Impacts of disruptive innovation with the emergence of startups and startup users in the informal sector of Palembang City, Indonesia

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Abstract. This study aimed to explain the impacts of disruptive innovation with the emergence of startups and startup users in the informal sector in Palembang City. It employed a mixed-methods design. In the quantitative part, a questionnaire was used as a tool to collect data from 384 respondents, and statistical analyses in the forms of percentage calculation and cross-tabulations were conducted. In the qualitative method, an interview guide was used to gather data from 16 informants, and the data obtained were analyzed using data reduction, data display, conclusion drawing, and verification. The main results of the study are that the characteristics of startups and startup users within the city’s informal-sector worker population are businesses that rely on existing markets, bootstrapping, and are for profit. In addition, disruptive innovation has positive impacts, namely gaining more experience for startups and increasing revenue for startup users, and both startups and startup users experience no negative impact. The main conclusion drawn from these results is that startups and startup users run the same types of business based on the market used, source of funding, and motivation. Also, they feel different positive impacts of disruptive innovation but share the same experience about the negative impact.

1 Introduction
The business world is strongly influenced by disruptive innovation, a phenomenon resulting from the efforts of competitors to find strategies to maintain their respective businesses [1, 2]. Disruptive innovation has been continuously experiencing renewal and development since the beginning of the 21st century and is increasingly introduced in the business world [3]. More recognition of disruptive innovation affects technology (primarily through new technology development) and economic growth due to the emergence of new businesses. Starting or developing businesses are some of the actions taken by entrepreneurs [7]. This is believed to be partially responsible for the rising number of newly established businesses, often referred to as startups. In addition, startups are known to help their users earn income [22].

The general public, especially in Indonesia, began to know about startups after the birth of PT. Gojek Indonesia in 2010. Startups are considered able to provide business opportunities and create unique and new jobs. Various startups have been created in the country, including those engaging in retail, property, food, accommodation, and science startup [9]. Startups are greeted with excitement by young people because they encourage them, business actors, to adapt to today’s challenges by utilizing technology to easily market their products and run their businesses efficiently. Therefore, mastery of technology and its application is necessary [13]. Disruptive innovation most affects employment in the informal sector. Nevertheless, the emergence of technology-based startups is not separated from the roles of investors and technology entrepreneurs [4].

There is burgeoning confidence in Indonesia’s capacity to take advantage of this phenomenon as it has seen several startups born following advances in technology and human resources. However, it is noteworthy that failing to take advantage of these technological opportunities can result in high unemployment rates [21]. One of the affected cities in the country is Palembang, the center of the economy and industry in South Sumatra. Among the cities in this province, Palembang has the highest number of urban informal sector workers, amounting to 204,860 people or 59.17 percent of the city’s total population.

In Palembang, the online market has been developing rapidly due to the use of technology (an example of disruptive innovation), and workers in the online informal sector have increased in number since the Covid-19 pandemic, which compelled many people to rely heavily, if not solely, on technology in their daily lives [5]. Merchants and business actors can use this condition by establishing a startup independently or simply utilizing an existing one. Among the benefits
of using startups is that informal sector workers can market their wares widely and be reached by their customers.

Informal sector workers are trying to adapt to technological developments and breakthroughs from year to year. Advances in technology make it easier for humans to carry out daily activities. However, a question remains: Can the human resources in Palembang survive and keep up with the continuously developing technology? Scholars are thereby required to address this matter so as to avoid economic and social inequality between people who can and cannot use technology. So far, there have been limited studies on technology-based startups and startup users in the informal sector. Therefore, trying to fill the gap underlies the originality of the current research. Specifically, it aims to explain the impact of disruptive innovation with the emergence of startups and startup users in the informal sector in Palembang City.

2 Methods
This study combined quantitative and qualitative approaches, forming a mixed-methods design [6]. The quantitative method used a questionnaire as the data collection tool, while the qualitative method used an interview guide. There were 384 respondents in the quantitative method selected using a proportional random sampling technique from the informal sector workers in 14 subdistricts in Palembang. This sample size was calculated by applying the Krejcie and Morgan formula to the informal-sector workers' population, i.e., 204,860. In the qualitative method, 16 informants were selected using a purposive sampling technique based on their willingness to participate in the in-depth interview. The quantitative analysis used the IBM SPSS Statistics 25 program to perform statistical analyses, namely percentage calculation and cross-tabulation, while the qualitative analysis was conducted using data reduction, data display, conclusion drawing, and verification.

3 Results and discussion
a. Research location
This research was conducted in Palembang City, South Sumatra Province, Indonesia. The city was selected as the study area because it is the province's capital city and economic center. In addition, Palembang is also the city with the largest number of urban informal sector workers in South Sumatra. The research location is shown on the map below.
Based on the market, businesses can be categorized into four: existing markets, new markets, segmented markets, and clone market startups. Business types of startups and startup users identified in the study are summarized in Table 1.

### Table 1. Percentages of startups and startup users according to market-based business categories.

<table>
<thead>
<tr>
<th>Business types based on market</th>
<th>Startups (%)</th>
<th>Startup users (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing markets</td>
<td>50</td>
<td>78.9</td>
</tr>
<tr>
<td>New markets</td>
<td>12.5</td>
<td>21.1</td>
</tr>
<tr>
<td>Segmented markets</td>
<td>37.5</td>
<td>0</td>
</tr>
<tr>
<td>Clone market startups</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Primary data, 2021

Based on Table 1, using the existing market was the standard business practice among 50% of startups and 78.9% of startup users. These results were confirmed by the interview excerpts below:

“For now, we choose to follow the existing market trend.” (Informant I_Ta-6)

“[Business is] Easy to run if we follow the current market.” (Informant I_Da-4)

From the statements above, it can be inferred that the research informants tend to adjust their businesses according to current market conditions. It is known that entrepreneurs take several actions, such as creating a new business or developing an existing one to start

Based on the data collected in the field, the majority of startups and startup users were bootstrapped businesses. Up to 87.5% of startups and 98.4% of startup users used funds from personal savings. These results corresponded with the interview excerpts below:

“For now, we use our own money to support the business independently.” (Informant I_Ba-9)

“We have not been able to find sponsors yet, so we are still using our own money to grow the business.” (Informant I_Vi-6)

The research informants stated that they still relied on their own money or savings to run and grow their businesses and had not been able to find sponsors. This finding aligns with previous research that found many entrepreneurs running their businesses by bootstrapping or self-funding [8]. Also, based on the personal source of funding, it can be said that the entrepreneurs belong to the informal sector [16].
Table 3. Percentages of startups and startup users according to motivation-based business categories.

<table>
<thead>
<tr>
<th>Business types based on motivation</th>
<th>Startups (%)</th>
<th>Startup users (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social</td>
<td>25</td>
<td>0.3</td>
</tr>
<tr>
<td>For-profit</td>
<td>75</td>
<td>99.7</td>
</tr>
<tr>
<td>Not-for-profit</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Primary data, 2021

Table 3 shows that based on motivation, the largest share of startups (75%) and startup users (99.7%) ran their businesses for profits. These results were in line with the interview excerpts below:

“From the beginning, we created this startup to make profits.” (Informant I_Ta-7)

“Undoubtedly, we are for-profit, sir, because we cannot grow our business otherwise.” (Informant I_Gi-2)

Based on the informants’ statements above, it can be concluded that earning profit was the most common motivation in running a business. In another research, for-profit startups in Indonesia are subdivided according to their fields or services offered: science-based (60.8%), food and accommodation (11.4%), education (9.4%), and properties, retail, and others [9]. Every entrepreneur expects profits to be able to grow their business [16].

c. Impacts of disruptive innovation (startups and startup users) on informal sector workers in Palembang City

i. Positive and negative impacts of startup establishments

3.3.1.1. Positive impacts of the emergence of startups.

The positive impacts of establishing startups were grouped into five categories: obtaining social satisfaction, increasing motivation, gaining more experience, making acquaintances with many more people, and making daily lives easier. The distribution of respondents based on these positive impacts is presented in Figure 2.

![Bar chart showing positive impacts of startups]

Fig. 2. Positive impacts of the emergence of startups.

The establishment of startups was perceived positively by informal sector workers as it mainly contributed to gaining more experience in opening an online business (37.5%), making acquaintances (25%), obtaining social satisfaction (12.5%), increasing motivation (12.5%), and making daily lives easier (12.5%). These results were confirmed by the interview excerpts below:

“By building this startup, I gain more experience in online businesses.” (Informant I_Jo-1)

“This online business creates an opportunity for me to make acquaintances.” (Informant I_So-1)
Based on the interview results, the positive impacts of startup establishments include gaining more experience and making acquaintances with many people. In addition, creating relationships or networks with various parties proves that startups can benefit informal sector workers by increasing their knowledge to innovate [10]. Experiences can be shared between and among fellow startup founders [17] and obtained from experts [18].

3.3.1.2. Negative impacts of the emergence of startups.
The negative impacts of the establishment of startups were categorized into two: no negative impact and wasting time. The proportions of respondents belonging to either category are listed in Figure 3.

Fig. 3. Negative impacts of the emergence of startups.

As seen in Figure 3, most respondents did not think the emergence of startups had any negative impact (87.5%). Only a few of them, about 12.5%, believed that it was a waste of time. On average, the startup builders answered with "no negative impact." These results corresponded with the interview excerpts below:

“I have not found any negative impacts while building this startup." (Informant I_Ca-3)

“Actually, yes [there is a negative impact], [using or building startups] means that I spend more time selling than with my family.” (Informant I_Ri-5)

Based on the interview results, the only negative impact was the amount of time spent working on and with startups. Negative impacts can appear on market competition, which requires the government to actively monitor the market to minimize and avoid them [11]. Based on the small percentage of the negative impact depicted in Figure 3, it can be interpreted that the startups used have very few weaknesses or threats [19]. No bad reputations mean that the startups have no negative impact [20].

ii. Positive and negative impacts on startup users
3.3.2.1. Positive impacts on startup users.
The positive impacts of running businesses using startups, according to users, were divided into nine: earning income, increasing revenue, creating a better economy, helping the family’s economy and being economically independent, making more acquaintances and gaining a better understanding of competitors, gaining more experience, personally establishing/running a business (no need to comply with employers’ demands and rules), having more time with family, and meeting new business colleagues and learning/acquiring knowledge of sales management. The distribution of respondents according to the perceived positive impacts is summarized in Figure 4.

Fig. 4. Positive impacts of the emergence of startups.
When describing the positive impacts of utilizing startups in their businesses, users mainly responded with an increase in revenue (45%). However, only a few (3%) thought that startups allowed them to run businesses while spending more time with family. These results were in line with the interview excerpts below:

“As long as I use this startup, my income increases.” (Informant I_Wi-8)

“In my opinion, there is a difference in income. My income did not increase until after I use online [application, technology-based startups] to trade [wares] now.” (Informant I_Hu-6)

These informants confirmed economic improvements after using startups to run their businesses. In addition, increased income or revenue, as the most common benefit mentioned in the study area, corresponds with how digital businesses continue to positively influence the national economy in Indonesia [6]. The digital economy positively influences both macro and micro economies [11] [21], especially those run by startup users. Existing startups substantially help their users in earning income [22, 23].

3.3.2.2. Negative impacts on startup users.

The negative impacts on startup users were divided into four categories: no negative impact, less time with family and friends, high risk of crimes, and startups interfering with studies in college. This information is presented in detail in Figure 5.
In addition to positive impacts, users experienced the negative impacts of startups to different extents. Although the majority found no negative impact (63%), some of the respondents stated that using startups to run their businesses reduced time with family and friends (31%), interfered with studies in college (5%), and increased risks to crimes (1%).

“Nothing negative. Thank God. So far, I have only experienced positive impacts.”
(Informant I_Ba-5)

“[Using startups gave me] less time with family, [I am fully] occupied selling online.”
(Informant I_Ci-2)

The interview revealed that users experienced no disadvantages in integrating startups into their businesses. However, negative impacts can occur when users cannot see the opportunities in running businesses by utilizing technology [12]. For instance, if technological advancements are extensively used solely for entertainment instead of business operation or management [22], these opportunities will likely result in high unemployment rates [21].

4 Conclusion
The current research has found that the characteristics of startups and startup users among informal sector workers in Palembang City indicate relatively homogenous business type, namely using the existing market (business differentiation based on market) and running bootstrapped businesses (based on sources of funding) for profit (based on motivation). The research has also identified the positive and negative impacts of disruptive innovation with the emergence of startups and startup users in the city’s informal sector. In general, the most common positive impacts include gaining more experience for startups and increasing revenue for startup users. Also, the highest percentage of responses shows no negative impacts for both. These findings imply that startups and their users need the courage to create new markets, innovate to receive funds from investors, and create many types of social-based businesses. In addition, sharing knowledge with experts, startup players, and experienced startup users allows informal sector workers who have recently joined the digital economy to gain more experience and income.

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