

Pada tanggal 23 Oktober 2023, I Putu Ngurah Suyatna, seorang peneliti yang berfokus pada bidang teknopreneurship dan kinerja industri kreatif, melakukan pengajuan artikel pada dua jurnal yang berbeda. Artikel pertama, yang berjudul "Technopreneurship Contribution on Creative Industry Performance," diserahkan kepada jurnal Growing Science. Namun, setelah melalui proses review, artikel tersebut mengalami perubahan judul menjadi "Technopreneurship Contribution on Small Medium Industry Business Performance in Bali-Indonesia" dan dipublikasikan dalam Seybold Report pada tanggal 23 Januari 2024.

Sementara itu, artikel kedua, yang memiliki judul yang sama dengan artikel pertama, diajukan kepada International Journal of Data and Network Science pada tanggal 4 Februari 2024. Setelah melalui proses penelaahan oleh para reviewer, artikel ini mengalami perubahan judul menjadi "Adoption of Information Technology Encourages the Creation of Innovation to Improve Industrial Performance in the Digital Era." Artikel ini kemudian diterbitkan pada tanggal 4 April 2024.

Perubahan judul artikel kedua tersebut kemungkinan disarankan oleh para reviewer untuk lebih tepat mencerminkan fokus artikel terhadap penerapan teknologi informasi dalam mendorong inovasi dan peningkatan kinerja industri pada era digital. Hal ini menunjukkan respons positif dari para reviewer terhadap artikel tersebut dan upaya peningkatan kualitasnya sebelum dipublikasikan. sehingga terpblish pada 4 april 2024

# Adoption of Information Technology encourages the Creation of Innovation to Improve Industrial Performance in the Digital Era

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## CHRONICLE

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## ABSTRACT

Technology is becoming a trend, so this research examines technology information as a driver of productivity for small or medium industries (SMEs). This research examines the impact of innovation on the performance of small and medium enterprises, the impact of information technology on industrial performance, and the role of information technology as a mediator of innovation on company performance. Data was collected through an online survey. The total population is 346, so that many questionnaires were distributed to MSMEs using path analysis and Smart PLS as processing tools. The findings are that innovation has an influence on increasing the productivity of small businesses, innovation has a positive role on information systems, remains insignificant on the performance of the industrial Performance, and information technology does not mediate the relationship between innovation and performance. So it can be said that innovation plays an important role in improving company performance.

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## 1. Introduction

Indonesia's digital economy is the highest in ASEAN, growing at 12% annually. There are excellent products in many areas, but many digital processes have not been touched. SMEs have a strategic role, but challenges such as financing, digital. readiness and marketing . From 2020, the total annual consumption of the digital market will be dominated by beauty products, followed by electronics and then food. The keys to MSME development are local wisdom, digital transformation and the role of facilitator of digital transformation / SMEs empowerment. The following factors contribute to the success of SMEs in adopting digital technologies: access to Internet technology, cloud-based data, artificial intelligence, and then the support of policy makers to ensure an adequate regulatory framework and business environment. Strengthening SMEs is a comprehensive effort to improve the ability of SMEs to meet the challenges and opportunities in global business. It is necessary to conduct intensive business training for SMEs and prepare business plans for special economic zones.

The spread of SMEs is increasingly expanding and to be able to access a wide market, many things need to be addressed in various fields, such as technology or what is known as technology, regulations and market balance. Currently the market looks lively but is actually not healthy because there is overlap and this requires improvements from various parties. This small industrial sector is required to innovate, but of course it cannot do it alone because it requires support from universities, non-governmental organizations and the government. Therefore, success in new marketing is an important strategy for companies. (Hsu & Cheng, 2012), research results show that innovation has a positive effect on the business performance of small and medium enterprises (SMEs) in Taiwan's electronics and industrial information. According to research results (Méndez-Picazo et al., 2021), new product launches, new work activities, and new market activities are related to business growth. (Li et al., 2021), research on Turkish manufacturing shows those aspects of innovation (product, process, marketing and management) influence performance. The same thing was also done in the Pakistani manufacturing (Marion & Fixson, 2021) which shows that the nature of innovation can be affected. Likewise, Shang et al. (2020), also said that innovation is certainly a boost to the revival of business performance

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In the business world, the role of information technology is used in electronic commerce, or known as E-Commerce (e-commerce) or electronic commerce. The online store does business using online communication networks. Online shopping is a part of e-commerce, where the scope of e-commerce is more extensive, not only business, but also cooperation with business partners, customer service, open jobs, etc. In addition to www network technology, online shopping also requires the use of a database or database technology, electronic mail or e-mail (e-mail) and other forms of non-computer technology, such as delivery systems and e-commerce payments (Yasa and Sentosa, 2022). Instruments - change it. Based on the explanations of the above research results, the purpose of this work is to analyze; (1) the impact of innovations in small and medium-sized enterprises on organizational performance; (2) the impact of information technology on operations; and (3) analysis. Based on previous research findings, the use of ICT as a mediator between innovation and business performance is new in this study.

The economy on Bali Island certainly cannot be separated from the role of MSMEs, because they play an important role in expanding employment opportunities and employment, generating GDP, and providing a social safety net for the poor to participate in productive economic activities. However, the contribution of SMEs is not enough to encourage economic growth and increase income. Business performance is defined as the company's ability to achieve goals supported by good management skills, good governance and reliable commitment to achieving business goals (Guluma, 2021). A successful business is born when the company is structured according to the needs and desires of the target market. In addition, the products produced must have high specifications and performance compared to competitors to create a competitive advantage (Heng and Afifah, 2020). Technology entrepreneur can have economic, social and environmental benefits or impacts. The benefits provided from an economic perspective are as 1) Increase efficiency and productivity; 2) Increase income. 3) Create new jobs. To answer these challenges, the role of technology entrepreneur must be played by SMEs to improve their business performance. This research tries to determine whether innovation will help improve SME business performance in Bali. This research also makes a significant contribution in enriching the SME concept developed by previous researchers and shows the importance of techno-entrepreneurship in the development of SME business activities.

## **2. Relationship between variables and hypotheses**

Technology shows that computing is a communication tool for computer software Benbya et al. (2020). IT is defined as a part of a machine that can perform multiple commands. The Office of Communications (1991) explains that the term IT is used to describe new technologies and their applications, including all aspects of micro-devices, satellites and computers used as technology. Based on all these definitions, we can say that information technology is a part of information technology. The use of information technology has been widely studied. (Akpan et al., 2022) states that computers and other technologies are widely used in all areas of business, technology entrepreneur, finance, education and administration. (Etemad, 2020), claims that IT plays an important role in supporting business success in situations of uncertainty and economic crisis. The use of ICT for business has been studied around the world and it has been found that the entrepreneurship of an individual is related to personal innovation, risk, the ability to understand ideas and take responsibility for success combination (Afawubo and Noglo, 2022). Since IT systems affect products and services, markets, product costs and product differentiation, the success of a company's innovation largely depends on the adoption and innovative use of IT (Paioand Gebauer, 2020). (Guluma, 2021) IT is related to social entrepreneurship. Find out how this affects sustainability. Efficiency and improvement are important to the industry because crossing geographic boundaries requires workers to be computer literate. The indicators used to measure ICT are: 1) Use of information technology as an industrial driver (Pan et al., 2022; 2) Understanding the importance of using information technology (Ofori et al., 2022); 3) and IT usage skills (Kaplan, (2020).

### **2.1 Innovation and Industrial Performance**

Product innovations are one of the key factors of organizational success and an important strategy to increase market share and company performance (Soomro et al., 2021). Innovation lowers production costs and is beneficial in terms of customer satisfaction (Sellitto et al., 2020). Currently, the goals of new marketing are to increase sales, increase market share and initiate new markets (Azzam et al., 2021). According to (Nasir et al., 2020), creativity and innovation play an important role in the growth of organizational performance in the international market. Many previous studies have shown that innovations have a positive impact on business activities (Setini et al., 2020). A study by Purwad et al (2023) shows that creativity affects company performance. Innovation is often considered the lifeblood of an organization and is essential to business. Success in new marketing is an important strategy for companies because their ability to market creatively can help them dominate existing markets or develop new ones and share immediate leadership in the field. (Chen, 2020) research shows that innovation has a positive impact on the business performance of small and medium-sized enterprises (SMEs) in Taiwan's information and electronic industry. According to the research findings of (Bil, 2021), a study of the Turkish manufacturing industry shows that aspects of innovation (product, process, marketing and management) affect performance. The same is done in the manufacturing industry of Pakistan, which shows that it is possible to influence the nature of innovation. Subsequent studies have also shown that innovation has a positive and significant effect on performance (Ma et al 2021). Based on the research findings used as a benchmark in this study, the hypotheses presented in this study are as follows.

H1: Innovation has a positive effect on industrial performance.

### **2.2 Information Technology and Innovation**

To achieve a higher innovation level of SMEs, all activities related to the innovative activities of companies must have the basic support of information technology and communication (Heimonen, 2012), (Blanchard, 2020). (Yüksel, 2020) also stated in his research that companies that invested heavily in information technology and communication achieved a higher level of competition and innovation than companies that did not invest in it. According to (Charles and Ochieng, 2023), ideas that become innovations are usually implemented with information and communication technology initiatives, the results of which usually significantly improve the innovativeness of new products and processes, which is expressed in customer loyalty. promote demand for other products of the organization. At the same time, (Alam and Mohanty, 2022) found in their study that as much as companies want to maximize the innovative activities carried out every day, the introduction and implementation of information and communication technology should be prioritized and, in the context of the appeal, harmonize initiatives in

communication and communication technology for all innovative activities of organizations. These companies also regularly adopted information technology and communication in customer relationship management, production improvement, supply chain management, innovation and other important activities of the organization (Normal et al. 2023); (Munizu et al., 2024). Based on the research results used as reference in this study, the following hypothesis was formulated in this study.

H2: Innovation has a positive effect on information technology.

### 2.3 Information Technology on Industrial Performance

The success of corporate innovation is highly dependent on IT implementation and innovation. Research by (Kim et al., 2021) shows that IT is an important resource for improving business performance. Based on research on the relationship between IT and corporate performance and value (Ashal et al., 2021), IT is a strategic resource and has a significant impact on performance. (Charles & Ochieng, (2023) Studies show that IT has a positive impact on future business performance and increases business value. (Ashal et al., 2021) Research findings also revealed that IT has a primary impact on strategic direction and corporate performance. Research by (Shabbir & Wisdom, 2020) also found that IT investments have significant potential to improve business performance. (Ahmed et al., 2020) Studies have also shown that IT investment strategies have a significant impact on business performance. The hypotheses that can be made by combining the above research findings are as follows.

H3: Information Technology has a positive effect on industrial performance

### 2.4 The Mediating Role of Technology on Information Technology and Industrial Performance

The role of information technology does not directly affect performance improvement, but also indirectly mediates the relationship between innovation and performance. According to a study (Adigwe et al., 2023), one of the many characteristics of the past century is information and communication technologies, which play an important role as a basis for the introduction and adoption of innovations needed by organizations. improve management and productivity. This is how you can survive well in a global and competitive market. Research (Aceto et al., 2018) shows that IT and innovation determine the performance of the company. IT can increase productivity and business efficiency, enabling companies to resist and succeed in market changes (Alves and Alves, 2015). (Kinyua et al., 2015) argue that technology that drives resource acquisition drives internal processes that improve financial efficiency to improve business performance. In addition, IT is said to play an important role in improving business operations by increasing the performance of those assets (Farida and Setiawan, 2022). It is also important to help companies beat the competition (Bressler, 2012). Based on the results of the study, the following hypothesis was presented.

H4: Information technology mediates the relationship between innovation and industrial performance.

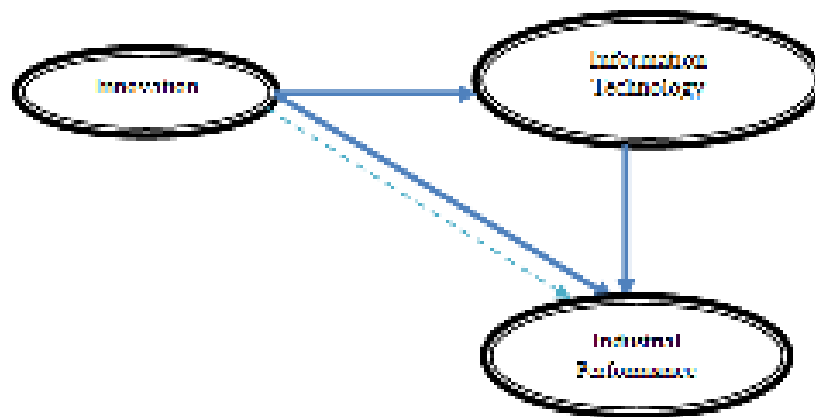


Fig. 1. Conceptual Framework

## 3. Research method

### 3.1 Research Setting and Sample

This research was conducted in 2022-2023 Bali-Indonesia on 15,198 MSMEs (Bali Provincial Industry Office 2019), the number of samples studied was 442,848 MSMEs, the research method used the sample size technique (Rahman et al., 2022), where samples were taken from each district using proportional stratified random sampling, while the selection of respondents used a simple random sampling method. The respondents used as samples were SME business owners who had been in business for one year. Data was obtained by distributing prepared questionnaires directly to 346 respondents throughout Bali. The research object is: SME business performance, innovation which consists of three dimensions, namely: product innovation, process innovation, and marketing and information technology innovation.

### 3.2 Data analysis

This research tests the influence of exogenous and endogenous variables with the SEM-PLS equation. The use of this analysis is due to assumptions (Baak et al., 2020), the data does not have to be normally distributed for all categories: ordinal, interval and proportion. The analysis does not depend on measurement scales, data distribution, and sample size. PLS can be used to validate theory and latent variable correlation, analyzing the innovation construct using a quadratic model, because innovation is divided into three dimensions, namely product, process and marketing innovation. The indicators that form latent variables are reflexive, so the evaluation of the measurement model (measurement model/external model) to measure the validity and reliability of these indicators is: convergent validity; discriminant validity; combined reliability, and Cronbach's alpha. Evaluation of the structural model (Structural Inner Model) to assess the level of accuracy of the model in the research as a

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whole is carried out by analyzing: (a) R-square (R2), (b) Q-Square Predictive. Relevance (Q2), (c) Fit (GoF) and (d) Structural Model Analysis.

#### 4. Findings

##### 4.1 Respondent Profile

The profile of the respondents studied as shown in table 1 shows that of the 346 respondents studied, 47.50 percent were women and 52.50 percent were men. Judging from the age of the respondents, 7.70 percent are between 17-22 years old, 16.50 percent are 23-28 years old, 12.70 percent are 29-34 years old and 63.10 percent are over 34 years old. The respondents studied had a relatively high level of education, namely 56.30 percent with a college education background, 5.90 percent junior high school and 39.80 percent high school. Meanwhile, in terms of the culinary product, 33 percent of them provide food and beverages, 54.30 percent of Beauty and fashion, 17.60 percent of Household equipment

**Table 1 Gender, Age, Education and Products Produced by Respondents**

<b>Gender</b>	<b>Percentage</b>
Male	47.50
Female	52.50
<b>Age (Year)</b>	<b>Percentage</b>
17 - 22	7.70
23 - 28	16.50
29 -34	12.70
> 34	63.10
<b>Education</b>	<b>Percentage</b>
Junior High school	5.90
Senior High school	39.80
College	54.30
<b>Product</b>	<b>Percentage</b>
Culinary	33.00
Beauty and fashion	51.60
Household equipment	17.60

Source: Field research results

##### 4.2 Data Analysis

Based on the result of the calculation of field research data using a structural equation modeling model based on PLS, the analysis can be described as follows.

###### 4.2.1 Outer Model Evaluation

###### 1) Convergent Validity

Convergent validity is a criterion in measuring the validity of reflexive indicators. This evaluation is carried out by examining the outer loading coefficient of each indicator on its latent variables. An indicator is said to be valid, if the coefficient of outer loading is between 0.60 – 0.70 but for an analysis whose theory is not clear then an outer loading of 0.50 is recommended (Sawyer, 2009), and is significant at the alpha level of 0.05 or t- statistics 1.96. The value of the outer loading of each indicator on the latent variable can be seen in Table 1 shows that all indicators are valid. A measurement can be said to be reliable, if the composite reliability and Cronbach alpha have a value greater than 0.70. Composite reliability and Cronbach alpha are a measure of reliability between indicator blocks in the research model. Table 1 shows that all constructs have Cronbach alpha and composite reliability values greater than 0.70, so they have met the valid requirements.

**Table 1. Convergent Validity**

Construct	Indicator	Original Sample	Cronbach Alpha	Composite Reliability	AVE	Description
Industrial Performance	Y11	0.86	0.83	0.85	0.67	Valid
	Y12	0.92				Valid
	Y13	0.82				Valid
	Y14	0.87				Valid
Information Technology	X11	0.79	0.95	0.96	0.85	Valid
	X12	0.92				Valid
	X13	0.95				Valid
Process Innovation	X211	0.83	0.88	0.94	0.77	Valid
	X212	0.85				Valid
	X213	0.84				Valid
	X214	0.85				Valid
Distribution Innovation	X221	0.85	0.78	0.87	0.69	Valid
	X222	0.67				Valid
	X223	0.78				Valid
Product Innovation	X231	0.74	0.87	0.87	0.67	Valid
	X232	0.72				Valid
	X233	0.78				Valid
	X234	0.76				Valid
Innovation			0.93	0.94	0.67	Valid

Source: research data calculation results 2023

## 2) Discriminate Validity

Measurement of the validity of the indicators that make up the latent variable can also be done through discriminate validity. Discriminate validity can be done by comparing the coefficient of the AVE Root ( $\sqrt{\text{AVE}}$  or Square root Average Variance Extracted) of each variable with the correlation value between variables in the model. A variable is said to be valid, if the AVE root is greater than the correlation value between variables in the research model, and the AVE is greater than 0.50.

**Table 2. AVE d**

Construct	AVE	$\sqrt{\text{AVE}}$
<b>Industrial Performance</b>		0.81
<b>Information Technology</b>	0.85	0.92
<b>Process Innovation</b>	0.77	0.85
<b>Distribution Innovation</b>	0.69	0.82
<b>Product Innovation</b>	0.67	0.82
<b>Innovation</b>	0.58	0.74

Source: research data calculation results 2023

Table 2 shows that all constructs show a value of  $\text{AVE} > 0.50$ , the AVE root value ranges from 0.74 - 0.92 while the correlation value between constructs ranges from 0.62 - 0.90, meaning that the discriminate validity test results show that all constructs are valid.

### 4.2.2 Inner Model Evaluation

Evaluation of the structural model (Inner Model) is a measurement to evaluate the level of accuracy of the model in the research as a whole, which is formed through several variables and their indicators. The results of further calculations are described below.

#### 1) Evaluation of Structural Models Through R-Square ( $R^2$ )

$R^2$  can show the strength and weakness of the influence caused by the dependent variable on the independent variable.  $R^2$  can also show the strength of a research model. According to Hair et al. (2014), the  $R^2$  value of 0.75 is classified as a strong model, while the  $R^2$  of 0.50 is classified as a moderate model and the  $R^2$  value of 0.25 is classified as a weak model.

**Table 3. R-Square Index**

Construct	R-Square
<b>Industrial Performance</b>	0.53
<b>Information Technology</b>	0.63
<b>Process Innovation</b>	0.78
<b>Distribution Innovation</b>	0.81

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Source: Survey data calculation results 2023

Table 4 shows that the dimensions of process, distribution and product innovation show a strong  $R^2$  value with each value greater than 0.75. Meanwhile, performance and IT showed moderate values with values ranging from 0.50 to 0,62.

### 2) Structural Model Evaluation through Q-Square Predictive Relevance ( $Q^2$ )

$Q^2$  is a measure of how well the observations made give results to the research model. The criteria for the strength of the model measured based on the  $Q^2$  are as follows: 0.35 (strong model), 0.15 (moderate model), and 0.02 (weak model). The calculation results show the value of  $Q^2 = 1 - (1-0.62)(1-0.80)(1-0.76)(1-0.81)(1-0.52) = 0.99$ , included in the strong model criteria.

### 3) Structural Model Evaluation through Goodness of Fit (GoF)

Goodness of Fit (GoF) is a measurement of the accuracy of the overall model, because it is considered a single measurement of the measurement of the outer model and the measurement of the inner model. The criteria for the strength of the model based on the measurement of Goodness of Fit (GoF) according to (Tellinghuisen, 2022), are as follows: 0.36 (GoF large), 0.25 (GoF medium), and 0.10 (GoF small). The calculation results show the value of  $GoF = \sqrt{0.70 * 0.69} = 0.69$  or includes a strong model.

### 4) Structural Model Analysis

The aim is to determine the effect and significance of exogenous constructs on endogenous constructs. The results of this analysis at the same time answer the research questions posed.

**Table 4. Path Coefficient and Statistical Test**

Construct	Coefficient	P-Value	Description
<b>IT -&gt; Industrial Performance</b>	0.21	0.16	Not Significant
<b>Innovation -&gt; Business Performance</b>	0.56	0.00	Significant
<b>Innovation -&gt; IT</b>	0.78	0.00	Significant
<b>Innovation -&gt; Innovation Process</b>	0.88	0.00	Significant
<b>Innovation -&gt; Innovation Marketing</b>	0.88	0.00	Significant
<b>Innovation -&gt; Innovation Product</b>	0.91	0.00	Significant

Source: Survey data calculation results 2023

The results of this study (Table 4, Figure 1) show that innovation has a positive and significant effect on business performance ( $b = 0.55$  P-Value = 0.00), so hypothesis 1 that innovation has a positive and significant impact on business activity is accepted. Innovation also has a positive and significant effect on IT ( $b = 0.79$  P-value = 0.00), thus hypothesis 2 is accepted that innovation has a positive and significant effect on IT. IT has a positive but not significant impact on business performance ( $b = 0.20$  P-value = 0.14), which means that hypothesis 3 that IT has a positive and significant impact on business performance cannot be accepted. Also, the results of the study show that process, marketing and product innovations can reflect the innovation structure, each of which has an index coefficient of 0.87; 0.89 and 0.90 and all of them were statistically significant (Table 4). Further findings also show that IT is not a mediator between innovation and business performance, the direct relationship between innovation and business performance is shown to be 0.71 and significant, while the indirect relationship between IT innovation and business performance is 0.16 and it is notable. Therefore, hypothesis 4, according to which IT mediates innovation and business performance, cannot be accepted (Table 6).

**Table 5. Direct and Indirect Effect**

Constructs Relationships	Coefficient	P-Value	Description
<b>Direct Effect</b>			
<b>Innovation-&gt; Industrial Performance</b>	0.72	0	Significant
<b>Indirect Effect</b>			
<b>Innovation-&gt; IT-&gt; Industrial Performance</b>	0.17	0.16	Not Significant

## 2. Discussions

### 5.1 The Effect of Innovation on SMEs Industrial Performance

The result of calculation on the field research data shows that innovation has a positive effect of 0.56 and is significant at the 0.05 level on business performance (Table 4). This means that increasing innovation in SMEs will improve the business performance of SMEs in Bali Province. The result of the analysis also shows that the three dimensions of innovation, namely

product, process and distribution innovation are able to significantly shape the innovation construct. The result of this study is in accordance with the result of previous studies stating that product innovation is one of the key factors for organizational success and is an important strategy for increasing market share and business (Etemad, 2020). The process innovation, meanwhile, is useful for reducing production costs and also for satisfying customers (Afawubo & Noglo, 2022). Besides, the target of marketing innovation is to increase sales, market share and open new markets (Guluma, 2021). According to (Pan et al., 2022) creativity and innovation have an important role for the growth of organizational performance in the global market. A company's ability to trade innovation can help dominate current markets or develop new markets, contributing to continued industrial leadership. Thus, success in commercializing innovation is an important strategy for companies (Munizu et al., 2024).

### **5.2 The Effect of Innovation on Information Technology**

The result of analysis in Table 4 shows that innovation has a positive effect of 0,78 and is significant in 0,05 level of significant on IT, it mean that the increasing of innovation both product, process and marketing innovation will boost higher of using IT. The result of this study is in accordance with the underlying theory of this research, that there is a positive relationship between innovation and IT. The result of this study is in accordance with the result of previous studies stating that the information and communication technology also plays an important role in the new millennium companies, since its adoption and implementation in business activities generates, on one hand, a higher level of process innovation (Kaplan, (2020). SMEs to achieve a higher level of innovation, all activities related to innovation made by companies, should have a basic support of information technology and communication (Afawubo & Noglo, 2022), (Guluma, 2021). Study by (Ofori et al., 2022) stated that one of the many elements that characterize the present century is the information and communication technology, which plays a fundamental role in establishing the basis for the adoption and implementation of the innovation activities that the organizations need to improve management and production methods, which will allow them to survive in a highly globalized and competitive market.

### **5.3 The Effect of Information Technology on Industrial Performance**

The result of the analysis in Table 4 shows that IT has a positive effect on business performance, meaning that the increasing use of information technology will encourage higher business performance. This means that the result is in accordance with the underlying theory of this research, that there is a positive relationship between IT and performance. However, this relationship is not significant at the 0.05 level as shown in Table 5. The result of this calculation is in accordance with the reality on the ground that the use of IT among SMEs in Bali Province is still limited. SMEs in Bali Province in marketing their products dominantly still use traditional methods, namely door-to-door. The role of promotion using print and electronic media or the internet is still relatively small. The data shows that SMEs in Bali generally use the door to door marketing method, which is 70.40%. They generally use promotional media from person to person on a limited scale; this condition is a traditional business management model with limited production quantities. Of all respondents studied, only 22.40% have used modern information technology in the form of the internet in marketing their products. In addition, there are also as many as 7.10% of SMEs that use other methods besides the two methods, namely handing over to collectors or production is ordered only so that it does not require marketing media to sell its products.

The result of this study is different from the result of previous studies which states that IT has a significant effect on performance, including the result of research by (Sellitto et al, 2020) showing that IT is an important valuable resource in improving business performance. (Kinyua et al., 2015) research result on the relationship between IT and firm performance and value shows that IT as a strategic resource has a significant positive effect on performance. The study of Purwadi et al. (2023) shows that IT and innovation determine company performance. (Bil, 2021) study shows that IT shows a positive influence on future company performance and increases firm value. The great potential of IT investment in improving business performance has also been carried out through a study by (Bressler, 2012). (Farida & Setiawan, 2022) study also shows that IT investment strategies have a real influence on company performance.

### **5.4 The Role of Information Technology in Mediating the Relationship Between Innovation and Industrial Performance**

To find out the role of IT in mediating the relationship between innovation and business performance. The examination method is done by doing two analysis, namely analysis involving mediating variables (indirect effect) and analysis without involving mediating variables (direct effect). The method of examining the mediating variable with the coefficient difference approach is carried out as follows: if the indirect relationship is significant while the direct relationship is not significant, it is said that IT is a perfect mediation of the relationship between innovation and business performance. If the direct relationship is significant while the indirect relationship is not significant, it is said that IT is not a mediating relationship between innovation and business performance (Munizu et al., 2024).

Based on the coefficient relationship between constructs, it can be seen that the direct relationship coefficient between innovation and business performance is 0,72 and is significant, while the indirect relationship between innovation on IT and business performance is 0,17 and is not significant. From the result of the analysis, it can be stated that IT is not mediation between innovation and industrial Performance. This is in accordance with the result of the previous analysis between IT and industrial Performance that has an insignificant relationship, this condition is strongly influenced by the use of IT in SMEs in Bali which is generally still relatively limited, the dominant marketing activity is at the local district level with the most method using door to door without IT assistance. Meanwhile, SMEs that market their products for export are still relatively limited. The role of promotion using print and electronic media or the internet is still relatively small. The data in Figure 1 shows that SMEs in Bali generally use the door to door marketing method, which is 70.40%. They generally use promotional media from person to person on a limited scale; this condition is a traditional business management model with limited production quantities.

The result of this study is different from the result of previous studies which state that IT plays an important role as a mediator between innovation and industrial Performance, including a study by (Normal et al. 2023) which states that success in corporate innovation is highly depend on the implementation and creativity of using IT. The result of studies also states that IT enables companies to maintain sustainability and gain success in various market changes so that it can increase profits and industrial Performance (Shabbir & Wisdom, 2020). The result of this study is also different from the result of the study by (Charles &

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Ochieng, 2023) which states that technology facilitates the acquisition of resources that facilitate internal processes in improving financial performance to improve industrial performance. The result of this study differs from the study of (Ashal et al., 2021) which states that IT plays an important role in increasing the output of the same resources to improve business performance. Besides that, it is different from the study result which states that IT is also the most recognized factor to support companies in winning the competition (Ahmed et al., 2020). Thus the hypothesis which states that IT mediates innovation on organizational industrial performance cannot be accepted.

### 3. Conclusion

The results of this study indicate that innovation has a positive and significant effect on industrial performance, the increasing innovation will improve industrial performance. In addition, innovation also has a positive and significant effect on IT, meaning that the higher the innovation will also encourage the higher use of IT. The next finding also shows that IT has a positive but not significant effect on industrial performance. In addition, IT also does not mediate the relationship between innovation and industrial performance. This is due to the low use of IT among SMEs entrepreneurs in Bali in supporting their business activities, in product marketing still dominant using traditional methods such as door to door. Another contributing factor is that the scope of marketing is generally still limited on a local scale, only a small number of which have exported, so the use of IT is also limited.

### 4. Implication

The findings of this study are expected to provide benefits for the development of entrepreneurship in Bali-Indonesia as an effort to improve industrial performance. This condition is a fact that SMEs in Bali-Indonesia cannot be separated from the role of employee production skills because SMEs products in Bali are dominantly based on local wisdom that comes from skills born of Balinese human artistic talent. However, as an effort to improve product marketing, the role of information technology is also very important to be improved. Technopreneurship which is the integration of innovation with information technology is an important factor in supporting the industrial performance of SMEs in Bali-Indonesia. However, nowadays the use of IT is still limited so it is very important to be improved in the future. The result of this study is expected to be a guide line for SMEs and policy makers in their effort to industrial performance, which is currently still relatively low.

### References

- Akpan, I. J., Udoh, E. A. P., & Adebisi, B. (2022). Small business awareness and adoption of state-of-the-art technologies in emerging and developing markets, and lessons from the COVID-19 pandemic. *Journal of Small Business & Entrepreneurship*, 34(2), 123-140.
- Adigwe, C. S., Abalaka, A., Olaniyi, O. O., Adebisi, O. O., & Oladoyinbo, T. O. (2023). Critical analysis of innovative leadership through effective data analytics: Exploring trends in business analysis, finance, marketing, and information technology. *Asian Journal of Economics, Business and Accounting*, 23(22).
- Ahmed, S. S., Guozhu, J., Mubarik, S., Khan, M., & Khan, E. (2020). Intellectual capital and business performance: the role of dimensions of absorptive capacity. *Journal of Intellectual Capital*, 21(1), 23-39.
- Ashal, N., Alshurideh, M., Obeidat, B., & Masa'deh, R. (2021). The impact of strategic orientation on organizational performance: Examining the mediating role of learning culture in Jordanian telecommunication companies. *Academy of Strategic Management Journal*, 21, 1-29.
- Alam, A., & Mohanty, A. (2022, November). Business models, business strategies, and innovations in EdTech companies: integration of learning analytics and artificial intelligence in higher education. In *2022 IEEE 6th Conference on Information and Communication Technology (CICT)* (pp. 1-6). IEEE.
- Alves, J. R. X., & Alves, J. M. (2015). Production management model integrating the principles of lean manufacturing and sustainability supported by the cultural transformation of a company. *International Journal of Production Research*, 53(17), 5320-5333.
- Afawubo, K., & Noglo, Y. A. (2022). ICT and entrepreneurship: A comparative analysis of developing, emerging and developed countries. *Technological forecasting and social change*, 175, 121312.
- Aceto, G., Persico, V., & Pescapé, A. (2018). The role of Information and Communication Technologies in healthcare: taxonomies, perspectives, and challenges. *Journal of Network and Computer Applications*, 107, 125-154.
- Azzam, Z., Al Fuqaha'a, E., Khrais, I., Almubaydeen, T., & Ismai, A. R. (2021, December). Impact of marketing innovation on building customer loyalty:(a field study on customers of pioneers paper and carton industries in Jordan). In *2021 22nd International Arab Conference*
- Benbya, H., Davenport, T. H., & Pachidi, S. (2020). Artificial intelligence in organizations: Current state and future opportunities. *MIS Quarterly Executive*, 19(4).
- Baak, M., Koopman, R., Snoek, H., & Klous, S. (2020). A new correlation coefficient between categorical, ordinal and interval variables with Pearson characteristics. *Computational Statistics & Data Analysis*, 152, 107043.
- Blanchard, K. (2020). Innovation and strategy: Does it make a difference! A linear study of micro & SMEs. *International Journal of Innovation Studies*, 4(4), 105-115.
- Bressler, M. S. (2012). How small businesses master the art of competition through superior competitive advantage. *Journal of Management and Marketing Research*, 11(1), 1-12.
- Bil, E. (2021). The effect of technological innovation capabilities on companies' innovation and marketing performance: A field study on Technopark companies in Turkey. *Journal of Life Economics*, 8(3), 361-378.
- Charles, M., & Ochieng, S. B. (2023). Strategic outsourcing and firm performance: a review of literature. *International Journal of Social Science and Humanities Research (IJSSHR) ISSN 2959-7056 (o); 2959-7048 (p)*, 1(1), 20-43.
- Chen, C. L. (2020). Cross-disciplinary innovations by Taiwanese manufacturing SMEs in the context of Industry 4.0. *Journal of Manufacturing Technology Management*, 31(6), 1145-1168.
- Popkin, S. L. (1991). *The reasoning voter: Communication and persuasion in presidential campaigns*. University of Chicago Press.
- Etemad, H. (2020). Managing uncertain consequences of a global crisis: SMEs encountering adversities, losses, and new

- Ferreira, J., Coelho, A., & Moutinho, L. (2020). Dynamic capabilities, creativity and innovation capability and their impact on competitive advantage and firm performance: The moderating role of entrepreneurial orientation. *Technovation*, 92, 102061.
- Farida, I., & Setiawan, D. (2022). Business strategies and competitive advantage: the role of performance and innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(3), 163.
- Guluma, T. F. (2021). The impact of corporate governance measures on firm performance: the influences of managerial overconfidence. *Future Business Journal*, 7(1), 50.
- Gupta, P., Chauhan, S., Paul, J., & Jaiswal, M. P. (2020). Social entrepreneurship research: A review and future research agenda. *Journal of business research*, 113, 209-229.
- Heimonen, T. (2012). What are the factors that affect innovation in growing SMEs?. *European Journal of Innovation Management*, 15(1), 122-144.
- F. Hair Jr, J., Sarstedt, M., Hopkins, L., & G. Kuppelwieser, V. (2014). Partial least squares structural equation modeling (PLS-SEM) An emerging tool in business research. *European business review*, 26(2), 106-121.
- Hsu, J. L., & Cheng, M. C. (2012). What prompts small and medium enterprises to engage in corporate social responsibility? A study from Taiwan. *Corporate social responsibility and environmental management*, 19(5), 288-305.
- Heng, L., & Afifah, N. (2020). Entrepreneurial orientation for enhancement of marketing performance. *International Review of Management and Marketing*, 10(3), 46-53.
- Kaplan, B. (2020). Revisiting health information technology ethical, legal, and social issues and evaluation: telehealth/telemedicine and COVID-19. *International journal of medical informatics*, 143, 104239.
- Kim, H. K., & Lee, C. W. (2021). Relationships among healthcare digitalization, social capital, and supply chain performance in the healthcare manufacturing industry. *International Journal of Environmental Research and Public Health*, 18(4), 1417.
- Kinyua, J. K., Gakure, R., Gekara, M., & Orwa, G. (2015). Effect of internal control environment on the financial performance of companies quoted in the Nairobi Securities Exchange. *International Journal of Innovative Finance and Economics Research*, 3(4), 29-48.
- Li, Z., Liao, G., & Albitar, K. (2020). Does corporate environmental responsibility engagement affect firm value? The mediating role of corporate innovation. *Business Strategy and the Environment*, 29(3), 1045-1055.
- Ma, J., Hu, Q., Shen, W., & Wei, X. (2021). Does the low-carbon city pilot policy promote green technology innovation? Based on green patent data of Chinese A-share listed companies. *International Journal of Environmental Research and Public Health*, 18(7), 3695.
- Marion, T. J., & Fixson, S. K. (2021). The transformation of the innovation process: How digital tools are changing work, collaboration, and organizations in new product development. *Journal of Product Innovation Management*, 38(1), 192-215.
- Méndez-Picazo, M. T., Galindo-Martín, M. A., & Castaño-Martínez, M. S. (2021). Effects of sociocultural and economic factors on social entrepreneurship and sustainable development. *Journal of Innovation & Knowledge*, 6(2), 69-77.
- Munizu, M., Alam, S., Pono, M., & Riyadi, S. (2024). Do digital marketing, integrated supply chain, and innovation capability affect competitiveness, and creative industry performance?. *International Journal of Data and Network Science*, 8(2), 1025-1034.
- Nasir, J., Ibrahim, R. M., Sarwar, M. A., Sarwar, B., Al-Rahmi, W. M., Alturise, F., ... & Uddin, M. (2022). The effects of transformational leadership, organizational innovation, work stressors, and creativity on employee performance in SMEs. *Frontiers in Psychology*, 13, 772104.
- Normal, I., Setini, M., & Putra, I. (2023). Assessing the influence of supply chain collaboration value innovation, market demand, and competitive advantage on improving the performance of ceramic SMEs. *Uncertain Supply Chain Management*, 11(2), 777-786.
- Ofori, K. S., Anyigba, H., Adeola, O., Junwu, C., Osakwe, C. N., & David-West, O. (2022). Understanding post-adoption behaviour in the context of ride-hailing apps: the role of customer perceived value. *Information Technology & People*, 35(5), 1540-1562.
- Paiola, M., & Gebauer, H. (2020). Internet of things technologies, digital servitization and business model innovation in BtoB manufacturing firms. *Industrial Marketing Management*, 89, 245-264.
- Pan, W., Xie, T., Wang, Z., & Ma, L. (2022). Digital economy: An innovation driver for total factor productivity. *Journal of Business Research*, 139, 303-311.
- Purwadi, P., Darma, D., & Setini, M. (2023). Festival Economy: The Impact of Events on Sustainable Tourism. *Jurnal Kepariwisata: Destinasi, Hospitalitas dan Perjalanan*, 7(2), 178-195.
- Rahman, M. M., Tabash, M. I., Salamzadeh, A., Abdul, S., & Rahaman, M. S. (2022). Sampling techniques (probability) for quantitative social science researchers: a conceptual guidelines with examples. *Seeu Review*, 17(1), 42-51.
- Shang, Y., Yu, H., & Ma, Z. (2020). Venture investors' monitoring and product innovation performance in serial crowdfunding projects: An empirical test. *The Chinese Economy*, 53(3), 300-314.
- Sawyer, S. F. (2009). Analysis of variance: the fundamental concepts. *Journal of Manual & Manipulative Therapy*, 17(2), 27E-38E.
- Shabbir, M. S., & Wisdom, O. (2020). The relationship between corporate social responsibility, environmental investments and financial performance: evidence from manufacturing companies. *Environmental Science and Pollution Research*, 27(32), 39946-39957.
- Soomro, B. A., Mangi, S., & Shah, N. (2021). Strategic factors and significance of organizational innovation and organizational learning in organizational performance. *European Journal of Innovation Management*, 24(2), 481-506.

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- Sellitto, M. A., Camfield, C. G., & Buzuku, S. (2020). Green innovation and competitive advantages in a furniture industrial cluster: A survey and structural model. *Sustainable Production and Consumption*, 23, 94-104.
- Setini, M., Yasa, N. N. K., Supartha, I. W. G., Giantari, I. G. A. K., & Rajiani, I. (2020). The passway of women entrepreneurship: Starting from social capital with open innovation, through to knowledge sharing and innovative performance. *Journal of Open Innovation: Technology, Market, and Complexity*, 6(2), 25.
- Tellinghuisen, J. (2022). Goodness-of-Fit Tests in Calibration: Are They Any Good for Selecting Least-Squares Weighting Formulas?. *Analytical Chemistry*, 94(46), 15997-16005.
- Yasa, P. N. S., & Sentosa, I. (2022). An Empirical Study on the Technology Usage Dimensions within the Tourism Craft Industry in Bali, Indonesia: A Structural Equation Modelling Approach. In *Digital Transformation in Aviation, Tourism and Hospitality in Southeast Asia* (pp. 145-160). Routledge.
- Yüksel, H. (2020). An empirical evaluation of industry 4.0 applications of companies in Turkey: The case of a developing country. *Technology in Society*, 63, 101364.



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International Journal of Data and Network Science

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Originality of the work: Acceptable

Subject relevance: Acceptable

Professional/industrial relevance: Acceptable

Completeness of the work: Acceptable

Acknowledgement of the work of others by references: Acceptable

Organisation of the manuscript: Acceptable

Clarity in writing tables graphs and illustrations: Acceptable

Likelihood of passing the 'test of time': Acceptable

"Content Quality"

The title used is interesting and appropriate to the current era  
The abstract meets the rules of having objectives, methods and findings  
has been stated in relation to the problems and objectives of this research  
Literature is sufficient  
The method and results are very good

Recommendation: Accepted

Reviewer 2

In the arrangement of sentences, there are still some writings that are copied and  
pasted and become long and unclear sentences  
The method is more refined  
the results are quite clear  
Add literature related to this journal  
Recommendation: Accepted with minor revisions



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International Journal of Data and Network Science

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The title used is interesting and appropriate to the current era

The abstract meets the rules of having objectives, methods and findings  
has been stated in relation to the problems and objectives of this research

Literature is sufficient

The method and results are very good

Recommendation: Accepted

Reviewer 2

In the arrangement of sentences, there are still some writings that are copied and  
pasted and become long and unclear sentences

The method is more refined

the results are quite clear

Add literature related to this journal

Recommendation: Accepted with minor revisions



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Canada, Tel: +1-516-243-7112  
Date: April 9, 2024

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## Adoption of information technology encourages the creation of innovation to improve industrial performance in the digital era

Putu Ngurah Suyatna Yasa<sup>a\*</sup>

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### ABSTRACT

#### Article history:

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Technology is becoming a trend, so this research examines technology information as a driver of productivity for small or medium industries (SMEs). This research examines the impact of innovation on the performance of small and medium enterprises, the impact of information technology on industrial performance, and the role of information technology as a mediator of innovation on company performance. Data was collected through an online survey. The total population is 346, so that many questionnaires were distributed to MSMEs using path analysis and Smart PLS as processing tools. The findings are that innovation has an influence on increasing the productivity of small businesses, innovation has a positive role on information systems, remains insignificant on the performance of industrial Performance, and information technology does not mediate the relationship between innovation and performance. So it can be said that innovation plays an important role in improving company performance.

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### 1. Introduction

Indonesia's digital economy is the highest in ASEAN, growing at 12% annually. There are excellent products in many areas, but many digital processes have not been touched. Small and medium enterprises (SMEs) have a strategic role, but challenges such as financing, digital readiness and marketing. From 2020, the total annual consumption of the digital market will be dominated by beauty products, followed by electronics and then food. The keys to Micro, Small & Medium Enterprises (MSME) development are local wisdom, digital transformation, and the role of facilitator of digital transformation / SMEs empowerment. The following factors contribute to the success of SMEs in adopting digital technologies: access to Internet technology, cloud-based data, artificial intelligence, and then the support of policy makers to ensure an adequate regulatory framework and business environment. Strengthening SMEs is a comprehensive effort to improve the ability of SMEs to meet the challenges and opportunities in global business. It is necessary to conduct intensive business training for SMEs and prepare business plans for special economic zones. The spread of SMEs is increasingly expanding and to be able to access a wide market, many things need to be addressed in various fields, such as technology or what is known as technology, regulations, and market balance. Currently the market looks lively but is not healthy because there is overlap and this requires improvements from various parties. This small industrial sector is required to innovate, but of course it cannot do it alone because it requires support from universities, non-governmental organizations, and the government. Therefore, success in new marketing is an important strategy for companies. Hsu and Cheng (2012) showed that innovation has a positive effect on the business performance of SMEs in Taiwan's electronics and industrial information. According to research results (Méndez-Picazo et al., 2021), new product launches, new work activities, and new market activities are related to business growth. Li et al. (2021) performed research on Turkish manufacturing and showed those aspects of innovation (product, process, marketing and management) influence performance. The same thing was also done in Pakistani manufacturing (Marion &

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Fixson, 2021) which shows that the nature of innovation can be affected. Likewise, Shang et al. (2020), also said that innovation is certainly a boost to the revival of business performance.

In the business world, the role of information technology is used in electronic commerce or known as E-Commerce (e-commerce) or electronic commerce. The online store does business using online communication networks. Online shopping is a part of e-commerce, where the scope of e-commerce is more extensive, not only business, but also cooperation with business partners, customer service, open jobs, etc. In addition to www network technology, online shopping also requires the use of a database or database technology, electronic mail, or e-mail and other forms of non-computer technology, such as delivery systems and e-commerce payments (Yasa & Sentosa, 2022).

Based on the explanations of the above research results, the purpose of this work is to analyze; (1) the impact of innovations in small and medium-sized enterprises on organizational performance; (2) the impact of information technology on operations; and (3) analysis. Based on previous research findings, the use of ICT as a mediator between innovation and business performance is new in this study.

The economy on Bali Island certainly cannot be separated from the role of MSMEs, because they play an important role in expanding employment opportunities and employment, generating GDP, and providing a social safety net for the poor to participate in productive economic activities. However, the contribution of SMEs is not enough to encourage economic growth and increase income. Business performance is defined as the company's ability to achieve goals supported by good management skills, good governance and reliable commitment to achieve business goals (Guluma, 2021). A successful business is born when the company is structured according to the needs and desires of the target market. In addition, the products produced must have high specifications and performance compared to competitors to create a competitive advantage (Heng & Afifah, 2020). Technology entrepreneurs can have economic, social, and environmental benefits or impacts. The benefits provided from an economic perspective are as 1) Increase efficiency and productivity; 2) Increase income. 3) Create new jobs. To answer these challenges, the role of technology entrepreneur must be played by SMEs to improve their business performance. This research tries to determine whether innovation will help improve SME business performance in Bali. This research also makes a significant contribution in enriching the SME concept developed by previous researchers and shows the importance of techno-entrepreneurship in the development of SME business activities.

## **2. Relationship between variables and hypotheses**

Technology shows that computing is a communication tool for computer software (Benbya et al., 2020). Information technology (IT) is defined as a part of a machine that can perform multiple commands. The Office of Communications (Popkin, 1991) explains that the term IT is used to describe new technologies and their applications, including all aspects of micro-devices, satellites and computers used as technology. Based on all these definitions, we can say that information technology is a part of information technology. The use of information technology has been widely studied. Akpan et al. (2022) reported that computers and other technologies are widely used in all areas of business, technology entrepreneur, finance, education, and administration. Etemad (2020) claims that IT plays an important role in supporting business success in situations of uncertainty and economic crisis. The use of ICT for business has been studied around the world and it has been found that the entrepreneurship of an individual is related to personal innovation, risk, the ability to understand ideas and take responsibility for success combination (Afawubo & Noglo, 2022). Since IT systems affect products and services, markets, product costs and product differentiation, the success of a company's innovation largely depends on the adoption and innovative use of IT (Paolani & Gebauer, 2020). According to Guluma (2021), IT is related to social entrepreneurship and finds out how this affects sustainability. Efficiency and improvement are important to the industry because crossing geographic boundaries requires workers to be computer literate. The indicators used to measure ICT are: 1) Use of information technology as an industrial driver (Pan et al., 2022); 2) Understanding the importance of using information technology (Ofori et al., 2022); 3) and IT usage skills (Kaplan, 2020).

### *2.1 Innovation and Industrial Performance*

Product innovations are one of the key factors of organizational success and an important strategy to increase market share and company performance (Soomro et al., 2021). Innovation lowers production costs and is beneficial in terms of customer satisfaction (Sellitto et al., 2020). Currently, the goals of new marketing are to increase sales, increase market share and initiate new markets (Azzam et al., 2021). According to (Nasir et al., 2020), creativity and innovation play an important role in the growth of organizational performance in the international market. Many previous studies have shown that innovations have a positive impact on business activities (Setini et al., 2020). A study by Purwad et al. (2023) shows that creativity affects company performance. Innovation is often considered the lifeblood of an organization and is essential to business. Success in new marketing is an important strategy for companies because their ability to market creatively can help them dominate existing markets or develop new ones and share immediate leadership in the field. Chen (2020) shows that innovation has a positive impact on the business performance of SMEs in Taiwan's information and electronic industry. According to the research findings of (Bil, 2021), a study of the Turkish manufacturing industry shows that aspects of innovation (product, process, marketing and management) affect performance. The same is done in the manufacturing industry of Pakistan, which shows that it is possible to influence the nature of innovation. Subsequent studies have also shown that innovation has a

positive and significant effect on performance (Ma et al., 2021). Based on the research findings used as a benchmark in this study, the hypotheses presented in this study are as follows.

**H<sub>1</sub>:** *Innovation has a positive effect on industrial performance.*

## 2.2 Information Technology and Innovation

To achieve a higher innovation level of SMEs, all activities related to the innovative activities of companies must have the basic support of information technology and communication (Heimonen, 2012; Blanchard, 2020). Yüksel (2020) also stated in his research that companies that invested heavily in information technology and communication achieved a higher level of competition and innovation than companies that did not invest in it. According to Charles and Ochieng (2023), ideas that become innovations are usually implemented with information and communication technology initiatives, the results of which usually significantly improve the innovativeness of new products and processes, which is expressed in customer loyalty. promote demand for other products of the organization. At the same time, Alam and Mohanty (2022) found in their study that as much as companies want to maximize the innovative activities carried out every day, the introduction and implementation of information and communication technology should be prioritized and, in the context of the appeal, harmonize initiatives in communication and communication technology for all innovative activities of organizations. These companies also regularly adopted information technology and communication in customer relationship management, production improvement, supply chain management, innovation and other important activities of the organization (Normal et al., 2023; Munizu et al., 2024). Based on the research results used as reference in this study, the following hypothesis was formulated in this study.

**H<sub>2</sub>:** *Innovation has a positive effect on information technology.*

## 2.3 Information Technology on Industrial Performance

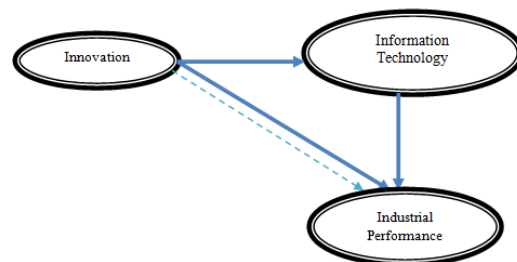
The success of corporate innovation is highly dependent on IT implementation and innovation. Research by Kim et al. (2021) shows that IT is an important resource for improving business performance. Based on research on the relationship between IT and corporate performance and value (Ashal et al., 2021), IT is a strategic resource and has a significant impact on performance. Charles and Ochieng (2023) showed that IT has a positive impact on future business performance and increases business value. (Ashal et al., 2021) Research findings also revealed that IT has a primary impact on strategic direction and corporate performance. Research by Shabbir and Wisdom (2020) also found that IT investments have significant potential to improve business performance. Ahmed et al. (2020) reported that IT investment strategies have a significant impact on business performance. The hypotheses that can be made by combining the above research findings are as follows.

**H<sub>3</sub>:** *Information Technology has a positive effect on industrial performance.*

## 2.4 The Mediating Role of Technology on Information Technology and Industrial Performance

The role of information technology does not directly affect performance improvement, but also indirectly mediates the relationship between innovation and performance. According to Adigwe et al. (2023), one of the many characteristics of the past century is information and communication technologies, which play an important role as a basis for the introduction and adoption of innovations needed by organizations. improve management and productivity. This is how you can survive well in a global and competitive market. Research by Aceto et al. (2018) shows that IT and innovation determine the performance of the company. IT can increase productivity and business efficiency, enabling companies to resist and succeed in market changes (Alves & Alves, 2015). Kinyua et al. (2015) argue that technology that drives resource acquisition drives internal processes that improve financial efficiency to improve business performance. In addition, IT is said to play an important role in improving business operations by increasing the performance of those assets (Farida & Setiawan, 2022). It is also important to help companies beat the competition (Bressler, 2012). Based on the results of the study, the following hypothesis was presented.

**H<sub>4</sub>:** *Information technology mediates the relationship between innovation and industrial performance.*



**Fig. 1.** Conceptual Framework

### 3. Research method

#### 3.1 Research Setting and Sample

This research was conducted in 2022-2023 Bali-Indonesia on 15,198 MSMEs (Bali Provincial Industry Office 2019), the number of samples studied was 442,848 MSMEs, the research method used the sample size technique (Rahman et al., 2022), where samples were taken from each district using proportional stratified random sampling, while the selection of respondents used a simple random sampling method. The respondents used as samples were SME business owners who had been in business for one year. Data was obtained by distributing prepared questionnaires directly to 346 respondents throughout Bali. The research object is: SME business performance, innovation which consists of three dimensions, namely: product innovation, process innovation, and marketing and information technology innovation.

#### 3.2 Data analysis

This research tests the influence of exogenous and endogenous variables with the SEM-PLS equation. The use of this analysis is due to assumptions (Baak et al., 2020), the data does not have to be normally distributed for all categories: ordinal, interval and proportion. The analysis does not depend on measurement scales, data distribution, and sample size. PLS can be used to validate theory and latent variable correlation, analyzing the innovation construct using a quadratic model, because innovation is divided into three dimensions, namely product, process and marketing innovation. The indicators that form latent variables are reflexive, so the evaluation of the measurement model (measurement model/external model) to measure the validity and reliability of these indicators is: convergent validity; discriminant validity; combined reliability, and Cronbach's alpha. Evaluation of the structural model (Structural Inner Model) to assess the level of accuracy of the model in the research is carried out by analyzing: (a) R-square (R<sup>2</sup>), (b) Q-Square Predictive. Relevance (Q<sup>2</sup>), (c) Fit (GoF) and (d) Structural Model Analysis.

### 4. Findings

#### 4.1 Respondent Profile

The profile of the respondents studied as shown in Table 1 shows that of the 346 respondents studied, 47.50 percent were women and 52.50 percent were men. Judging from the age of the respondents, 7.70 percent are between 17-22 years old, 16.50 percent are 23-28 years old, 12.70 percent are 29-34 years old, and 63.10 percent are over 34 years old. The respondents studied had a relatively high level of education, namely 56.30 percent with a college education background, 5.90 percent junior high school and 39.80 percent high school. Meanwhile, in terms of the culinary product, 33 percent of them provide food and beverages, 54.30 percent of Beauty and fashion, 17.60 percent of Household equipment.

**Table 1**  
Gender, Age, Education and Products Produced by Respondents

Gender	Percentage
Male	47.50
Female	52.50
Age (Year)	Percentage
17 - 22	7.70
23 - 28	16.50
29 - 34	12.70
> 34	63.10
Education	Percentage
Junior High school	5.90
Senior High school	39.80
College	54.30
Product	Percentage
Culinary	33.00
Beauty and fashion	51.60
Household equipment	17.60

Source: Field research results

#### 4.2 Data Analysis

Based on the result of the calculation of field research data using a structural equation modeling model based on PLS, the analysis can be described as follows.

##### 4.2.1 Outer Model Evaluation

#### 1) Convergent Validity

Convergent validity is a criterion in measuring the validity of reflexive indicators. This evaluation is carried out by examining the outer loading coefficient of each indicator on its latent variables. An indicator is said to be valid, if the coefficient of outer loading is between 0.60 – 0.70 but for an analysis whose theory is not clear then an outer loading of 0.50 is recommended (Sawyer, 2009),



and is significant at the alpha level of 0.05 or t- statistics 1.96. The value of the outer loading of each indicator on the latent variable can be seen in Table 1 shows that all indicators are valid. A measurement can be said to be reliable if the composite reliability and Cronbach alpha have a value greater than 0.70. Composite reliability and Cronbach alpha are a measure of reliability between indicator blocks in the research model. Table 1 shows that all constructs have Cronbach alpha and composite reliability values greater than 0.70, so they have met the valid requirements.

**Table 1**  
Convergent Validity

Construct	Indicator	Original Sample	Cronbach Alpha	Composite Reliability	AVE	Description
Industrial Performance	Y11	0.86	0.83	0.85	0.67	Valid
	Y12	0.92				Valid
	Y13	0.82				Valid
	Y14	0.87				Valid
Information Technology	X11	0.79	0.95	0.96	0.85	Valid
	X12	0.92				Valid
	X13	0.95				Valid
Process Innovation	X211	0.83	0.88	0.94	0.77	Valid
	X212	0.85				Valid
	X213	0.84				Valid
	X214	0.85				Valid
Distribution Innovation	X221	0.85	0.78	0.87	0.69	Valid
	X222	0.67				Valid
	X223	0.78				Valid
Product Innovation	X231	0.74	0.87	0.87	0.67	Valid
	X232	0.72				Valid
	X233	0.78				Valid
	X234	0.76				Valid
<b>Innovation</b>			0.93	0.94	0.67	Valid

Source: research data calculation results 2023

## 2) Discriminate Validity

Measurement of the validity of the indicators that make up the latent variable can also be done through discriminate validity. Discriminate validity can be done by comparing the coefficient of the AVE Root ( $\sqrt{\text{AVE}}$  or Square root Average Variance Extracted) of each variable with the correlation value between variables in the model. A variable is said to be valid, if the AVE root is greater than the correlation value between variables in the research model, and the AVE is greater than 0.50.

**Table 2**  
AVE d

Construct	AVE	$\sqrt{\text{AVE}}$
Industrial Performance		0.81
Information Technology	0.85	0.92
Process Innovation	0.77	0.85
Distribution Innovation	0.69	0.82
Product Innovation	0.67	0.82
Innovation	0.58	0.74

Source: research data calculation results 2023

Table 2 shows that all constructs show a value of  $\text{AVE} > 0.50$ , the AVE root value ranges from 0.74 - 0.92 while the correlation value between constructs ranges from 0.62 - 0.90, meaning that the discriminate validity test results show that all constructs are valid.

### 4.2.2 Inner Model Evaluation

Evaluation of the structural model (Inner Model) is a measurement to evaluate the level of accuracy of the model in the research, which is formed through several variables and their indicators. The results of further calculations are described below.

#### 1) Evaluation of Structural Models Through R-Square ( $R^2$ )

$R^2$  can show the strength and weakness of the influence caused by the dependent variable on the independent variable.  $R^2$  can also show the strength of a research model. According to Hair et al. (2014), the  $R^2$  value of 0.75 is classified as a strong model, while the  $R^2$  of 0.50 is classified as a moderate model and the  $R^2$  value of 0.25 is classified as a weak model.

**Table 3**  
R-Square Index

Construct	Industrial Performance	Information Technology	Process Innovation	Distribution Innovation	Product Innovation
R-Square	0.53	0.63	0.78	0.81	0.83

Source: Survey data calculation results 2023

Table 4 shows that the dimensions of process, distribution and product innovation show a strong  $R^2$  value with each value greater than 0.75. Meanwhile, performance and IT showed moderate values with values ranging from 0.50 to 0,62.

## 2) Structural Model Evaluation through Q-Square Predictive Relevance ( $Q^2$ )

$Q^2$  is a measure of how well the observations made give results to the research model. The criteria for the strength of the model measured based on the  $Q^2$  are as follows: 0.35 (strong model), 0.15 (moderate model), and 0.02 (weak model). The calculation results show the value of  $Q^2 = 1 - (1-0.62)(1-0.80)(1-0.76)(1-0.81)(1-0.52) = 0.99$ , included in the strong model criteria.

## 3) Structural Model Evaluation through Goodness of Fit (GoF)

Goodness of Fit (GoF) is a measurement of the accuracy of the overall model because it is considered a single measurement of the measurement of the outer model and the measurement of the inner model. The criteria for the strength of the model based on the measurement of Goodness of Fit (GoF) according to (Tellinghuisen, 2022), are as follows: 0.36 (GoF large), 0.25 (GoF medium), and 0.10 (GoF small). The calculation results show the value of  $GoF = V \ 0.70 * 0.69 = 0.69$  or includes a strong model.

## 4) Structural Model Analysis

The aim is to determine the effect and significance of exogenous constructs on endogenous constructs. The results of this analysis at the same time answer the research questions posed.

**Table 4**

Path Coefficient and Statistical Test

Construct	Coefficient	P-Value	Description
IT → Industrial Performance	0.21	0.16	Not Significant
Innovation → Business Performance	0.56	0.00	Significant
Innovation → IT	0.78	0.00	Significant
Innovation → Innovation Process	0.88	0.00	Significant
Innovation → Innovation Marketing	0.88	0.00	Significant
Innovation → Innovation Product	0.91	0.00	Significant

Source: Survey data calculation results 2023

The results of this study (Table 4) show that innovation has a positive and significant effect on business performance ( $b = 0.55$  P-Value = 0.00), so hypothesis 1 that innovation has a positive and significant impact on business activity is accepted. Innovation also has a positive and significant effect on IT ( $b = 0.79$  P-value = 0.00), thus hypothesis 2 is accepted that innovation has a positive and significant effect on IT. IT has a positive but not significant impact on business performance ( $b = 0.20$  P-value = 0.14), which means that hypothesis 3 that IT has a positive and significant impact on business performance cannot be accepted. Also, the results of the study show that process, marketing, and product innovations can reflect the innovation structure, each of which has an index coefficient of 0.87; 0.89 and 0.90 and all of them were statistically significant (Table 4). Further findings also show that IT is not a mediator between innovation and business performance, the direct relationship between innovation and business performance is shown to be 0.71 and significant, while the indirect relationship between IT innovation and business performance is 0.16 and it is notable. Therefore, hypothesis 4, according to which IT mediates innovation and business performance, cannot be accepted (Table 6).

**Table 5**

Direct and Indirect Effect

Constructs Relationships	Coefficient	P-Value	Description
<b>Direct Effect</b>			
Innovation → Industrial Performance	0.72	0	Significant
<b>Indirect Effect</b>			
Innovation → IT → Industrial Performance	0.17	0.16	Not Significant

The result of analysis in Table 4 shows that innovation has a positive effect of 0.78 and is significant when the level of significance is five percent, which means that the increase of innovation in both product, process and marketing innovation will boost higher use of IT. The result of this study is in accordance with the underlying theory of this research, that there is a positive relationship between innovation and IT. The result of this study is in accordance with the result of previous studies stating that the information and communication technology also play an important role in the new millennium companies, since its adoption and implementation in business activities generates, on one hand, a higher level of process innovation (Kaplan, 2020). SMEs to achieve a higher level of innovation, all activities related to innovation made by companies, should have a basic support of information technology and communication (Afawubo & Noglo, 2022; Guluma, 2021). Study by Ofori et al. (2022) stated that one of the many elements that characterize the present century is the information and communication technology, which plays a fundamental role in establishing the basis for the adoption and implementation of the innovation

activities that the organizations need to improve management and production methods, which will allow them to survive in a highly globalized and competitive market.

#### *4.3 The Effect of Information Technology on Industrial Performance*

The result of the analysis in Table 4 shows that IT has a positive effect on business performance, meaning that the increasing use of information technology will encourage higher business performance. This means that the result is in accordance with the underlying theory of this research, and there is a positive relationship between IT and performance. However, this relationship is not significant at the 0.05 level as shown in Table 5. The result of this calculation is in accordance with the reality on the ground that the use of IT among SMEs in Bali Province is still limited. SMEs in Bali Province in marketing their products dominantly still use traditional methods, namely door-to-door. The role of promotion using print and electronic media, or the internet is still relatively small. The data shows that SMEs in Bali generally use the door-to-door marketing method, which is 70.40%. They generally use promotional media from person to person on a limited scale; this condition is a traditional business management model with limited production quantities. Of all respondents studied, only 22.40% have used modern information technology in the form of the internet in marketing their products. In addition, there are also as many as 7.10% of SMEs that use other methods besides the two methods, namely handing over to collectors or production is ordered only so that it does not require marketing media to sell its products.

The result of this study is different from the result of previous studies which states that IT has a significant effect on performance, including the result of research by Sellitto et al. (2020) showing that IT is an important valuable resource in improving business performance. Kinyua et al. (2015) performed research on the relationship between IT and firm performance and showed that IT as a strategic resource has a significant positive effect on performance. The study of Purwadi et al. (2023) shows that IT and innovation determine company performance. Bil (2021) shows that IT has a positive influence on future company performance and increases the firm value. The great potential of IT investment in improving business performance has also been carried out through a study by Bressler (2012). Farida and Setiawan (2022) study also shows that IT investment strategies have a real influence on company performance.

#### *4.4 The Role of Information Technology in Mediating the Relationship Between Innovation and Industrial Performance*

To find out the role of IT in mediating the relationship between innovation and business performance, the study has been performed by doing two analyses, namely analysis involving mediating variables (indirect effect) and analysis without involving mediating variables (direct effect). The method of examining the mediating variable with the coefficient difference approach is carried out as follows: if the indirect relationship is significant while the direct relationship is not significant, it is said that IT is a perfect mediation of the relationship between innovation and business performance. If the direct relationship is significant while the indirect relationship is not significant, it is said that IT is not a mediating relationship between innovation and business performance (Munizu et al., 2024).

Based on the coefficient relationship between constructs, it can be seen that the direct relationship coefficient between innovation and business performance is 0.72 and is significant, while the indirect relationship between innovation on IT and business performance is 0.17 and is not significant. From the result of the analysis, it can be stated that IT is not a mediation between innovation and industrial Performance. This is in accordance with the result of the previous analysis between IT and industrial Performance that has an insignificant relationship, this condition is strongly influenced by the use of IT in SMEs in Bali, which is generally still relatively limited, the dominant marketing activity is at the local district level with the most method using door to door without IT assistance. Meanwhile, SMEs that market their products for export are still relatively limited. The role of promotion using print and electronic media, or the internet is still relatively small. The data shows that SMEs in Bali generally use the door-to-door marketing method, which is 70.40%. They generally use promotional media from person to person on a limited scale; this condition is a traditional business management model with limited production quantities.

The result of this study is different from the result of previous studies which state that IT plays an important role as a mediator between innovation and industrial Performance, including a study by Normal et al. (2023) which states that success in corporate innovation is highly dependent on the implementation and creativity of using IT. The result of studies also states that IT enables companies to maintain sustainability and gain success in various market changes so that it can increase profits and industrial Performance (Shabbir & Wisdom, 2020). The result of this study is also different from the result of the study by Charles and Ochieng (2023) which states that technology facilitates the acquisition of resources that facilitate internal processes in improving financial performance to improve industrial performance. The result of this study differs from the study of Ashal et al. (2021) which states that IT plays an important role in increasing the output of the same resources to improve business performance. Besides that, it is different from the study result which states that IT is also the most recognized factor to support companies in winning the competition (Ahmed et al., 2020). Thus, the hypothesis which states that IT mediates innovation on organizational industrial performance cannot be accepted.

## 5. Conclusion

The results of this study have indicated that innovation has a positive and significant effect on industrial performance, and that increasing innovation will improve industrial performance. In addition, innovation also has shown a positive and significant effect on IT, meaning that the higher the innovation will also encourage the higher use of IT. The next finding also shows that IT has a positive but not significant effect on industrial performance. In addition, IT also does not mediate the relationship between innovation and industrial performance. This is due to the low use of IT among SMEs entrepreneurs in Bali in supporting their business activities, in product marketing still dominant using traditional methods such as door to door. Another contributing factor is that the scope of marketing is generally still limited on a local scale, only a small number of which have exported, so the use of IT is also limited.

## 6. Implication

The findings of this study are expected to provide benefits for the development of entrepreneurship in Bali-Indonesia as an effort to improve industrial performance. This condition is a fact that SMEs in Bali-Indonesia cannot be separated from the role of employee production skills because SMEs products in Bali are dominantly based on local wisdom that comes from skills born of Balinese human artistic talent. However, as an effort to improve product marketing, the role of information technology is also very important to be improved. Technopreneurship, which is the integration of innovation with information technology, is an important factor in supporting the industrial performance of SMEs in Bali-Indonesia. However, nowadays the use of IT is still limited so it is very important to be improved in the future. The result of this study is expected to be a guideline for SMEs and policy makers in their effort to industrial performance, which is currently still relatively low.

## References

- Akpan, I. J., Udoh, E. A. P., & Adebisi, B. (2022). Small business awareness and adoption of state-of-the-art technologies in emerging and developing markets, and lessons from the COVID-19 pandemic. *Journal of Small Business & Entrepreneurship*, 34(2), 123-140.
- Adigwe, C. S., Abalaka, A., Olaniyi, O. O., Adebisi, O. O., & Oladoyinbo, T. O. (2023). Critical analysis of innovative leadership through effective data analytics: Exploring trends in business analysis, finance, marketing, and information technology. *Asian Journal of Economics, Business and Accounting*, 23(22).
- Ahmed, S. S., Guozhu, J., Mubarik, S., Khan, M., & Khan, E. (2020). Intellectual capital and business performance: the role of dimensions of absorptive capacity. *Journal of Intellectual Capital*, 21(1), 23-39.
- Ashal, N., Alshurideh, M., Obeidat, B., & Masa'deh, R. (2021). The impact of strategic orientation on organizational performance: Examining the mediating role of learning culture in Jordanian telecommunication companies. *Academy of Strategic Management Journal*, 21, 1-29.
- Alam, A., & Mohanty, A. (2022, November). Business models, business strategies, and innovations in EdTech companies: integration of learning analytics and artificial intelligence in higher education. In *2022 IEEE 6th Conference on Information and Communication Technology (CICT)* (pp. 1-6). IEEE.
- Alves, J. R. X., & Alves, J. M. (2015). Production management model integrating the principles of lean manufacturing and sustainability supported by the cultural transformation of a company. *International Journal of Production Research*, 53(17), 5320-5333.
- Afawubo, K., & Noglo, Y. A. (2022). ICT and entrepreneurship: A comparative analysis of developing, emerging and developed countries. *Technological forecasting and social change*, 175, 121312.
- Aceto, G., Persico, V., & Pescapé, A. (2018). The role of Information and Communication Technologies in healthcare: taxonomies, perspectives, and challenges. *Journal of Network and Computer Applications*, 107, 125-154.
- Azzam, Z., Al Fuqaha'a, E., Khrais, I., Almubaydeen, T., & Ismai, A. R. (2021, December). Impact of marketing innovation on building customer loyalty:(a field study on customers of pioneers paper and carton industries in Jordan). In *2021 22nd International Arab Conference*
- Benbya, H., Davenport, T. H., & Pachidi, S. (2020). Artificial intelligence in organizations: Current state and future opportunities. *MIS Quarterly Executive*, 19(4).
- Baak, M., Koopman, R., Snoek, H., & Klous, S. (2020). A new correlation coefficient between categorical, ordinal and interval variables with Pearson characteristics. *Computational Statistics & Data Analysis*, 152, 107043.
- Blanchard, K. (2020). Innovation and strategy: Does it make a difference! A linear study of micro & SMEs. *International Journal of Innovation Studies*, 4(4), 105-115.
- Bressler, M. S. (2012). How small businesses master the art of competition through superior competitive advantage. *Journal of Management and Marketing Research*, 11(1), 1-12.
- Bil, E. (2021). The effect of technological innovation capabilities on companies' innovation and marketing performance: A field study on Technopark companies in Turkey. *Journal of Life Economics*, 8(3), 361-378.
- Charles, M., & Ochieng, S. B. (2023). Strategic outsourcing and firm performance: a review of literature. *International Journal of Social Science and Humanities Research (IJSSHR) ISSN 2959-7056 (o); 2959-7048 (p)*, 1(1), 20-43.
- Chen, C. L. (2020). Cross-disciplinary innovations by Taiwanese manufacturing SMEs in the context of Industry 4.0. *Journal of Manufacturing Technology Management*, 31(6), 1145-1168.
- Popkin, S. L. (1991). *The reasoning voter: Communication and persuasion in presidential campaigns*. University of Chicago Press.
- Etamad, H. (2020). Managing uncertain consequences of a global crisis: SMEs encountering adversities, losses, and new opportunities. *Journal of International Entrepreneurship*, 18, 125-144.

- Farida, I., & Setiawan, D. (2022). Business strategies and competitive advantage: the role of performance and innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(3), 163.
- Guluma, T. F. (2021). The impact of corporate governance measures on firm performance: the influences of managerial overconfidence. *Future Business Journal*, 7(1), 50.
- Heimonen, T. (2012). What are the factors that affect innovation in growing SMEs?. *European Journal of Innovation Management*, 15(1), 122-144.
- F. Hair Jr, J., Sarstedt, M., Hopkins, L., & G. Kuppelwieser, V. (2014). Partial least squares structural equation modeling (PLS-SEM) An emerging tool in business research. *European business review*, 26(2), 106-121.
- Hsu, J. L., & Cheng, M. C. (2012). What prompts small and medium enterprises to engage in corporate social responsibility? A study from Taiwan. *Corporate social responsibility and environmental management*, 19(5), 288-305.
- Heng, L., & Afifah, N. (2020). Entrepreneurial orientation for enhancement of marketing performance. *International Review of Management and Marketing*, 10(3), 46-53.
- Kaplan, B. (2020). Revisiting health information technology ethical, legal, and social issues and evaluation: telehealth/telemedicine and COVID-19. *International journal of medical informatics*, 143, 104239.
- Kim, H. K., & Lee, C. W. (2021). Relationships among healthcare digitalization, social capital, and supply chain performance in the healthcare manufacturing industry. *International Journal of Environmental Research and Public Health*, 18(4), 1417.
- Kinyua, J. K., Gakure, R., Gekara, M., & Orwa, G. (2015). Effect of internal control environment on the financial performance of companies quoted in the Nairobi Securities Exchange. *International Journal of Innovative Finance and Economics Research*, 3(4), 29-48.
- Li, Z., Liao, G., & Albitar, K. (2020). Does corporate environmental responsibility engagement affect firm value? The mediating role of corporate innovation. *Business Strategy and the Environment*, 29(3), 1045-1055.
- Ma, J., Hu, Q., Shen, W., & Wei, X. (2021). Does the low-carbon city pilot policy promote green technology innovation? Based on green patent data of Chinese A-share listed companies. *International Journal of Environmental Research and Public Health*, 18(7), 3695.
- Marion, T. J., & Fixson, S. K. (2021). The transformation of the innovation process: How digital tools are changing work, collaboration, and organizations in new product development. *Journal of Product Innovation Management*, 38(1), 192-215.
- Méndez-Picazo, M. T., Galindo-Martín, M. A., & Castaño-Martínez, M. S. (2021). Effects of sociocultural and economic factors on social entrepreneurship and sustainable development. *Journal of Innovation & Knowledge*, 6(2), 69-77.
- Munizu, M., Alam, S., Pono, M., & Riyadi, S. (2024). Do digital marketing, integrated supply chain, and innovation capability affect competitiveness, and creative industry performance?. *International Journal of Data and Network Science*, 8(2), 1025-1034.
- Nasir, J., Ibrahim, R. M., Sarwar, M. A., Sarwar, B., Al-Rahmi, W. M., Alturise, F., ... & Uddin, M. (2022). The effects of transformational leadership, organizational innovation, work stressors, and creativity on employee performance in SMEs. *Frontiers in Psychology*, 13, 772104.
- Normal, I., Setini, M., & Putra, I. (2023). Assessing the influence of supply chain collaboration value innovation, market demand, and competitive advantage on improving the performance of ceramic SMEs. *Uncertain Supply Chain Management*, 11(2), 777-786.
- Ofori, K. S., Anyigba, H., Adeola, O., Junwu, C., Osakwe, C. N., & David-West, O. (2022). Understanding post-adoption behaviour in the context of ride-hailing apps: the role of customer perceived value. *Information Technology & People*, 35(5), 1540-1562.
- Paiola, M., & Gebauer, H. (2020). Internet of things technologies, digital servitization and business model innovation in BtoB manufacturing firms. *Industrial Marketing Management*, 89, 245-264.
- Pan, W., Xie, T., Wang, Z., & Ma, L. (2022). Digital economy: An innovation driver for total factor productivity. *Journal of Business Research*, 139, 303-311.
- Purwadi, P., Darma, D., & Setini, M. (2023). Festival Economy: The Impact of Events on Sustainable Tourism. *Jurnal Kepariwisata: Destinasi, Hospitalitas dan Perjalanan*, 7(2), 178-195.
- Rahman, M. M., Tabash, M. I., Salamzadeh, A., Abduli, S., & Rahaman, M. S. (2022). Sampling techniques (probability) for quantitative social science researchers: a conceptual guidelines with examples. *Seeu Review*, 17(1), 42-51.
- Shang, Y., Yu, H., & Ma, Z. (2020). Venture investors' monitoring and product innovation performance in serial crowdfunding projects: An empirical test. *The Chinese Economy*, 53(3), 300-314.
- Sawyer, S. F. (2009). Analysis of variance: the fundamental concepts. *Journal of Manual & Manipulative Therapy*, 17(2), 27E-38E.
- Shabbir, M. S., & Wisdom, O. (2020). The relationship between corporate social responsibility, environmental investments and financial performance: evidence from manufacturing companies. *Environmental Science and Pollution Research*, 27(32), 39946-39957.
- Soomro, B. A., Mangi, S., & Shah, N. (2021). Strategic factors and significance of organizational innovation and organizational learning in organizational performance. *European Journal of Innovation Management*, 24(2), 481-506.
- Sellitto, M. A., Camfield, C. G., & Buzuku, S. (2020). Green innovation and competitive advantages in a furniture industrial cluster: A survey and structural model. *Sustainable Production and Consumption*, 23, 94-104.
- Setini, M., Yasa, N. N. K., Supartha, I. W. G., Giantari, I. G. A. K., & Rajiani, I. (2020). The passway of women entrepreneurship: Starting from social capital with open innovation, through to knowledge sharing and innovative performance. *Journal of Open Innovation: Technology, Market, and Complexity*, 6(2), 25.
- Tellinghuisen, J. (2022). Goodness-of-Fit Tests in Calibration: Are They Any Good for Selecting Least-Squares Weighting Formulas?. *Analytical Chemistry*, 94(46), 15997-16005.
- Yasa, P. N. S., & Sentosa, I. (2022). An Empirical Study on the Technology Usage Dimensions within the Tourism Craft Industry in Bali, Indonesia: A Structural Equation Modelling Approach. In *Digital Transformation in Aviation, Tourism and Hospitality in Southeast Asia* (pp. 145-160). Routledge.
- Yüksel, H. (2020). An empirical evaluation of industry 4.0 applications of companies in Turkey: The case of a developing country.



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Please make revisions to some of the reviewer's suggestions

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International Journal of Data and Network Science

Reviewer 1

"Management Transkip"

Originality of the work: Acceptable

Subject relevance: Acceptable

Professional/industrial relevance: Acceptable

Completeness of the work: Acceptable

Acknowledgement of the work of others by references: Acceptable

Organisation of the manuscript: Acceptable

Clarity in writing tables graphs and illustrations: Acceptable

Likelihood of passing the 'test of time': Acceptable

"Content Quality"

The title used is interesting and appropriate to the current era

The abstract meets the rules of having objectives, methods and findings

has been stated in relation to the problems and objectives of this research

Literature is sufficient

The method and results are very good

Recommendation: Accepted

Reviewer 2

In the arrangement of sentences, there are still some writings that are copied and pasted and become long and unclear sentences

The method is more refined

the results are quite clear

Add literature related to this journal

Recommendation: Accepted with minor revisions

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