Absorption Capacity and Development of Photocatalyst Green Ceramic Products with Moderation of Green Environment for Sustainability Performance of Developing Industries

I Nyoman Normal 1 and Made Setini 2,*

1 Creative Functional Ceramics Research Group, Advanced Materials Research Center, National Research and Innovation Agency, Jakarta 10340, Indonesia
2 Faculty of Economics and Business, Warmadewa University, Denpasar 80361, Indonesia
* Correspondence: setini@warmadewa.ac.id; Tel.: +62-81339139595

Abstract: Business Sustainability is closely related to the green environment and of the products produced, photocatalyst is one of the strategies in caring for the green environment. The benefits of this product are a very important opportunity for small business actors where ceramic SMEs have never developed photocatalyst green products. This study uses SEM-PLS analysis, with SmartPLS software as a processing tool where data is obtained from 300 business actors developing green products (photocatalysts) spread across Indonesia; data collection is carried out directly using questionnaires with stratified purposive sampling method and obtained research samples totaling 200 SMEs. This research shows that the development of green products can be a perfect mediation in bridging the absorption capacity and business sustainability. The development of green products encourages the spirit of obtaining information, interpretation, internalization and facilities by SMEs so as to provide increased productivity, increase production quality, increase environmental friendliness and more dissemination to the green product market. However, the green environment cannot drive the sustainable performance of SMEs because it is not fully understood that the green environment is driving its products but rather to market needs and profit targets and existing market needs.

Keywords: absorption capacity; green product development; green environment; business sustainability

1. Introduction

The COVID-19 pandemic and the policy of travel bans have caused the economy to decline as all sectors experience a slump. Various elements are affected, such as restaurants, markets, shopping centers, online transportation, to SME (Medium Small Business) owners. Goldman Sachs data shows that as many as 96% of SME owners in the United States claim to have felt the impact of the COVID-19 pandemic and 75% of their businesses experienced a decline in sales due to the COVID outbreak. In addition to having an impact on health, the infection can turn into bronchitis and pneumonia, resulting in symptoms such as: fever which may be quite high if the patient has pneumonia, cough with mucus, shortness of breath, and chest pain or shortness of breath and cough. This pandemic condition greatly affects the health sector and being infected can worsen if it attacks certain groups of individuals [1,2]. This is because if there is air pollution, the concentration of air pollutants in the room is more than outside the house. This condition is exacerbated if the room does not have good circulation [3-5]. Indoor air pollutants can be released by various products used or activities carried out in the home such as floor cleaning products, carpet cleaners, cosmetic ingredients, paints, smoke cigarettes, and kitchen smoke. To overcome the problem of air pollution, various technologies have been applied to reduce the level of indoor air pollution [6]. One technology that has great potential in overcoming this is photocatalyst [7,8]. The application of this technology has been widely developed in the last
few years. In addition to air purification, photocatalyst technology is also applied to sewage treatment, water purification, self-cleaning, anti-fog, and bacterial disinfection [9,10].

The number of pottery and decorative ceramic SMEs includes more than 5200 business units that absorb 21,470 workers [11]. Pottery and decorative ceramics SMEs centers are spread across a number of regions in Indonesia, including Banten, West Java, Central Java, Yogyakarta, East Java, Bali, West Kalimantan, West Nusa Tenggara, North Sulawesi and South Sulawesi. Creative ceramic products have the potential to contribute to non-oil exports. Indonesian decorative pottery and ceramics have been exported abroad. The achievement of this handicraft export value exceeded USD 25.4 million in 2018 or an increase compared to the previous year’s acquisition of USD 25.2 million. Some of the main export destinations include the United States, France, Germany, the Netherlands, and the United Kingdom. Pottery and decorative ceramics SMEs in Indonesia still have the opportunity to reach a larger market in the international world.

Ceramic SMEs as a party affected by the COVID-19 pandemic has a good opportunity to develop photocatalyst ceramic products under the guidance of BTIKK (Ceramic creative industry technology center), which in 2021 was carrying out a photocatalyst-capable art ceramic prototype program. Cooperation between SMEs and BTIKK (Ceramic creative industry technology center) in the development of photocatalyst ceramic products is expected to help overcome the financial problems experienced by SMEs due to the low demand for ceramic product designs that have been produced so far. However, in practice, ceramic SMEs have never produced photocatalyst ceramics in their product variations. To implement the development of photocatalyst ceramic products in SMEs, it is necessary to conduct research on the absorption capacity of SMEs by looking at the elements of absorption capacity related to the development of production willingness, green environmental sustainability, as well as the performance of SMEs. Photocatalyst ceramic products are one of the alternative products that can be developed during the pandemic because it fulfills two important elements in the ceramics field, namely the elements of art (creativity) and benefits (functional/green products) [12].

Absorption capacity is the driving force in increasing performance capabilities [5,13,14]. Absorbing capacity has an important role as an explorer of potential market opportunities, increasing new business development and business sustainability which drives the company’s growth rapidly. The development of products that play a role in green environmental sustainability is still minimal, especially in developing countries due to many factors such as cost, resource capacity and other factors [15]; indeed there are findings that suggest that green products provide large market opportunities in driving the performance of these businesses [16–19]. The absorption of information on the development of green products is a driving force for improving the performance of SMEs [20–22]. The process of how to analyze and interpret and the process of understanding green products provide a rapid movement, driving innovation in green product development [5,23–25]. The impact of ignorance surrounding the environment will be on the next generation, where the big problem in this case is air pollution [5,20–22]. Clean air is a dream for everyone because it provides life growth from era to era, so this will certainly provide great opportunities in business sustainability opportunities [18,23,24].

There have been many studies on absorption capacity to improve business performance [25–28], but the relationship between development of green products by taking into account the role of the green environment and market opportunities for the sustainability of the business, there are still not many, especially those related to the development of unique products (environmental cleaning ceramics/photocatalysts). In accordance with the concept of absorptive capacity, this research proposes new constructions, namely green absorption, green product development, green environment and green product SMEs performance. Although green absorptive capacity has been widely discussed in theory in relevant fields, such as business administration, no research has proposed a model of green absorptive capacity by incorporating green product development and green environment for the environmental management field. The absorption capacity data of SMEs in response
to photocatalyst ceramic products becomes the basis for analyzing the effect of absorption capacity; we also focus on the development of photocatalyst ceramic products by considering the green environment in encouraging the performance of small and medium industries that play green photocatalyst ceramic products. Therefore, this study develops a green product development and green environment framework to bridge this research gap.

2. Literature Review

2.1. Absorption Capacity Absorption

Capacity is defined as the ability to acquire, assimilate and use new knowledge from outside the organization for commercial purposes [29]. According to [20,30–32]; absorption capacity has three types of capabilities: (1) assessing knowledge from external organizations; (2) the ability to assimilate knowledge, and (3) the ability to commercialize that knowledge. Based on a literature review conducted by [30], absorption capacity has 4 dimensions, the first being acquisition which is described as the introduction and assessment of external information, described in more detail as the components of investment priority, knowledge priority, intensity, speed, and direction. the second dimension assimilation is defined as a process within the organization to analyze, interpret and understand external information; the third dimension of transformation: internalization of external information into the organization that facilitates the combination of knowledge from outside and within the organization; and the exploitation dimension is the most important dimension, where this stage is a means to improve, expand and enhance existing competencies or create new competencies based on external knowledge that has been obtained. In order to operationalize absorption measurements, these dimensions are translated into components and indicators.

The measurement of absorption capacity is not easy because there is no standard for measuring absorption capacity, besides that the currently available measurement methods are varied and ambiguous [33,34]. Furthermore, as noted by [13,35,36], classifying current absorption measurement methods into two categories, namely quantitative measurement methods and qualitative measurement methods and quantitative methods, are usually carried out using: (a) absorption capacity indicators in the form of input-oriented and output-oriented orientations, or (b) using a perceptive tool, while the qualitative method focuses on the history of the development and absorption of an organization.

Absorption capacity has been of interest to scholars in recent decades [18,30–32,35–37]. The concept of absorption is a complex construction that requires in-depth and detailed analysis [14,38]. However, the existing studies for this matter are mostly dominated by quantitative approaches [13,14,34,39,40] which are more appropriate for testing theories, and several studies using qualitative methods [41,42]. Ref. [26] note that the absorption capacity depends on the research and development (R&D) of the firm.

2.2. Green Product Development (Photocatalyst)

All technologies and innovations that have developed new products or services have made a positive contribution to the environment [35,43]. This context reflects new product innovations that provide environmental benefits. These benefits can be summed up as energy savings, reduced CO\textsubscript{2} emissions, savings in water use, improvements in recycling, increased biodiversity, and reduced environmental pollution in findings [44]. Innovation can create growth and competitiveness, increase productivity and economic wealth [45,46] for companies. It can also reduce waste and environmental damage for the planet, provide better goods and services at lower prices and create jobs for people [47–53]. In conclusion, it can be said that innovation is a key factor for sustainability for companies and countries. Photocatalyst is generally defined as a chemical transformation process in the presence of catalyst and light aid [54]. Photocatalyst was first discovered by Renz in 1921, namely on the surface of the oxide semiconductor metals [7–9], photocatalytic processes occur when a photon with energy hv equals or exceeds the amount of energy in the band gap possessed by the catalyst material, electrons (e) from the valence band will be excited.
to the conduction band leaving a positive hole (h+) resulting in an electron-hole pair. Ceramic has the potential to be used as a photocatalyst medium, because ceramics are optimal photocatalyst media compared to stainless steel and aluminum [55]. This is because ceramic has a texture that is able to bind more composites [35]. Modified pottery clay coated with TiO$_2$ can be used as a photocatalytic reactor in the water purification process [56].

2.3. Green Environment

Changing the mindset on environmental protection issues, companies should adopt a preventive approach to environmental pollution and improve their business models and management thinking to stimulate green opportunities and innovation [5]. Stakeholders such as consumers and employees are usually warned about the company’s environmental performance [20]. In addition, they take action against companies that they perceive as irresponsible to the environment [57]. In the period of developing innovation, the spirit of prioritizing environmental care must be carried out by companies in an effort to improve environmental management performance to the concept of a green environment [19]. Effective environmental management can consist of various elements that cover all aspects of an organization’s operations [58]. One circular concept in caring for the environment begins with environmental management concepts, such as green design, marketing, product, and production, meeting environmental requirements. The importance of business sustainability is rooted in environmental management and becomes an important part of the organization’s strategic business management [59,60].

Green business is the responsibility of the company in maintaining and preserving the surrounding environment by minimizing the negative impact on the surrounding community and economy; this has become a growing trend across the world. Green business itself is shown in various forms including green labels, green products, green packaging to green business [24]. Business owners sometimes think that managing the company’s environment is not important or effective because it can be detrimental to the company’s financial development [61]. However, not all business people have the same opinion; businesses must care about the future of the environment because it is a company asset so that they express a different perspective [24]. Since pollution results from inefficient use of resources, companies pioneering environmental management or green innovation can achieve “first mover advantage” and enjoy increased benefits from green production [5]. In addition, this advantage allows them to increase the green quality image of their products, which is a predictor of business sustainability triggers [24].

2.4. Sustainable Business

Sustainable business referred to as a Green Business is a concept where business actors minimize the risks or negative impacts caused to the surrounding environment [43]. The negative impact will be directly felt by the community, both the global economic community and local communities [62]. Citing [63], it is further stated that sustainable business is a business effort to minimize negative environmental and social impacts, so that future generations will have adequate resources to meet their needs. A business does not just have to be safe for the environment, this business also has good qualities to succeed in a competitive global market [64]. Sustainable business is often defined as a business model that manages the triple bottom line, where companies manage their finances as well as their social and environmental impacts [65]. Sustainable business is different than traditional business activities, because the company’s traditional business only thinks in terms of finance without thinking the effects or impacts on the environment or society [66].

The triple bottom line concept according to [67] is the company’s focus on three concepts, namely the economic focus, then the focus on social responsibility and the last is the focus on environmental responsibility. The triple bottom line aims to maintain business continuity by balancing focus into 3 (three) elements, namely profit, people, and planet, so that SMEs can still benefit and maintain social and environmental benefits [68]. The characteristic of sustainable business is radical resource productivity, namely companies
reduce or even abandon the use of natural resources in their production processes [69]. Companies eliminate dependence on energy or non-renewable resources [70]. Then, investment in natural capital; in this case the company runs and uses energy or resources for business needs, but participates in restoring or protecting the environment and society [69]. Responsible consumption is promoting products by educating consumers to be wiser in buying products that do not pollute the environment, so that this behavior helps in the process of cleaning the environment [69]. In addition to concern for the environment, and society, what is important is the profits achieved by the company; especially for SMEs that are just developing, the profit earned by business actors will be the basic foundation in the establishment and survival of a business [43,71].

Business sustainability is when the company’s performance goes well, which means that in the financial dimension it produces good future performance in the environmental dimension. This statement is associated to the triple bottom line theory of course also means that good company performance in the financial dimension will result in good future performance in the financial, environmental and social dimensions [72].

2.5. Green Product Absorption Has a Positive Effect on Green Product Development and Encourages Green Business Sustainability

The process of absorbing information is carried out through informal interactions with customers and community groups, the absorption of capacity does not always flow in a linear manner and its intensity is largely determined by the innovation needs and company characteristics of research findings [35]. Supported by research [5,73,74] that the success of companies is determined by their ability to assimilate and use knowledge in developing environmentally friendly products. Environmental absorption can be used as a tool to increase innovative capacity in the company. Refs. [5,35] stated from their findings that two organizational capabilities, namely the ability to innovate and the capacity to absorb, have a significant effect on the performance of SMEs. Research support [35,36] from research findings show that there is evidence of partial mediation of the relationship between green products and company profits with absorption capacity variables. The relationship between district absorption capacity and partner features is mediated by the nature of the interaction between district and partners, with possible consequences for organizational learning outcomes outlined in the findings [36,51,75]. Based on literature, the hypothesis can be formulated as follows:

Hypothesis 0 (H₀): Absorption capacity has a negative effect on the development of green products.

Hypothesis 1 (H₁): Absorption capacity has a positive effect on the development of green products.

Absorption capacity was originally defined by [76] as the capacity to recognize and assess external knowledge, to assimilate, and apply it. Many works since then have clarified and improved concepts based on that essential work. Along these lines, [41] describe absorption capacity as a set of organizational routines and processes, by which firms acquire, assimilate, transform, and exploit knowledge, thus describing the four dimensions of absorption capacity. Similarly, these authors suggest that recognition and assimilation are dimensions of the “potential” of that capacity, and that transmutation and exploitation are dimensions of realized abilities [77,78]. Reinforced by opinions, [18,19,33,34,36–38,79] describe absorption capacity through three sequential processes: (1) introduction and understanding of the valuable potential of new knowledge outside the enterprise through exploratory learning; (2) assimilation of valuable new knowledge through transformative learning; and, (3) the use of assimilated knowledge, to create new knowledge and commercial outcomes through exploitative learning.

Hypothesis 0 (H₀): Absorption capacity has a negative effect on green business sustainability.

Hypothesis 2 (H₂): Absorption capacity has a positive effect on green business sustainability.
Organizational support is an important issue to achieve the successful application of innovation; this argument is also recognized for green product innovation. In addition, [77] show that the more support for innovation, the greater the company’s desire to implement green innovation. Green innovation is closely related to how the development of these products will have a concern for the environment [78,79]. The existence benefits for human life makes the product have a very high economic value, of course it provides an opportunity to encourage the progress of business people [23,80,81]. Ref. [47] emphasizes that managerial environmental concern is one of the key factors influencing the adoption of green practices. This can act as a trigger for green innovation, which in turn will make the company’s performance better and more sustainable.

According to survey results [82–84]; the encouragement of environmentally friendly products even having benefits in air circulation shows a significant influence on the willingness to adopt green practices. Values, beliefs, and norms on product benefits determine the willingness to adopt eco-innovations [85]. Research findings from [49] show that green product development is related to corporate environmental ethics between green relationship learning and green innovation performance. Developing awareness of green products or product lines, companies seek to increase consumers’ knowledge of their products and environmental attributes in the hope of eliciting buying behavior [86,87].

Every business activity carried out by any party must comply with various established regulations such as the management of toxic hazardous waste and household waste, then always improve the efficiency of energy use [88]. In research [73], it is explained that a company’s green sustainability can be demonstrated by implementing or using environmental management concerns as a form of responsibility for everything that is physical, such as air pollution, air pollution due to company activities, damage to biodiversity, or also reduction in ground water. The results of product development must pay attention to social impacts, the risks that affect the business run by the company with the air generated by the company’s activities, will provide a risk of liability [89].

**Hypothesis 0 (H0):** Green Product Development has a negative effect on business performance.

**Hypothesis 3 (H3):** Green Product Development has a positive effect on business performance.

### 2.6. Green Environment Moderates Green Product Development and Sustainable Business

It is said by [85,90] that in general, a business is said to be green if the business meets four criteria, namely, (1) apply the principle of sustainability in every business decision; (2) provide environmentally friendly products that replace the demand for non-environmentally; (3) it is more environmentally friendly than its competitors, and (4) has a commitment to and runs related to various environmental principles in each of its business operations. Companies are required to implement Greening business management, which is a strategy to make the company green by aligning business and environmental management in an integrated manner, which includes developing an environmentally friendly organizational structure, system and work culture by implementing and complying with all regulations regarding environmental management, raw material management, waste management, efficient and effective use of natural resources, as well as the use of production technology that produces minimal waste and implement commitments regarding environmental awareness for all employees in its operations.

It states in [60] that the company’s green environment to meet environmental protection requirements, and, in this way, enable businesses to increase resource productivity through green innovation to make up for environmental costs. According to [5], the accumulation of previous knowledge drives the potential of companies to produce innovation results. Specific environments in which strong attitude-behavior relationships do exist, despite the controversy over the environmental attitude-behavior relationship, companies that promote their green products continue to try to establish brand preferences. The background behind the emergence of the green business concept is awareness of environmental
changes that are increasingly hostile, accompanied by the advancement of industries and businesses that do not have concern for the environment [82,91].

For some experts [5,45,92], the environment itself is a challenge for the business world, where banks, insurance or investors can ensure that the company has evidence that the use of natural resources and waste disposal at every stage of activity such as planning, production, distribution, marketing to the final consumer of goods and services has been going well and has provided positive benefits for both parties. It is necessary to make efforts to utilize existing natural resources; it is also necessary to pay attention to the impact on the environment with the existence of these business activities [93].

Hypothesis 0 (H0): Green environment is not a moderation of green product development towards business sustainability.

Hypothesis 4 (H4): Green environment moderates green product development towards business sustainability.

Hypothesis 0 (H0): Green product development does not mediate absorptive ability to business sustainability.

Hypothesis 5 (H5): Green product development mediates absorptive ability to business sustainability.

New knowledge acquired and applied in a business will result in an innovation which includes product development, and how the product process will ultimately encourage the improvement of product quality. The behavior of workers or employers regarding the importance of environmental sustainability is the driving force in the selection of products produced from the results of this innovation development. The value of product development will make the business definitely have the opportunity of excellence with the support around the environment. So, from the relationship of previous research, the conceptual framework can be made as follows:

3. Research Methods

This study uses ceramic SMEs in Bali as the object of research and sampling with non-probability techniques, where the population used is 300 Ceramic SMEs spread throughout Indonesia. This research is focused on ceramics or pottery SMEs because the application of this research will focus on the application of photocatalysts attached to soil or earthenware media, where soil or earthenware media have good mediators in attaching photocatalysts. The sampling technique used stratified purposive sampling, which is a sampling method with certain reasons (objectives) adapted to the SME classification, namely: located in several districts/cities in Indonesia and representing the business classification based on the type of SME business (micro, small, and medium). The sample acquisition refers to [94] that the structural equation model (SEM) uses five or more constructs, a minimum of 100 sample sizes, the statistical power level is 0.95, the probability level is 0.05, based on four latent variables and 26 indicators of a minimum sample size of 130. Departing from [95], the sample size of this study uses 200 sample data which is still at the minimum sample size limit, though of course it has met the sample requirements. Data was collected through a structured interview process. We interviewed owners using a questionnaire and then assessed their responses directly to the questionnaire answer sheet. Of those surveyed, 100 SMEs have only started their business in a span of 2 years, and products made from pottery materials turned ceramics, wall decorations, and flower vases, the ceramic craft industry is a sub-sector of the growing industry in Bali.

Data were collected by interview method using a questionnaire based on a Likert scale on a scale of 1 to 5. Absorption ability which represents the four dimensions was adopted from research [96,97]. Green product development is measured using four question indicator items adopted from research [98–100] and green environment using five measurement
indicators adopted by research [101–103] and business sustainability using 5 items from research [20,104]. The final scale items are presented in Table 1.

### Table 1. Measurement Scale.

| Variable | Dimensions and Indicators | Items | Ref. | Loading Factor | Cronbach's Alpha | Composite Reliability | AVE  |
|----------|---------------------------|-------|------|---------------|------------------|------------------------|------|
| Absorption Capacity (X) | Information and terms (X1) | X11 Prior knowledge | [96,97] | 0.886 | 0.892 | 0.911 | 0.463 |
| | | X12 Commitment in gathering knowledge | | 0.880 | 0.805 | 0.885 | 0.720 |
| | | X13 Direction of acquired knowledge | | 0.803 | | | |
| Analytical interpretation (X2) | | X21 The magnitude of the interpretation | | 0.874 | | | |
| | | X22 The magnitude of understanding | | 0.793 | | | |
| | | X23 Formalization | | 0.754 | | | |
| Internalization (X3) | | X31 Summing up again | | 0.865 | 0.865 | 0.650 | 0.592 |
| | | X32 How big are the questions that arise | | 0.776 | | | |
| | | X33 Adaptation rate | | 0.847 | | | |
| Facilitation Expand (X4) | | X41 Resource usage | | 0.668 | 0.776 | 0.839 | 0.757 |
| | | X42 Getting results | | 0.824 | | | |
| | | X43 Implement | | 0.888 | | | |
| Green Product Development (Y1) | | Y11 Improved material eco-efficiency | [99–101] | 0.836 | | 0.810 | 0.637 |
| | | Y12 Energy efficiency improvement | | 0.756 | | | |
| | | Y13 Green management implementation | | 0.822 | | | |
| | | Y14 Green supply chain management implementation | | 0.776 | | | |
| Green Environment (M) | | M1 The level of concern for the environment | [102–104] | 0.655 | | 0.818 | 0.596 |
| | | M2 Concern for the environment | | 0.835 | | | |
| | | M3 Environmental protection | | 0.793 | | | |
| | | M4 Responsible behavior | | 0.875 | | | |
| | | M5 Pro-environmental behavior | | 0.802 | | | |
| Business Sustainability (Y2) | | Y21 Profits allocated for the empowerment of the surrounding community and the environment | [20,105] | 0.830 | | 0.860 | 0.641 |
| | | Y22 Adequacy of capital in increasing productivity | | 0.818 | | | |
| | | Y23 Production asset quality ratio | | 0.757 | | | |
| | | Y24 Environmentally friendly increase profits | | 0.858 | | | |
| | | Y25 Green products support market spread | | 0.734 | | | |

### 4. Results and Discussion

#### 4.1. Results

**Validity and Reliability Test**

Confirmatory factor analysis was conducted to evaluate the validity and reliability of the indicators used to measure the constructs used. In this study, it was not found that the distribution of data exceeded the normality criteria. The indicator is said to be valid if it has a loading coefficient above 0.06 [98]. Convergent validity can also be seen from the Composite Reliability and Average Variance Extracted (AVE) values. Based on the Composite Reliability values presented in Table 1, it shows that the six constructs have Composite Reliability above 0.6. This means that the indicators that have been determined are able to measure each construct well or it can be said that the six measurement models are reliable. The better the Convergent Validity value is indicated by the higher correlation between indicators that make up a construct. In this study, the AVE value of each construct was above 0.5, therefore there was no convergent validity problem in the tested model and seen in Figure 1.
Sustainability 2022, 14, x FOR PEER REVIEW ... by the root mean of AVE multiplied by R². The
steps to find the GoF value are:

Average R² → (0.288 + 0.707)/2 → 0.498

Average AVE → (0.463 + 0.637 + 0.596 + 0.641)/4 → 0.585

Q-Square as a measure of whether or not the estimation model and the resulting
parameters are good, if the Q-Square value is more than 0 it means that the model has a
good predictive relevance value and vice versa. The steps to get the Q-square value are:

\[ Q^2 = 1 - (1 - R^2_1)(1 - R^2_2) \rightarrow Q^2 = 1 - (1 - R^2_1)(1 - R^2_2) \rightarrow Q^2 = 1 - (1 - 0.288)(1 - 0.707) \rightarrow 1 - (0.712) \\
(0.293) \rightarrow 1 - (0.208) = 0.792 \]

The result of the Q-Square calculation is 0.792, which means 79.2% of the model has a
very good value. Value of 79.2% variable relationship can be explained by the model.

The Goodness of Fit (GoF) index is used as an evaluation of the structural model and
the overall measurement is calculated by the root mean of AVE multiplied by R². The steps
to find the GoF value are:

\[ \text{Average R}^2 \rightarrow (0.288 + 0.707)/2 \rightarrow 0.498 \]

\[ \text{Average AVE} \rightarrow (0.463 + 0.637 + 0.596 + 0.641)/4 \rightarrow 0.585 \]
So that the sum of the average R2 and AVE is = 1.08 

GoF → the root of the average of the two is: \( \sqrt{1.08} \)

The provisions of the GoF are 0.1 means small GoF, 0.25 GoF medium 0.36, and more than that value is in the high category [107]. This study has a GoF value of 1.04 so it can be declared as good. So that further hypotheses can be analyzed.

4.2. Discussion

The direct relationship between exogenous and endogenous variables resulted in 2 significant positive relationships, namely Hypothesis 1, Hypothesis 2, And Hypothesis 3. Hypothesis 1 had a \( p \)-value of 0.000 less than 0.05 and a T-Statistic of 6.614 < 1.96 so hypothesis is accepted. While Hypothesis 2 was rejected because the \( p \)-Value value of 0.262 was more than 0.05 and the T-statistic was 1.123 < 1.96 seen in Table 3.

Table 3. Hypothesis Results.

| Absorption Capacity → Green Product Development | Original Sample | Sample Means | Standard Deviation | T-Statistic | \( p \)-Value | Description |
|------------------------------------------------|-----------------|--------------|--------------------|-------------|-------------|-------------|
| Business Sustainability → Green Product Development | 0.539 | 0.544 | 0.081 | 6.614 | 0.000 | Significant |
| Business Sustainability → Business Sustainability | 0.062 | 0.050 | 0.055 | 1.123 | 0.262 | Not Significant |
| Production Development → Business Sustainability | 0.617 | 0.619 | 0.070 | 8.812 | 0.000 | Significant |

The explanation of the results of the hypothesis as shown in Figure 2 will be explained as follows.

Figure 2. Research Results SEM-PLS.

4.2.1. Absorbing Capacity for Green Product Development

Information about the term photocatalyst is a new thing, thus creating the desire of ceramic SME players to try to develop photocatalyst ceramic products (green products) which provide many benefits to entrepreneurs’ concern for the environment. This is in accordance with the research concept [108], which states that the information absorption process is carried out through informal interactions with customers and community groups, absorption can flow linearly, the intensity is largely determined by the needs of innovation and the characteristics of the company. The interpretation makes ceramic SME players pay attention to product development, balancing environmental empowerment is the driving force in continuing to produce green products. The urgency of products that care about
the environment gives a positive appreciation for the interest in developing green product innovations. The estimation of business success is the expectation of business actors by obtaining assistance and training provided by the government and BITKK (Ceramic creative industry technology center). The internalization of photocatalyst ceramic information into an organization whose components consist of: product urgency during a pandemic, production capability, and estimation of success. These are positive things that are appreciated by SMEs. The internal coaching and mentoring process received by SMEs for the development of photocatalyst ceramic products can improve the ability and skills of SMEs in producing photocatalyst ceramics. Photocatalyst ceramic products are very relevant to be developed by SMEs during the COVID-19 pandemic that is impacting the world, especially Bali, because of the advantages of photocatalyst ceramics compared to other decorative ceramic products. The advantage of the ceramic photocatalyst function is the presence of the chemical compound Titan Dioxide (TiO$_2$) which is applied as a surface coating on ceramic objects with the help of ultraviolet light and a fan as a driver that can purify the air, filter dirt or dust, weaken bacteria or germs when most people are required to stay or staying at home to reduce the spread of COVID-19. The basis used by SMEs to develop their business is the ability to produce photocatalyst products. Internalization of information, guidance, and assistance can convince SMEs to achieve satisfactory production of photocatalyst ceramic products, so that the ability to cooperate in the development of photocatalyst ceramics will be more open for SMEs. This condition is reinforced by research conducted by which states that a company’s success is determined by its ability to assimilate and use market-appropriate knowledge. The current market demand is to create products that play a role in overcoming the COVID-19 pandemic, one of which is photocatalyst ceramics for environmental health. In line with that [36]; Ref. [81], states that two organizational capabilities, absorption capacity have a significant effect on the development of green products.

The facilitation to expand or improve the competence of photocatalyst ceramics whose components consist of the availability of equipment, human resources, and receiving assistance during the COVID-19 pandemic did not foster the interest of ceramic SMEs to collaborate in developing photocatalyst ceramics. This is rational because most SMEs do not yet have photocatalyst product equipment. To obtain facilities or resources requires sufficient investment. Currently, the financial condition of SMEs is very low, and it is not possible to provide resources quickly, so they are more interested in using the facilities owned by BTIKK (Ceramic creative industry technology center). This is in accordance with research [36,51,75], which states that the information absorption process is carried out through informal interactions with customers and community groups; absorption does not always flow linearly and its intensity is largely determined by the need for innovation and the characteristics of the company. Absorption capacity does have a role in encouraging the development of green products but in the field, there are still obstacles.

4.2.2. Absorption Capacity for Business Sustainability

Introduction of information or the term photocatalyst ceramics whose components consist of the introduction of terms, knowledge concepts, and concept lessons about photocatalyst ceramics are very new to ceramic SMEs. Photocatalysts are not yet popular among SMEs so that at the time of the research, almost all SMEs were unfamiliar with the concept of photocatalysts. New terms, concepts, and information about photocatalysts is not yet known to SMEs and this tends to reduce the interest of SMEs to produce and develop their products, especially during the COVID-19 pandemic where most ceramic SMEs stopped their business due to financial difficulties to finance their operations, even though the photocatalyst concept is actually useful in dealing with health problems, especially to purify the dirty air inside. This is in accordance with the research concept [108], Ref. [23], which states that the process of absorbing information is carried out through informal interactions with customers and community groups, absorption does not always flow
Analysis of interpretation or understanding of photocatalyst ceramics whose components consist of business utilization and product development is a new thing for SMEs. Business benefits are the focus of attention for every SME. To obtain business benefits, SMEs must create superior products that sell well in the market. SMEs tend to interpret products that have provided business benefits, are practical, fast, affordable, and functional. The interpretation of photocatalyst ceramic SMEs has not been able to show real business benefits because it is a new product that requires training and technical guidance for a long time. The interpretation of SMEs during the COVID-19 pandemic is to continue the design of old products that already have a market by using the limited available resources to minimize production and operational costs. Based on the reasons for this interpretation, ceramic SMEs in Bali lack the ability to cooperate in the development of photocatalyst ceramics in line with research which was started by [85,90] that in general argues that a business is said to be green if, in carrying out its business, it applies the provisions by applying; (1) the principle of sustainability in every business decision; (2) provide environmentally friendly products that replace non-environmental demand; (3) it is more environmentally friendly than its competitors, and (4) has a commitment and runs related to various environmental principles in each of its business operations [2]. Companies are required to implement green business management, which is a strategy to make the company “green” by aligning business and environmental management in an integrated manner, which includes the development of an environmentally friendly organizational structure, system and work culture by implementing and complying with all regulations regarding environmental management, raw material management, waste management, efficient and effective use of natural resources, as well as the use of production technology that produces minimal waste and implement commitments regarding environmental awareness for all employees in its operations.

Internalization of photocatalyst ceramic information into the organization, although it has a positive impact on understanding the urgency of the product during the pandemic, does not provide an impetus to the performance of ceramic SMEs. Apart from this, the facilitation to expand or improve the competence of photocatalyst ceramics whose components consist of the availability of equipment, human resources, and receiving assistance during the COVID-19 pandemic has not fostered interest in ceramic SMEs to collaborate in developing photocatalyst ceramics. This is rational because most SMEs do not yet have photocatalyst product equipment. To obtain facilities or resources requires sufficient investment. Currently, the financial condition of SMEs is very low and it is not possible to provide resources quickly, so they are more interested in using the facilities owned by BTIKK (Ceramic creative industry technology center). This is in accordance with research [36,51,75], which states that the information absorption process is carried out through informal interactions with customers and community groups, absorption does not always flow linearly and its intensity is largely determined by the need for innovation and the characteristics of the company. From this explanation, it can be concluded that in the end, the absorption capacity does not provide encouragement or influence towards the business sustainability of photocatalyst ceramic business actors. Many obstacles faced by the actors in the end were unable to maximize the power capacity absorption.

4.2.3. Green Product Development towards Business Sustainability

Green product development relationship encourages business sustainability, provides impetus, and is a must for companies running green companies today. In line with the triple bottom line, companies are competing to build a good image of business sustainability this is achieved by paying attention to starting from the management of environmental factors to the impact of the company’s business on the community.

The concept of a green company is also in line with research (Lamond and Everett 2019); fundamentally, a green company acts in a way that minimizes the impact on the
environment. Green companies can implement different types of environmental practices. The development of photocatalyst ceramic products is the effort of SMEs to provide support for environmental cleanliness; photocatalyst products are able to bind CO\textsubscript{2} so that in maintaining environmental cleanliness it plays a major role. Similar to research findings [73], ref. [23] companies with green products will promote green enterprise and corporate sustainability, in practice, the overall goal of this is to: increase productivity in the use of natural resources, such as energy and materials, and reduce adverse impacts on the environment.

4.2.4. Indirect Relationships

Whether a variable is able to be a perfect mediation or cannot be used is achieved by giving an example of the relationship a, b, and c. Hypothesis 2 is accepted that green product development can be a perfect mediation because the direct relationship between absorptive capacity and business sustainability is rejected while the relationship between green product development and business sustainability is accepted so that the effect of absorptive capacity has a positive effect on business sustainability through mediation of green product development. See Table 4.

Table 4. Indirect Relationship.

| Indirect Relationship Hypothesis | T-Statistic | p-Value | Description |
|---------------------------------|------------|---------|-------------|
| Green Product Development Mediation | 6.614 | 0.000 | Significant; a |
|                                   | 8.812 | 0.000 | Significant; b |
|                                   | 1.123 | 0.262 | Not Significant; c |

4.2.5. Absorption Capacity Development to Business Sustainability through Mediation of Green Product Development

The green product development process obtained from information on the benefits of the term and the benefits of photocatalyst green products is a driving force in the sustainability of photocatalyst ceramic SMEs. The need for product innovation that is always used to care in line with the green concept makes photocatalyst ceramic SME actors ultimately able to survive in business competition. Photocatalyst ceramic MSE players have an interpretation of green products that balances environmental empowerment so as to make for a good appreciation. Assistance in the development of green products obtained from BITKK (Ceramic creative industry technology center) provides new enthusiasm and becomes a mediation in the absorption capacity of SME players by increasing the performance or sustainability of the performance of photocatalyst ceramic SMEs.

Green product development is a bridge in facilitating and expanding the information and competence of photocatalyst ceramics. The echo of the green concept is a driving force in maximizing the absorption capacity of ceramic SME players. Innovation will provide value to the resulting product; a newly developing business must be able to always innovate in order to be able to display a different product that characterizes the uniqueness of the product. In line with this, product development must go hand in hand with environmental energy processing. The limited resources owned by small ceramic business actors are encouraged by the existence of financial assistance in the process of developing this product. This is a finding in this study which was not present in previous studies. The implementation of green product development and efficiency in energy human resources provides benefits to the company, so that the achievement of SME performance will be sustainable, and the ratio of additional capital will certainly be achieved.
4.2.6. Moderation of a Green

A green environment cannot be a driver and play a role as a green product development and business sustainability. The development of green products carried out by SME actors is not due to the full encouragement of concern for the green environment but rather to develop products that are able to be adopted by the market and consider capital adequacy. Pro-environmental behavior needs to be improved. The concept of the trilogy, namely planet, people and price, must be in harmony. Therefore, this is different from the research findings [82,91].

5. Conclusions and Suggestions

5.1. Conclusions

Based on the results of the research and discussion, it can be concluded that the introduction of information or the term photocatalyst ceramics does not directly affect the business sustainability of ceramic SMEs. Information or the term photocatalyst ceramic is very important, but in the conditions of the COVID-19 pandemic, it has not become a necessity for SMEs. SMEs are more focused on information or ceramic terms that have been produced previously, but the capacity of understanding and interpreting the green environment with the terms and benefits of photocatalysts provides a positive or good impetus in developing photocatalyst ceramic products.

Photocatalyst ceramic products are very relevant for SMEs during the COVID-19 pandemic that is impacting the world, especially Bali, because of the advantages of photocatalyst ceramics compared to other decorative ceramic products, with the encouragement of green implementation, increasing energy efficiency and increasing material efficiency and product development concepts. Green ceramics are able to grow the interest of ceramic SMEs to collaborate in developing photocatalyst ceramic products.

5.2. Limitation

The green environment has not been able to provide a good impetus in the development of green products and business sustainability. Along with the covid pandemic period, it means that the main target is to focus on the need of products needed by the market so that under different conditions do they have different roles.

5.3. Suggestions

The development of photocatalyst products is carried out on small and medium-sized businesses which have a limited level of ability to adopt resources; this requires the role of other stakeholders in encouraging, so that future research and research objectives can be carried out on larger businesses and greater reach and add the role of stakeholders as a mediating variable or a moderating variable.

Author Contributions: Conceptualization, I.N.N. and M.S.; methodology, M.S.; software, M.S.; validation, I.N.N. and M.S.; formal analysis, M.S.; investigation, I.N.N. and M.S.; resources, I.N.N.; data curation, M.S.; writing—original draft preparation, I.N.N.; writing—review and editing, M.S.; visualization, M.S.; supervision, I.N.N.; project administration, I.N.N.; funding acquisition, I.N.N. and M.S. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted in accordance with the guidelines of the Declaration of Helsinki, and was approved by the Institutional Review Board.

Informed Consent Statement: Approval of action obtained from all objects involved in the research.

Data Availability Statement: Data available upon request.
Acknowledgments: I would like to thank the Head of the Creative Functional Ceramics Research Group-Advanced Materials Research Center-National Research and Innovation Agency, and the Photocatalyst Ceramic Development Activity Team, ceramic SMEs throughout Indonesia who I cannot mention one by one who have helped this research, so this article done. This article is expected to contribute to the development of science and technology, especially the creative industry as a source of driving national economic resilience. This article is also far from perfect, I really hope for constructive criticism, suggestions, and input for future progress.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Kang, L.; Ma, S.; Chen, M.; Yang, J.; Wang, Y.; Li, R.; Yao, L.; Bai, H.; Cai, Z.; Yang, B.X.; et al. Impact on mental health and perceptions of psychological care among medical and nursing staff in Wuhan during the 2019 novel coronavirus disease outbreak: A cross-sectional study. *Brain Behav. Immun.* 2020, 87, 11–17. [CrossRef] [PubMed]

2. Abi, P.; Searcy, C. A comparative literature analysis of definitions for green and sustainable supply chain management. *J. Clean. Prod.* 2013, 52, 329–341. [CrossRef]

3. Guo, Y.; Jia, Y.; Pan, X.; Liu, L.; Wichmann, H.-E. The association between fine particulate air pollution and hospital emergency room visits for cardiovascular diseases in Beijing, China. *Sci. Total Environ.* 2009, 407, 4826–4830. [CrossRef] [PubMed]

4. Chakraborty, J.; Basu, P. Air quality and environmental injustice in India: Connecting particulate pollution to social disadvantages. *Environ. Sci. Pollut. Res.* 2019, 26, 128376. [CrossRef]

5. Xu, N.; Fan, X.; Hu, R. Adoption of Green Industrial Internet of Things to Improve Organizational Performance: The Role of Institutional Isomorphism and Green Innovation Practices. *Front. Psychol.* 2022, 13, 917533. [CrossRef]

6. Gonzalez-Martín, J.; Kraaikamp, N.J.R.; Pérez, C.; Lebrero, R.; Muñoz, R. A state-of-the-art review on indoor air pollution and strategies for indoor air pollution control. *Chemosphere* 2021, 262, 128376. [CrossRef]

7. Zhu, Z.; Cai, H.; Sun, D.-W. Titanium dioxide (TiO₂) photocatalysis technology for nonthermal inactivation of microorganisms in foods. *Trends Food Sci. Technol.* 2018, 75, 23–35. [CrossRef]

8. Angelo, J.; Andrade, L.; Madeira, L.M.; Mendes, A. An overview of photocatalysis phenomena applied to NOx abatement. *J. Environ. Manag.* 2013, 129, 522–539. [CrossRef]

9. Niu, K.; Chen, P.; Zhang, X.; Tan, W.-S. Enhanced enzymatic hydrolysis of rice straw pretreated by alkali assisted with photocatalysis technology. *J. Chem. Technol. Biotechnol.* 2009, 84, 1240–1245. [CrossRef]

10. Long, Z.; Li, Q.; Wei, T.; Zhang, G.; Ren, Z. Historical development and prospects of photocatalysts for pollutant removal in water. *J. Hazard. Mater.* 2020, 395, 122599. [CrossRef]

11. Aryani, A.S.; Jalaludin, J.; Kurnia, A.D. Analisis Jual Beli Keramik Hias Dalam Perspektif Ekonomi Syariah (Studi Kasus Pada UPTD Pengembangan Keramik Hias Di Desa Anjun Kecamatan Plered Purwakarta). EKSISBANK Ekon. Syariah Bisnis Perbank. 2022, 6, 16–40. [CrossRef]

12. Liu, P.; Yao, Z.; Zhou, J.; Yang, Z.; Kong, L.B. Small magnetic Co-doped NiZn ferrite/graphene nanocomposites and their dual-region microwave absorption performance. *J. Mater. Chem. C* 2016, 4, 9738–9749. [CrossRef]

13. Chauvet, V. Absorptive Capacity: Scale Development and Implications for Future Research. *Manag. Int. J.* 2015, 19, 113–129.

14. Zou, B.; Guo, F.; Guo, J. Absorptive capacity, technological innovation, and product life cycle: A system dynamics model. *Springerplus* 2016, 5, 1662. [CrossRef] [PubMed]

15. Dogbe, C.S.K.; Bamfo, B.A.; Pomegbe, W.W.K. Market Orientation and New Product Success Relationship: The Role of Innovation Capability, Absorptive Capacity, Green Brand Positioning. *Int. J. Innov. Manag.* 2020, 25, 2150033. [CrossRef]

16. Benhayoun, L.; Le-Dain, M.-A.; Domínguez-Péry, C. Characterising Absorptive Capacity Supporting SMEs’ Learnings within Collaborative Innovation Networks: Insights from Multi-Level Case Studies. *Int. J. Innov. Manag.* 2020, 25, 2150047. [CrossRef]

17. Vlačić, E.; Dabić, M.; Daim, T.; Vlačić, D. Exploring the impact of the level of absorptive capacity in technology development firms. *Technol. Forecast. Soc. Chang.* 2019, 138, 166–177. [CrossRef]

18. Hong, J.; Zheng, R.; Deng, H.; Zhou, Y. Green supply chain collaborative innovation, absorptive capacity and innovation performance: Evidence from China. *J. Clean. Prod.* 2019, 241, 118377. [CrossRef]

19. Galbreath, J. Drivers of green innovations: The impact of export intensity, women leaders, and absorptive capacity. *J. Bus. Ethics* 2019, 158, 47–61. [CrossRef]

20. Wang, M.; He, Y.; Zhou, J.; Ren, K. Evaluating the Effect of Chinese Environmental Regulation on Corporate Sustainability Performance: The Mediating Role of Green Technology Innovation. *Int. J. Environ. Res. Public Health* 2022, 19, 6882. [CrossRef]

21. Zia, S.; Rahman, M.U.; Noor, M.H.; Khan, M.K.; Bibi, M.; Godil, D.I.; Quddoos, M.U.; Anser, M.K. Striving towards environmental sustainability: How natural resources, human capital, financial development, and economic growth interact with ecological footprint in China. *Environ. Sci. Pollut. Res.* 2021, 28, 52499–52513. [CrossRef] [PubMed]

22. Darwisk, S.; Shah, S.M.M.; Ahmed, U. The role of green supply chain management practices on environmental performance in the hydrocarbon industry of Bahrain: Testing the moderation of green innovation. *Uncertain Supply Chain. Manag.* 2021, 9, 265–276. [CrossRef]
23. Xing, X.; Liu, T.; Shen, L.; Wang, J. Linking Environmental Regulation and Financial Performance: The Mediating Role of Green Dynamic Capability and Sustainable Innovation. *Sustainability* 2020, 12, 1007. [CrossRef]
24. Weng, H.-H.; Chen, J.-S.; Chen, P.-C. Effects of Green Innovation on Environmental and Corporate Performance: A Stakeholder Perspective. *Sustainability* 2015, 7, 4997–5026. [CrossRef]
25. Li, X.; Huang, L.; Ren, A.; Li, Q.; Zeng, X. The Effect of Production Structure Roundaboutness on the Innovation Capability of High-Tech Enterprises—The Mediating Role of Technology Absorption Path. *Sustainability* 2022, 14, 5116. [CrossRef]
26. Tang, Y.; Chen, Y.; Wang, K.; Xu, H.; Yi, X. An Analysis on the Spatial Effect of Absorptive Capacity on Regional Innovation Ability Based on Empirical Research in China. *Sustainability* 2020, 12, 3021. [CrossRef]
27. Koskinen, K.U. Problem absorption as an organizational learning mechanism in project-based companies: Process thinking perspective. *Int. J. Proj. Manag.* 2012, 30, 308–316. [CrossRef]
28. Atiase, V.Y.; Dzansi, D.Y.; Ameh, J.K. Technology absorption capacity and firm growth in Africa. *View Proj.* 2020, 341655891. [CrossRef]
29. Chang, C.-Y.; Chang, Y.-Y.; Tsao, Y.-C.; Kraus, S. The power of knowledge management: How top management team bricolage boosts ambidexterity and performance. *J. Knowl. Manag.* 2022, 26, 188–213. [CrossRef]
30. Gölgeci, I.; Kuivalainen, O. Does social capital matter for supply chain resilience? The role of absorptive capacity and marketing-supply chain management alignment. *Ind. Mark. Manag.* 2020, 84, 63–74. [CrossRef]
31. Xie, X.; Zou, H.; Qi, G. Knowledge absorptive capacity and innovation performance in high-tech companies: A multi-mediating analysis. *J. Bus. Res.* 2018, 88, 289–297. [CrossRef]
32. Imran, A.; Ata U1, M.; Murad, A. Impact of knowledge sharing and absorptive capacity on project performance: The moderating role of social processes. *J. Knowl. Manag.* 2022, 22, 453–477.
33. Wang, Q.; Zhang, Y.; Wangjin, X.; Wang, Y.; Meng, G.; Chen, Y. The adsorption behavior of metals in aqueous solution by microplastics effected by UV radiation. *J. Environ. Sci.* 2020, 87, 272–280. [CrossRef] [PubMed]
34. Tzokas, N.; Kim, Y.-A.; Akbar, H.; Al-Dajani, H. Absorptive capacity and performance: The role of customer relationship and technological capabilities in high-tech SMEs. *Ind. Mark. Manag.* 2015, 47, 134–142. [CrossRef]
35. Zhao, G.; Ma, W.; Wang, X.; Xing, Y.; Hao, S.; Xu, X. Self-water-absorption-type two-dimensional composite photocatalyst with high-efficiency water absorption and overall water-splitting performance. *Adv. Powder Mater.* 2022, 1, 100008. [CrossRef]
36. Khan, A.; Tao, M.; Li, C. Knowledge absorption capacity’s efficacy to enhance innovation performance through big data analytics and digital platform capability. *J. Innov. Knowl.* 2022, 7, 100201. [CrossRef]
37. García-Villaverde, P.M.; Rodrigo-Alarcón, J.; Ruiz-Ortega, M.J.; Parra-Requena, G. The role of knowledge absorptive capacity on the relationship between cognitive social capital and entrepreneurial orientation. *J. Knowl. Manag.* 2018, 22, 1015–1036. [CrossRef]
38. Juárez, L.E.V.; Escobar, E.A.R.; Guzmán, G.M. The Effects of Absorptive Capacity, Intellectual Property and Innovation in SMEs. *J. Manag. Sustain.* 2017, 7, 36. [CrossRef]
39. Shams, S.M.R. Capacity building for sustained competitive advantage: A conceptual framework. *Mark. Intell. Plan.* 2016, 34, 671–691. [CrossRef]
40. Heckmann, N.; Steger, T.; Dowling, M. Organizational capacity for change, change experience, and change project performance. *J. Bus. Res.* 2016, 69, 777–784. [CrossRef]
41. Akbar, H.; Kim, Y.A.; Tzokas, N. Absorptive capacity and performance: The role of customer relationship and technological capabilities. In Proceedings of the Academy of Marketing Conference 2012, Southampton, UK, 3–5 July 2012.
42. Gray, C. Absorptive capacity, knowledge management and innovation in entrepreneurial small firms. *Int. J. Entrep. Behav. Res.* 2006, 12, 345–360. [CrossRef]
43. Fernando, Y.; Jabbour, C.J.C.; Wah, W.-X. Pursuing green growth in technology firms through the connections between environmental innovation and sustainable business performance: Does service capability matter? *Resour. Conserv. Recycl.* 2019, 141, 8–20. [CrossRef]
44. Ding, W.; Ding, J. New venture’s product innovativeness strategy, institutional environment and new product performance. *Technol. Forecast. Soc. Chang.* 2022, 174, 121211. [CrossRef]
45. Luan, N.T.; Hau, D.N.D.; Thu, N.T.A. The Influence of Green Product Development Performance to Enhance Enterprise Effectiveness and Innovation. *Economics 2022*, 10, 113. [CrossRef]
46. Chen, Y.S.; Lin, S.; Lin, C.; Hung, S.; Chang, C.; Huang, C. Improving green product development performance from green vision and organizational culture perspectives. *Corp. Soc. Responsib. Environ. Manag.* 2019, 27, 222–231. [CrossRef]
47. Ogjemworonyi, O.; Bin Harun, A.; Alam, M.N.; Karim, A.M.; Tabash, M.I.; Hessain, M.I.; Aziz, S.; Abbasi, B.A.; Ouolape, M.A. Green product as a means of expressing green behaviour: A cross-cultural empirical evidence from Malaysia and Nigeria. *Environ. Technol. Innov.* 2020, 20, 101055. [CrossRef]
48. Fang, Y.; Wang, X.; Yan, J. Green Product Pricing and Order Strategies in a Supply Chain under Demand Forecasting. *Sustainability* 2020, 12, 713. [CrossRef]
49. Asih, D.; Setini, M.; Soelton, M.; Muna, N.; Putra, I.G.C.; Darma, D.C.; Judiarni, J.A. Predicting green product consumption using theory of planned behavior and reasoned action. *Manag. Sci. Lett.* 2020, 10, 3367–3374. [CrossRef]
50. Paul, J.; Modi, A.; Patel, J. Predicting green product consumption using theory of planned behavior and reasoned action. *J. Retail. Consum. Serv.* 2016, 29, 123–134. [CrossRef]
80. Yun, J.J.; Zhao, X.; Jung, K.H.; Yigitcanlar, T. The Culture for Open Innovation Dynamics. *Sustainability* 2020, 12, 5076. [CrossRef]
81. Yun, J.J.; Zhao, X. Business Model Innovation through a Rectangular Compass: From the Perspective of Open Innovation with Mechanism Design. *J. Open Innov. Technol. Mark. Complex.* 2020, 6, 131. [CrossRef]
82. Nguyen, Q.D.; Nguyen, H.T.T. Do green business initiatives enhance firm performance? Evidence from an emerging market. *Int. J. Soc. Sci. Econ. Invent.* 2020, 6, 278–291. [CrossRef]
83. Nazarko, L. Responsible Research and Innovation in Enterprises: Benefits, Barriers and the Problem of Assessment. *J. Open Innov. Technol. Mark. Complex.* 2020, 6, 12. [CrossRef]
84. Muafi, M.; Diamastuti, E.; Pambudi, A. Service Innovation Strategic Consensus: A Lesson from the Islamic Banking Industry in Indonesia. *J. Asian Financ. Econ.* 2020, 7, 401–411. [CrossRef]
85. Kurniawati, E.; Sumarmi, S.; Aliman, M. Participation of Green Environmental Group and Ulur-Ulur Local Wisdom on Buret Lake Ecotourism Management in Karst Area of Tulungagung, Indonesia. *Geo J. Tour. Geosites* 2020, 30 (Suppl. S2), 889–895. [CrossRef]
86. Rousson, V.; Goçoni, N.F. An R-square coefficient based on final prediction error. *J. Environ. Manag.* 2011, 92, 203–214. [CrossRef]
87. Redante, R.C.; de Medeiros, J.F.; Vidor, G.; Cruz, C.M.L.; Ribeiro, J.L.D. Creative approaches and green product development: Using design thinking to promote stakeholders’ engagement. *Sustain. Prod. Consum.* 2019, 19, 247–256. [CrossRef]
88. Mamduh, J.; Everett, G. Sustainable Blue-Green Infrastructure: A social practice approach to understanding community preferences and stewardship. *Landsc. Urban Plann.* 2019, 191, 103639. [CrossRef]
89. Qing, L.; Chun, D.; Ock, Y.-S.; Dagestani, A.A.; Ma, X. What Myths about Green Technology Innovation and Financial Performance’s Relationship? A Bibliometric Analysis Review. *Economics 2022*, 10, 92. [CrossRef]
90. Green, S.G.; Gavin, M.B.; Aiman-Smith, L. Assessing a multidimensional measure of radical technological innovation. *IEEE Trans. Eng. Manag.* 1995, 42, 203–214. [CrossRef]
91. Hair, J.F.; Black, W.C.; Babin, B.J.; Anderson, R.E.; Tatham, R. *Multivariate Data Analysis*, 7th ed.; Pearson Prentice Hall: Hoboken, NJ, USA, 2010.
92. Hair, J.F.; Ringle, C.M.; Sarstedt, M. PLS-SEM: Indeed a Silver Bullet. *J. Mark. Theory Pract.* 2011, 19, 139–152. [CrossRef]
93. Ahmed, S.S.; Guozhu, J.; Mubarik, S.; Khan, M.; Khan, E. Intellectual capital and business performance: The role of dimensions of absorptive capacity. *J. Intellect. Cap.* 2019, 21, 23–39. [CrossRef]
94. Aribi, A.; Dupouët, O. Absorptive capacity: A non-linear process. *Knowl. Manag. Res. Pract.* 2016, 14, 15–26. [CrossRef]
95. Ghozali, I. Model Persamaan Struktural, Konsep dan Aplikasi Dengan Program AMOS 21.0; Badan Penerbit Universitas Diponegoro: Semarang, Indonesia, 2013.
96. Albino, V.; Balice, A.; Dangelico, R.M. Environmental strategies and green product development: An overview on sustainability-driven companies. *Bus. Strategy Environ.* 2009, 18, 83–96. [CrossRef]
97. Rodrigues, V.P.; Pigosso, D.C.A.; McAlonee, T.C. Process-related key performance indicators for measuring sustainability performance of ecodeign implementation into product development. *J. Clean. Prod.* 2016, 139, 416–428. [CrossRef]
98. Allibert-Morant, G.; Henseler, J.; Cepeda-Carrion, G.; Leal-Rodriguez, A.L. Potential and Realized Absorptive Capacity as Complementary Drivers of Green Product and Process Innovation Performance. *Sustainability* 2018, 10, 381. [CrossRef]
99. Ibnou-Laaroussi, S.; Rjoub, H.; Wong, W.K. Sustainability of Green Tourism among International Tourists and Its Influence on the Achievement of Green Environment: Evidence from North Cyprus. *Sustainability* 2020, 12, 5698. [CrossRef]
100. Prasanna, R.; Jayasundara, J.; Camage, S.K.N.; Ekanayake, E.; Rajapakse, P.; Abyerathne, G. Sustainability of SMEs in the Competition: A Systemic Review on Technological Challenges and SME Performance. *J. Open Innov. Technol. Mark. Complex.* 2019, 5, 100. [CrossRef]