and the third place of the creativity economy is Binjai City with 3.68%. Where the creative economy subsector with the highest revenue in 2020 is in the music subsector at 24.98%, followed by the culinary subsector of 19.71%, and the performing arts subsektor of 9.17%. (Informasi 2020).

Along with rapid innovation and technological development, society has now shifted from a variety of manual systems to more practical and flexible systems. The presence of several technological instruments makes modern society put a point of dependence on the whole component. Technology with all its advances is capable of transforming the intensity of the human perspective into a broader and more comprehensive one. It's because of the modern society that is no longer alien to the Internet. (Nabilah, Mhd, and Nurbaiti 2021). Using technology to make work more efficient and efficient is known as the term digital transformation. The process of unchangeable change is also called digital transformation. (Farhani and Chaniago, 2021). Digital transformation is the implementation of digital technology to improve service in an enterprise by changing services from manual process to digital process or performing the shift of old technology with newer technology. Digital solutions aim to efficient automation and new innovation and creativity (Karyani, Geraldina, and Haque 2021). This is because every organization, regardless of size or industry, is increasingly relying on data and technology to operate more efficiently and deliver value to customers. (Aisyah, Arifandi Banurea, and Bimantaka 2023). Applying digital technology to boost productivity and boost corporate value is another way of embodying digital transformation. (Firmansyah, Saepuloh, and Dede, 2022). Digital transformation is much easier to analyze when using business intelligence. The digital transformation strategy specifically covers the vision, planning, and implementation of the process of organizational change (Putri et al. 2021).

**Number of Internet Users in Indonesia (2018-2022\*)**



**Figure 1. Graphic Number of Internet Users in Indonesia (2018-2022)**

**Source: We Are Social**

Indonesia is one of the countries with the largest population of Internet users in the world. According to the We Are Social report, there were 204.7 million Internet users in the country as of January 2022. That's a thin increase of 1.03% from the previous year. As of January 2021, the number of Internet users in Indonesia was 202.6 million. The trend in the number of Internet users in Indonesia has been steadily rising over the last five years. Compared to 2018, the number of national Internet users has soared by



54.25%. Meanwhile, the Internet penetration rate in Indonesia reached 73.7% of the total population by the beginning of 2022. The total population of Indonesia was 277.7 million as of January 2022. In 2018, the Internet penetration rate in the country only reached 50% of the total population. That is, the rate of national Internet penetration has increased quite rapidly in recent years. The digital economy itself shows growth and development of widespread and simple economic transactions through the use of Internet services as a means of communication and collaboration between individuals and companies. (Rahayu, Agus Supriyono, and Mulyawan 2022)

Changes in human activity such as the transition from conventional money to digital money, conventional media to digital media, and other changes are impacting many aspects of life. Activities that individuals or groups can do are no longer limited by space and time, even activities such as transactions and communications can be done digitally anywhere and anytime without having to meet in person. (Rahmadyah and Aslami 2022). These changes have a positive or negative impact on any individual or company involved in the business process. In business with digital transformation, it makes it easy for customers to order products or make orders for a variety of other things easily and cheaply. (Danuri 2019).

On the micro side, the presence of such a trend of digital transformation requires a change in the business model in which the actors must respond in raising their awareness of information literacy and the use of information technology. (IT). On the macro side, there is a need for government policy in creating a digital ecosystem that integrates information systems so that not only fosters the business climate by creating a transaction tool, but also knows the conditions and needs of the perpetrators so that valid data and information is obtained and integrated as the appropriate policy formulation material. (Berliandaldo et al. 2021)

To help perfect this research, the authors used some previous research to use as a comparative reference. As done by Ethics Karyani dkk (2021) that digital transformation is recognized as a solution to enhance halal industry in Indonesia. According to Mahardhika Berliandaldo dkk (2020) that the growth of UMKM in recent years has seen a fairly positive improvement for Indonesian economic growth. However, this growth does not go hand in hand with the use of UMKM's digitization concept, which is currently still 13% UMKM using digital technology. According to Wislye Kangharnando dkk (2022) that can answer all keywords given by users accurately. Then the buyers/users who use the chatbot service will get the right information. According to Imma Rokhmatul Aysa (2021) that the digital economy can cause inequalities for some groups that can follow digital development to success, as well as some that can not follow so making their earnings rolls. Some of the benefits that we can get from digitization for the development of Indonesia's economy are large market share, easier transactions, increased production, simpler payments, and more varied promotions. The harmful side is lack of employment, vulnerability to fraud, and plagiarism.

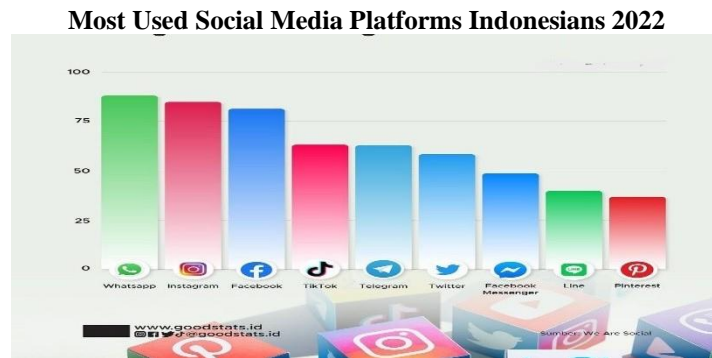
Social media is a very effective digital marketing tool for small domestic entrepreneurs to market their products and optimize their marketing goals. Using social media as digital marketing in business processes can create cost, time and energy efficiency. The most widely used social media application is WhatsApp. Marketing products using social media that is commonly used by the public, such as the WhatsApp app, can boost sales. Chatbot technology is widely used by business operators because companies can save operating costs and provide 24-hour active services. Nevertheless, it turns out that the digital economy can create inequalities for some groups that can follow digital progress to success, as well as some that can't follow so making their earnings a scratch. (Aysa 2021)

Chatbots are artificial intelligence programs and models of human-computer interaction. (human-computer interaction). Artificial intelligence has influenced the way we engage in everyday activities by designing and evaluating advanced applications and devices, called intelligent agents, that can perform various functions. In general, a chatbot is a computer program designed to simulate conversations with humans, mainly via the Internet (Dr. Hesti Fibriasari 2022).

In industry and business, chatbots are already being used to provide customer service so that they can interact with their customers. (Bariyah and Imania 2022). Chatbots serve to help handle thousands of incoming messages through various channels of communication. Chatbots can provide information about products that customers want. Chatbots are often the choice of searching for general information and do not take long. Once the customer has obtained the desired product information, the chatbot can also help the customer to make the booking. This feature also ensures that all messages from customers can be handled quickly. This would indirectly be added value for consumers and could save labour and increase



sales. (D, Primasari M, Janaqi, Kamilah, E 2022). Chatbot technology is a form of Natural Language Processing application, NLP itself is one of the sciences of Artificial Intelligence that studies communication between humans and computers through natural language (Hormansyah et al. 2018).



**Figure 2. Most Used Sosmed Platform Graphics Indonesians 2022**  
Source: We Are Social

In this era, social media is one of the needs of society. Data released from We Are Social, the most widely used social media platform of Indonesians by 2022 is the WhatsApp app with 80 percent of all social media users in Indonesia. Then followed by Instagram, Facebook, TikTok, and Telegram apps. (Goodstats, 2022). Based on the above, it can be concluded that the digital transformation and the use of WhatsApp chatbot applications by creative economists will bring many benefits. However, there are still creative economists who have not used technology to market their products. Based on both of these phenomena, it can be seen that in the digital transformation and use of WhatsApp chatbot applications in the creative economy, there is a multi-case perspective, namely, the case of creative economies that have leveraged technology and cases of creative economy that have not been leveraged. Based on the multi-case perspective, the study aims to examine the impact of digital transformation and the use of the WhatsApp chatbot application on the development of the creative economy in the district of Delilah.

### Method

Quantitative research is a research that in the process of its implementation uses numerous figures ranging from the collection of data, interpretation, to the outcome or the drawing of conclusions. In its presentation, quantitative research more often shows and signifies numbers accompanied by images, tables, graphs or other displays. (Dr. Priest Machali 2021)

The type of research used in this research is quantitative research. Sampling method using purposive sampling obtained 100 data samples from a total population of 288,557 creative economists. The statistical test used in this study is a double linear regression model tested using SPSS 26. This research focuses on primary and secondary data sources. The primary data of this study is collected from responses to questionnaire statements following conditions/situations/emotions experienced directly by respondents who are creative economists in Deli Serdang district. Further, secondary supporting data comes from a variety of literature, such as journals and related books. (Nabil Al Arif 2021).

Based on the answer from the respondent, the questionnaire is given a score called the Likert scale used to evaluate the response to the attitude of respondents to each item of the statement and the research through a scale that places the respondents on a single statement and is then asked to give an answer by choosing one of the five responses that have been provided with different degrees. (Sihotang 2020)

The large sample in this study uses a Slovenian formula with a 10% error rate and a population of 288.557 (14.94% of the population of Deli Serdang District was 1.931.441 people). Here's the sample calculation using the Slovenian formula: (Amalia Dina Rosalin 2021)

$$n = \frac{N}{1+N(\epsilon)^2}$$



$$\begin{aligned}
&= \frac{288.557}{1+288.557(0,1)^2} \\
&= \frac{288.557}{1+2.885,57} \\
&= \frac{288.557}{2.886,57} \\
&= 100 \text{ sample}
\end{aligned}$$

**Description:**

n = sample size/number of respondents

N = population size

e = the percentage of loosening the severity of sampling errors that are still tolerable

In the Slovin formula there is the following provision:

Value e = 0.1 (10%) for a large population

Value e = 0.2 (20%) for a small population

So the range of samples that can be taken from the Slovenian technique is between 10-20% of the population.

**Result**

**First. Data Quality Test Results**

**Validity Test**

**Digital Transformation Variable (X1)**

**Table 1. Digital Transformation Validity Test Results**

No	R count	R table	Probability	Description
1	0,726	0,196	0,000 < 0,05	Valid
2	0,793	0,196	0,000 < 0,05	Valid
3	0,659	0,196	0,000 < 0,05	Valid
4	0,784	0,196	0,000 < 0,05	Valid
5	0,636	0,196	0,000 < 0,05	Valid

**Variable Chatbot Whatsapp (X2)**

**Table 2. Results of the Validity Chatbot Whatsapp**

No	R count	R table	Probability	Description
1	0,691	0,196	0,000 < 0,05	Valid
2	0,658	0,196	0,000 < 0,05	Valid
3	0,712	0,196	0,000 < 0,05	Valid
4	0,447	0,196	0,000 < 0,05	Valid
5	0,562	0,196	0,000 < 0,05	Valid

**Variable Ekonomi Kreatif (Y)**

**Table 3. Results of the Validity Test of the Creative Economy**

No	R count	R table	Probability	Description
1	0,673	0,196	0,000 < 0,05	Valid
2	0,729	0,196	0,000 < 0,05	Valid
3	0,701	0,196	0,000 < 0,05	Valid
4	0,431	0,196	0,000 < 0,05	Valid
5	0,762	0,196	0,000 < 0,05	Valid



From the three tables above can be drawn the conclusion that the scattered questionnaire is valid if r counts > r tables, whereas the questionnaire is said to be invalid if r tells < r tables. With r count > r table and r table 0.196 then all statements can be considered valid based on the validity results above.

### Uji Reliability

**Table 4. Reliability Test Results**

Variable	Construct Reliability
Digital Transformation	0,781
WhatsApp Chatbot	0,742
Creative Economy	0,766

Let's Color (2018) communicate that when cronbach's alpha value is greater than 0.60 then the research instrument is reliable. If cronbach's alpha value is less than 0.60 then the research instrument is not reliable. As for the reliability value of the Digital Transformation variable (0,781), the WhatsApp Chatbot (0,742), the Creative Economy (0,766). Therefore, the variable used in this study is declared reliable.

### Classical Assumption Test

#### Normality Test

**Tabel 5. Normality Test Result**

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		100
Normal Parameters <sup>a,b</sup>	Mean	.0000000
	Std. Deviation	1.90221853
Most Extreme Differences	Absolute	.060
	Positive	.060
	Negative	-.044
Test Statistic		.060
Asymp. Sig. (2-tailed)		.200 <sup>c,d</sup>
a. Test distribution is Normal.		
b. Calculated from data.		
c. Lilliefors Significance Correction.		
d. This is a lower bound of the true significance.		

The normality test showed a degree of significance greater than  $\alpha$  ( $\alpha=0.05$ ), or  $0.200 > 0.05$ , on this data output indicates that the data is distributed normally.



## Heterokedastisity test

**Table 6. Heterokedastisity test results**

No.	Indicator	Calculation Value	Meaning Side	Descriptive
1.	Digital Transformation (X1)	0,476	0,05	There is no heterocadastisity
2.	Chatbot Whatsapp (X2)	0,500	0,05	There is no heterocadastisity

The above output data indicates that the calculation results of each variable have  $\text{sig} > \alpha$  values, i.e.  $0.476 > 0.05$  for the Digital Transformation variable and WhatsApp Chatbot has a  $\text{sig} > \alpha$  value of  $0.500 > 0.05$ , this suggests that the study is free of heterocadastisity and deserves further study

## Uji Multikolinearitas

**Tabel 7. Hasil Uji Multikolinearitas**

No.	Indicator	Calculation Value	Meaning Side	Descriptive
1.	Digital Transformation (X1)	1,254	10,00	There is no multicolinearity
2.	Chatbot Whatsapp (X2)	1,254	10,00	There is no multicolinearity

The data results show that VIF values are below 10.00 for digital transformation and WhatsApp chatbots. It shows that there is no multicolinearity between the two variables.

## Second. Double Linear Regression Test

**Table 8. Double Linear Regression Test Results**

No.	Indicator	Calculation Value	Table value	Description
1.	Digital Transformation (X1)	5,610	There's a significant influence.	There's a significant influence.
2.	Chatbot Whatsapp (X2)	2,901	There's a significant influence.	There's a significant influence.
	$F_{hitung}$	34,189	3,09	There's a significant influence.
	Koefisien Determinasi	41,3%	-	-

Explanation of each of the values of the t and F hypotheses as well as the determination coefficient (R<sup>2</sup>). The result of the t sequence hypothesis of the digital transformation (X1) = 5,610, and the whatsapp chatbot (X2) = 2,901. It's done partially or per-variable. It can be concluded that both independent variable values or  $t_{hitung} > t_{table}$  values, then there is a significant influence on dependent variables. The value of the simultaneous F hypothesis (X) is 34,189. This is done simultaneously from both independent variables to dependent variables. Similarly, the results of research conducted by both independent variables simultaneously have a significant influence on dependent variables.

It can be concluded that both independent variable values or  $F_{hitung} > F_{table}$  values, then there is a significant influence on the dependent variable. Meanwhile, the determination coefficient (R<sup>2</sup>) in this study was 41.3%. The result is to determine the extent of the impact of the research that has been carried out.

The impact of digital transformation on the development of creative economies

Digital transformation has a positive and significant impact on the development of creative economies. Digital transformation has the benefits of digitalization for the development of creative economies, including increased market share, simplification of transactions, increased production, simplified payments, and diversification of promotions. Digital transformation is so good that it is a powerful factor for the development of the creative economy especially in Deli district of Serdang.

The results of this research are also supported by previous research carried out by Ethics of Careers (2021) that digital transformation is recognized as a solution to enhance halal industry in Indonesia. According to Mahardhika Berliandaldo dkk (2020) that the growth of UMKM in recent years has seen a fairly positive improvement for Indonesian economic growth. However, this growth does not go hand in hand with the use of UMKM's digitization concept, which is currently still 13% UMKM using digital technology.

The impact of the WhatsApp Chatbot on the development of the creative economy

WhatsApp's chatbots have a positive and significant influence on the development of the creative economy. One Chatbot for the WhatsApp app is Wabot. Wabot is an Android-based application that features Android Smart Keyboard, Auto Reply, Chatbot, Auto Follow Up, Auto Send Messages, etc. Wabot can make it easy for UMKM perpetrators to manage incoming messages through WhatsApp automatically 24 hours a day.

The results of this study are also supported by previous research conducted by Wislye Kanharnando dkk (2022) that chatbots can answer all keywords given by users accurately. Then the buyers/users who use the chatbot service will get the right information. According to Imma Rokhmatul Aysa (2021) that the digital economy can cause inequalities for some groups that can follow the digital development to success, as well as some that can not follow so making their earnings rolls.

The impact of digital transformation and WhatsApp chatbots on the development of the creative economy. Future development of the creative economy will be predicted to grow based on the influence of digital transformation and whatsapp chatbots according to previous R-Tests. The results of the R test are supported by a determination coefficient or R Square value of 0.413 which shows that the digital transformation variable and whatsapp chatbot have an impact of 41.3% on the development of the creative economy. From the results of the R test, it can be concluded that the research finds that the digital transformation and chatbot whatsapp have an important role in the development of the creative economy.

## Conclusion

Based on the results of the research that has been carried out, it is possible to conclude that the digital transformation variable has a positive and significant impact on the creative economy with a significance rate of 0,000 and the chatbot variable whatsapp has a negative and significant effect on the creativity economy with the significance level of 0,005. Based on the simultaneous f test, the result was that the digital transformation variable and the whatsapp chatbot together influenced the bound variable, the creative economy. The results of the determination test (R) indicated that the digital transformation variable and whatsapp chatbot had an impact of 41.3% on the creative economy in Deli Serdang district while the remaining 58.7% was influenced by the variable or other factors outside the research.

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