



## Innovation Strategies to Reduce SMEs' Bankruptcy Prediction During COVID-19 Pandemic in Central Java

### *Strategi Inovasi untuk Mengurangi Prediksi Kebangkrutan UMKM pada Masa Pandemi COVID-19 di Provinsi Jawa Tengah*

Ahmad Hijri Alfian, Dian Essa Nugrahini

Accounting, Economic Faculty, Sultan Agung Islamic University

Hijrialfian@unissula.ac.id

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#### ABSTRACT

As a result of the COVID-19 epidemic, the business sector, particularly SME's, is currently undergoing turbulence. To combat this epidemic, SMEs doers must increase their efficiency and effectiveness and maximize their market share by leveraging possibilities and innovative solutions. Prior to and during a pandemic, small and medium-sized enterprises (SMEs) faced challenges that may have led to their bankruptcy rather than having a large influence on the national economy and the micro welfare. The purpose of this study was to determine the effect of the innovation strategy carried out by SMEs in dealing with potential bankruptcy in the Covid-19 pandemic era. Innovation strategy is measured through "Cost Research and Development", while bankruptcy prediction is calculated using "Z Score Altman Model". The research used primary data, namely financial data questionnaires, while the sample and research population were SMEs in the province of Central Java. The results show that the innovation strategy is proven to be able to influence SMEs bankruptcy prediction, and its financial performance is proven to be a significant moderating variable which, if it shows good results, then it can weaken the bankruptcy prediction. Furthermore, this innovation strategy is also able to reduce the prediction of bankruptcy because it has a positive effect; the higher the innovation strategy, the higher the Z-Score value is, while the potential for bankruptcy prediction becomes smaller.

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#### ABSTRAK

Saat ini dunia bisnis termasuk pelaku UMKM sedang mengalami gejala yang berasal dari kejadian yang tidak dapat diduga, yaitu pandemi Covid-19. Cara yang dapat dilakukan untuk mengatasi kejadian tersebut, pelaku UMKM perlu meningkatkan efisiensi, efektivitas, dan memaksimalkan pangsa pasar dengan mengoptimalkan kesempatan yang tersedia dengan memaksimalkan strategi inovasi yang dimilikinya. Persaingan antarUMKM sebelum pandemi berpotensi mengalami kebangkrutan UMKM semakin besar dan tentunya akan berdampak luas baik dari sisi perekonomian nasional maupun kesejahteraan masyarakat yang terpengaruh dari dampak kebangkrutan tersebut. Tujuan Penelitian ini adalah untuk mengetahui pengaruh strategi inovasi yang dilakukan oleh UMKM dalam menghadapi potensi kebangkrutan pada era pandemi Covid-19. Strategi inovasi diukur melalui "Cost

*Research and Development”, sedangkan prediksi kebangkrutan dihitung menggunakan “Z Score Altman Model”. Data penelitian menggunakan data primer, yaitu kuesioner data keuangan. Sampel dan populasi penelitian adalah UMKM yang terdapat di Provinsi Jawa Tengah. Hasil penelitian menunjukkan strategi inovasi terbukti dapat memengaruhi prediksi kebangkrutan suatu UMKM dan kinerja keuangan terbukti secara signifikan dapat menjadi variabel moderasi. Jika menunjukkan hasil yang baik, dapat memperlemah prediksi kebangkrutan. Strategi inovasi juga mampu mengurangi prediksi kebangkrutan karena memiliki hasil yang berpengaruh positif, sehingga semakin tinggi strategi inovasi yang dilakukan semakin tinggi pula nilai Z-Score dan potensi prediksi kebangkrutanpun akan semakin mengecil.*

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## Introduction

Nowadays, competition between companies, including SMEs, in Indonesia and globally, is very sharp and fast. This means new competitors can enter the industry easily. This also happens to suppliers and customers who can improve the bargaining process so that they will get a tighter price competition (Jimmy & Mustamu, 2015).

Competition between companies and SMEs before 2019 could indeed be categorized as one that only relied on their company’s conditions with those of their competitors. Yet, at the end of 2019 the world was shocked by the COVID-19 pandemic, which was completely beyond the companies’ control. The previous burden of competition coupled with the COVID-19 pandemic, forced companies to take immediate steps related to innovation strategies for the sustainability of SMEs in the future. This situation has not been compounded by the current global economic conditions, which have various challenges such as the effects of globalization, increasing competition, technology, increasing environmental turmoil, and increasing customer preferences. Therefore, today’s top management companies are required to do more than just a long-term strategy and be able to anticipate the unexpected and important event. (Kaliappen & Hilman, 2017). This also applies to businessmen and to small and medium enterprises (SMEs).

One of the steps that companies and SMEs must take is to continue developing innovation strategies. Innovation has become a phenomenal and important measure in every organization, because innovation is closely related to the growth of productivity, competitiveness, and the economy of a country (Cunha Schmidt & Hoffmann, 2019). These various activities are also closely related to small and medium enterprises (SMEs). Therefore, this innovation will help companies and SMEs to maintain their business and be able to compete in the marketplace. The business world and SME actors need to improve their efficiency, effectiveness, and market share by optimizing available opportunities and maximizing their innovation strategy. This opinion is supported by Varadarajan (2018), who states that innovation is the core of business strategy to achieve and maintain competitive advantage in the market. One of them is product innovation, a marketing strategy that can meet consumer needs and wants, respond to changes in consumer preferences, shape consumer preferences, strengthen the company’s position in the market, and enter new markets. This will be reflected in the improvement of the existing financial performance of SMEs.

Mistakes and unwillingness of companies and SMEs related to the innovation steps taken will have a worse impact on the company and SMEs themselves. The worst consequence for companies and SMEs is the inevitable bankruptcy. Innovations that should help companies and SMEs in their efforts to recover business operations coupled with the COVID-19 pandemic are very crucial.

Research on innovation in SMEs has been carried out, including by Niam (2018), who succeeded in proving that product innovation carried out by SMEs was able to strengthen customer satisfaction in Jambi Province. Another research was conducted by Syukron & Ngatno (2016) in one of the cities in Central Java Province, namely Kudus, which has a high level of SMEs’ survival. The results showed

that its market orientation and entrepreneurship affect product innovation, and product innovation affects the competitive advantage of SMEs. Other research conducted by Restrepo-Morales et al. (2019) showed that SMEs in Colombia that are oriented towards product innovation produces high performance indicators. This research proves that the innovations carried out by SMEs will have a positive impact on the performance and operations of SMEs themselves.

The recovery of business operations can be marked by several things, one of which is that companies and SMEs are able to win the competition in sales in market competition and get more liquid assets such as cash to ensure the company's and SMEs' running operations will continue to make over, or in other words, improve financial performance conditions. Furthermore, SMEs must be able to offer new products that are better than their competitors in order to continue to exist and earn sustainable profits (Amrulloh, 2017). Competition between companies and SMEs before the pandemic, which is currently coupled with the COVID-19 pandemic itself, will make the chance for bankruptcy of them even greater, and, of course, it will have a broad impact both in terms of the national economy and micro-welfare.

Companies and business sectors, including SMEs, that file for bankruptcy, have lost their ability to pay rent or other operational activities. The financial difficulties experienced by companies and business sectors are a consequence of the non-optimal ownership of resources that cannot generate an adequate economic income (Tenkasi & Kamel, 2016).

Companies and SMEs that have experienced financial difficulties, will experience several problems, and one of them is complaints made by suppliers because their bills or debts are not paid. This bankruptcy case is likely experienced by a company hit with financial difficulties and applying for protection from the court regarding its bankruptcy. One of the goals is to seek immunity from all debt accumulation in the future. Tenkasi & Kamel (2016) argue that companies and SMEs will try to restructure themselves both financially and organizationally to regain good conditions related to healthy finances.

Bankruptcy in SMEs must be avoided because SMEs play one of the important functions related to the state's micro economy in terms of job creations, as stated in (Culkin & Simmons, 2018), which states that SMEs play a central role in terms of job creations. Meanwhile, Irawan (2018) states 99% of SMEs companies in Indonesia come from family companies. This is the reason for the urgency and purpose of why this research was conducted. Besides being related to employment, it also concerns the livelihoods of families in Indonesia. Moreover, the research on the prediction of bankruptcy in SMEs is also rarely done so far, especially ones applying Z Score method, which uses more manufacturing companies or companies listed on the capital market as research samples. Indeed, this happens because there are difficulties in obtaining the financial data needed to produce a Z Score to predict the bankruptcy of a business.

## Literature Review

### Market Orientation Theory

Market orientation believes that businesses and small businesses must be oriented and focused. Furthermore, it has to must pay attention to consumers in performing of their activities since consumers are a priority in all decision-making. Research by Ipek & Tanyeri (2020) stated that "market orientation" relates to current and future consumer needs. The basic philosophy of market orientation begins by studying market developments, followed by sharing information between company members and by adapting to market changes.

Based on the research by Hamzah et al. (2020), market orientation is defined as the company's ability to generate market knowledge and use this knowledge to create a superior customer value. Applying market orientation theory to a business will significantly impact the company's financial performance, increase consumers, employee loyalty, and foster business innovation.

Market orientation is an organizational culture that is effective and efficient in creating behaviour for buyers and companies. Market orientation also includes modern marketing concepts widely practiced

by academics and practitioners (Borazon et al., 2022). Market orientation culture is also known to be particularly good when applied in a condition of intense business competition. Market orientation is another factor that significantly influences the improvement of financial performance, especially in terms of SMEs profitability.

This is reinforced by Kazakov et al., (2020) finding that in research, SMEs can adopt a market orientation which has a relationship with the entrepreneurial and innovation process conducted. Another study (Newman et al., 2016) found that companies should strive to develop a good market orientation to have an impact on the development of innovation strategies.

### **Innovation Strategy**

Suhaeni (2018) provides a definition of innovation as the process of creating an idea including the development of a novelty, as well as the creation and introduction of a new product. Innovation also includes processes or services for the community. Innovation also has another meaning, which is the process of initial commercialization of inventions by producing and selling a service or product. The new process created is also included in the innovation.

Research by Ko et al. (2018) stated that one type of strategic innovation used by SMEs is product innovation. For SMEs to invest in continuing to innovate in products will be closely related to the survival of the SMEs themselves. Another study by (Winning in the global, (2020) showed that SMEs innovation can be conducted by looking at two strategies: creativity and risk orientation. Creativity is close to the process that must be conducted to produce a different product or service output. Risk orientation will indicate whether the output of various products and services is still in accordance with the community's or users' needs.

Research by Oduro (2019) showed that there are strategic innovations shown to SMEs that do not yet have superior technology, namely "open innovation." This strategy will bring many benefits for MSMEs, including operational, strategic, network, and financial benefits.

SMEs with high performance, dubbed "strong SMEs," will be able to create new jobs, improve economic conditions, reduce unemployment, and reduce poverty (Haddad et al., 2020).

### **Relationship of Research and Development with Innovation Strategy**

Innovation is especially important for the company. Several types of innovation have been described in the previous chapter. Another innovation that can be done is innovation in the technology field. Technological innovation is particularly important for a company if it wants to survive and thrive in a market with intense competition.

Technological innovation can provide companies with knowledge regarding new products and production processes. Indrawati et al. (2020) stated that technology is a valuable resource for organizations. The process of increasing innovation related to technology will have an impact on several things, one of which is cost. Research conducted by Ferreira et al. (2020) used many things related to R&D (Research and Development) in measuring the innovation variables conducted by SMEs in Portugal. Another study stated that R&D is the main resource for how company innovation can be conducted (Islam & Fatema, 2020).

### **Indonesian Enterprise Innovation Strategy**

The innovation strategies of companies in Indonesia are truly diverse. Research by Suhaeni (2018) stated that there are several types of innovation strategies that are usually carried out by SMEs in Indonesia. These innovation strategies include product, process, marketing, technical, and administrative innovation. Other research conducted by Elwisam & Lestari (2019) provides evidence that product and marketing innovation, as well as market orientation, have an influence on improving SMEs performance.



Product innovation, as described in paper by Widiyastuti et al., (2021) must go through several stages to maximize it. The stages consist of thinking creatively about product innovations that will be conducted, searching for ideas from the surrounding environment, paying attention to customer feedback in which products must follow the times, and finally, daring to make changes (execution).

Another innovation made by SMEs in Indonesia is information technology. The study by Wijaya et al., (2022) proved that information technology developed by SMEs will affect the competitive advantage of SMEs in the future. To survive in the global economic competition, SMEs must continue to innovate in the field of technology.

### **Bankruptcy and Prediction of Corporate Bankruptcy**

Mitter et al., (2021) stated that SMEs are one of the organizations that are very prone to facing bankruptcy. The bankruptcy experienced by the company always begins with a failure in the management process. The management in question can be of various kinds such as financial management, performance management, and management in dealing with all kinds of workers. Another thing is that the company is not being able to anticipate something that is “uncontrollable”. One of the things that falls into the “uncontrollable” category is a disaster.

Kuttner et al., (2022) stated that one form of management through accounting will greatly impact the possibility of bankruptcy in SMEs organizations.

At the end of 2019, the world experienced turmoil with the emergence of the COVID-19 pandemic disaster. This condition made all companies volatile because the impact was very fatal. The pandemic had hampered the company’s operational activities. Many workers were forced to work from home, because if they were forced to work in their company, the potential for transmission will be even greater.

One of the efforts to defend the company from the possibility of bankruptcy that occurs is to conduct an innovation strategy. According to Tenkasi & Kamel (2016), companies will try to get out of bankruptcy by offering insight into the various change of strategies that will be used. The company’s strategy will be compared with other companies to know which one has the effect of changing the prediction of company bankruptcy.

The company’s bankruptcy that may occur will get the attention of many people. According to Changiz & Mohsen (2015), bankruptcy is a sad thing for the global economy. Bankruptcy will also have a broad impact, such as financial failure on a wide scale, a possible economic recession, rising unemployment, and a worsening economic situation. Therefore, an analysis of the bankruptcy prediction is particularly important to be able to identify the financial stability of the organization sooner. The identification process is a form of anticipation, so that if a bankruptcy potentially occurred, the company will be better prepared of anticipating it.

Cultrera & Brédart (2016) succeeded in identifying financial ratios that could describe the predictions of bankruptcy for SMEs in Belgium. These ratios are liquidity and profitability. This means that the prediction of an organization’s bankruptcy will be reflected in the company’s financial statements. The bankruptcy prediction method is classified into two types, namely quantitative and qualitative methods. The quantitative method uses financial ratios as a proxy and one of the predictive models that uses financial ratios called the Altman model, or Z Score. The model is in accordance with research conducted by Goh et al., (2022); Dalwai & Salehi, (2021); and Buzgurescu & Elena, (2020).

### **Financial Performance**

Financial performance is the most important thing to evaluate organizational performance (Erakipia & Gamaliel, 2017). The performance of an organization, including SMEs, has many dimensions. The dimensions of organizational performance include long-term performance, short-term performance, performance in building a relationship, financial performance and non-financial performance (Borhan et al., 2014). Financial performance according to Fahmi (2018) is an analysis or measure that can be

used to assess whether an organization or company has implemented financial performance properly and correctly (as cited in Tyas, 2020). One of the factors that affect the financial performance of SMEs is decision-making (Jeong & Chung, 2022). One of the decisions is about innovation activities to develop the organization to survive in unstable economic conditions.

Wagner et al. (2015) managed to find the performance of family companies with better results even in unfavorable economic conditions when using return on assets (ROA) as a financial performance variable (as cited in Gonzalez et al. 2019). The condition of SMEs in Indonesia, which tend to be close to family companies and measure financial performance through ROA, needs more attention.

## Method

### Research Model

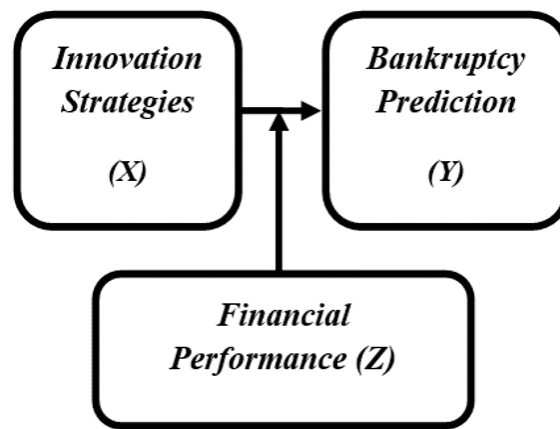


Figure 1 Measured variables of the current research

The SMEs research location was in Central Java while the data taken were in the form of financial information and also reports on strategic innovations. The research phase started by searching for primary data in the form of a financial data questionnaire on SMEs in Central Java.

The observed or measured variables were divided into three variables. The dependent variable was the bankruptcy prediction measured using the “Z-Score Altman Model” method, or method which is most often used in research on the bankruptcy of a company. In this study, the method was applied to SMEs in Central Java. The second variable was the independent variable, namely the innovation strategy measured using “Cost Research Development”, namely the costs incurred by SMEs in terms of developing SMEs innovation per year. The third variable was the moderating variable, namely the independent variable that was served to strengthen or weaken the independent variable on the dependent variable, and financial performance, which became the moderating variable with ROA or was used as a measure. The analytical method used MRA (Moderated Regression Analysis). According to its definition, Moderated Regression Analysis is a special analysis that is part of multiple linear regression with its regression equation containing interaction elements (Umamah, 2019). The population of this research was SMEs that existed and were recorded in Central Java as many as 173,431 (Source: Department of Cooperatives and SMEs in Central Java).

The sample collection method used random purposive sampling based on the following criteria:

1. The SMEs as the sample are SMEs which exist and operate in the Central Java.
2. SMEs that are willing to provide research samples and conduct a survey of their business locations
3. SMEs that have financial data for two consecutive years of 2019 and 2020, and
4. SMEs that conduct an innovation strategy by including the costs incurred, namely “Cost of Research and Development”.

Based on the criteria above, there were sixty-two SMEs obtained with 2 years of financial data (2019 and 2020). The distribution of sample data almost covers all major cities in Central Java, such as Semarang, Pekalongan, Cilacap, Brebes, Kudus, Grobogan, Jepara, Temanggung, and Pati.

The data collection technique used primary data, namely conducting direct surveys and visiting several SMEs locations to request financial data. Furthermore, the data were prepared and processed using the SPSS tool using the MRA (Moderated Regression Analysis) method to see the effect of the innovation strategy that reduces the chance of SMEs bankruptcy prediction in Central Java with financial performance as a moderating variable.

## Results and Discussion

### Analysis of Descriptive Characteristics

The descriptive analysis attempts to see how the condition of the sample is related to its survival or bankruptcy prediction in the future period. The purpose of the descriptive analysis in this study is to analyze data related to the company's bankruptcy zone. In this study, the bankruptcy zone uses a Likert scale. The descriptive characteristics of the bankruptcy zone can be seen in table 1 as follows:

**Table I Bankruptcy Zone Characteristics**

Likert scale	SMEs Total	
	Total	
	Amount	Percentage
<b>1 (Bankrupt Zone)</b>	11	9%
<b>2 (Grey Zone)</b>	17	14%
<b>3 (Safe Zone)</b>	96	77%
<b>Total</b>	124	100%

(Source: Output SPSS)

This study obtained a sample of SMEs that met the criteria of 62 Sample was taken for 2 years from population of 99 SMEs. The processed sample results can be seen in table 1 above. As many as 5 SMEs, or 4.03% of SMEs were included in the Distress Zone category in 2019, while in 2020, there were 6 or 4.84% of SMEs. A total of 9 SMEs or 7.26% were included in the gray zone category in 2019, while in 2020 there were 8 or 6.45% SMEs. A total of 48 SMEs or 38.71%, were included in the safe zone category (Safe Zone) in 2019 and 2020. Therefore, the largest number of SMEs included in the safe zone, was the one with the number of SMEs being ninety-six, or 77.49% of the total of all SMEs in 2019 and 2020.

### Classical Assumption Test Analysis

Research data had gone through and passed all classical assumption tests.

### Moderated Regression Analysis (MRA)

The results of the MRA test can be seen in table below:

**Table II Moderated Regression Analysis**

	Model	t	Sig.
	<b>(Constant)</b>	-2.886	.005
1	<b>RnD</b>	2.869	.005
	<b>ROA</b>	6.204	.000
	<b>Moderation</b>	-5.158	.000

(Source: Output SPSS)

Based on the results of the Moderated Regression Analysis test above, the RnD variable provided a parameter coefficient value of 7.734 with a significance level of 0.005 ( $<0.05$ ). This meant that the Innovation Strategy variable had a partial positive effect on the Bankruptcy Prediction.

The Financial Performance variable gave a parameter coefficient value of 58,850 with a significance level of 0.000 ( $<0.05$ ). This meant that the ROA variable had a partially positive effect on the Z score. The moderating variable gave the parameter coefficient value of -3.556 with a significance level of 0.000 ( $<0.05$ ). This meant that the Financial Performance variable was able to moderate the influence of the Innovation Strategy on the Bankruptcy Prediction and, because the coefficient value was negative, the Financial Performance variable had weakens the influence of the Innovation Strategy on the Bankruptcy Prediction. The results in the table above, when viewed in the research framework, indicated that the Innovation Strategy affects the prediction of bankruptcy in the SMEs sector with good SMEs financial performance could weaken the prediction of bankruptcy that could occur in these SMEs.

## Discussion

The results show that the innovation strategy is proven to be able to influence the prediction of the bankruptcy of an SMEs, and financial performance is proven to be a significant moderating variable which, if it shows satisfactory results, can weaken the bankruptcy prediction. The innovation strategy is also able to reduce the prediction of bankruptcy because it has a positive effect, so that if the innovation strategy is conducted, the higher the Z-Score value, the smaller the potential for bankruptcy prediction will be.

The results also show that SMEs must have a good innovation strategy. Varadarajan (2018) stated that innovation is the core of business strategy to achieve and maintain competitive advantage in the market is supported by the fact that, of the entire sample population, 75% of SMEs in Central Java carries out an innovation strategy as an effort to maintain business continuity under the COVID-19 Pandemic disaster.

The innovation strategy conducted by SMEs in Central Java is divided into several types. The most common types of innovation are marketing innovations, as much as 52%, products 31%, business models 5%, product and marketing combinations 11%, and the combination of marketing and business models is 2%. These results indicate that product and marketing innovations are the most innovative, with a total of 94% of SMEs conducting innovations in products and marketing. This is in accordance with the opinion of Amrulloh (2017), which states that SMEs actors must be able to offer new products that are better than competitors in order to continue to exist and earn sustainable profits. New products that are better than competitors, coupled with marketing innovations conducted, will generate profits that make SMEs survive.

The use of the Z-Score to predict the bankruptcy of a business in this study looks accurate. This is supported by the fact that when the research team visited several SMEs to confirm the results, it was found that SMEs were indeed the ones who got the safe zone. In practice, it was true to get such conditions. Some examples were found in the UMKM "Friday Laundry", which has a laundry business in the Kandeman area, Kab. Batang said that during the COVID-19 pandemic, his laundry business did not experience a significant turmoil. The cleanliness that is demanded by the COVID-19 pandemic opens opportunities for laundry entrepreneurs to improve their performance, especially in terms of cleanliness, so that consumers will choose their laundry compared to others. Another SMEs is "Daffa Jaya", which is located in Kedondong Kab. Demak said that product quality was well maintained and, coupled with the right marketing strategy, would keep customers loyal for buying their merchandise. Likewise, with the condition of the Z-Score, which shows that SMEs are included in the gray zone, namely "Aqila Craft," namely handicraft SMEs located in the District Ring Road area. The reason that Demak, which is confirmed to be experiencing financial difficulties, is due to the fact that many exhibition events have been canceled due to the COVID-19 pandemic in terms of the prohibition on gathering and mass mobilization.



Financial performance that successfully moderates the effect of innovation strategy with SMEs bankruptcy prediction supports the opinion put forward by Tenkasi & Kamel (2016) who said that SMEs actors will try to restructure themselves both financially and organizationally to regain a healthy financial condition. Good financial performance will result in good financial conditions as well.

A further explanation of this research is that the innovation strategy is one way for SMEs to maintain their sustainability or avoid bankruptcy. The innovations obtained from the sample results state that SMEs used marketing innovation as the most often taken step, followed by product innovation and the business model. Silva et al., (2022) stated that one of the innovations for SMEs is to expand the network as an effective marketing tool. SMEs must also dare to take on the challenge of doing something related to innovation, even though the results may succeed or fail (Haddad et al., 2020). Therefore, financial performance is a particularly important factor in supporting the implementation of the innovations that will be carried out. The more funds and resources, the more opportunities to conduct various innovations.

The results of this study complement previous research conducted by Niam (2018) which says that product innovation affects customer satisfaction. On the other hand, Syukron & Ngatno (2016) stated that product innovation has an influence on competitive advantage, and Restrepo-Morales et al., (2019) stated that SMEs innovate products and produce good performance indicators.

## Conclusion

The results demonstrate that the innovation strategy can impact the prediction of SMEs bankruptcy and financial performance. It has also been demonstrated to be a strong moderating variable that, if it shows adequate results, might weaken the bankruptcy prediction. Moreover, these data reveal that product and marketing innovations are the most prevalent among SMEs in Central Java, with 94% of SMEs executing these innovations. In this study, the accuracy of using the Z-Score to forecast the bankruptcy of a company has been demonstrated. This is reinforced by data collected through visits to a number of SMEs in order to corroborate the results.

Based on the research findings, the following suggestions for further research may be made. It is suggested that research utilizing regional samples be carried out in different provinces in Indonesia. The addition of other variables to the study model is also deemed important since, according to the results of the coefficient of determination, around 16 percent of other variables can still impact the prediction of SMEs bankruptcy. If the study is conducted in the same region, the researchers must select SMEs with an NIB. This is because the study did not contain a subset of NIB that might serve as a research sample.

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