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Assessing the influence of supply chain collaboration value innovation, market demand, and competitive advantage on improving the performance of ceramic SMEs

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MSMEs in the ceramics industry are still experiencing a difficult period even though they have entered the post-pandemic period. Will competitive advantage be created from supply chain collaboration in terms of obtaining resource information which will ultimately create innovation and increase market demand? This research involved 200 ceramic MSMEs in Bali with the condition that the perpetrators had been running their business for more than one year, analyzed with SEM-PLS with the SmartPls processing tool. The results show that the relationship between market demands has a positive effect on competitive advantage and will give a boost to the performance of ceramics SMEs. While the collaborative relationship of innovation value does not have a positive effect on performance and competitive advantage because so far ceramic SMEs, especially photocatalysts, are still relatively new and are still running their business in one small group and no organization has yet been formed to support the acquisition of information related to the innovations to be carried out. This research also shows that the mediation of competitive advantage is the perfect mediation in creating market demand in improving the performance of MSMEs.

1. Introduction

Indonesia is a country that is active in encouraging world economic growth and takes part in global competition. The industrial development of a country greatly supports economic growth, one of the strategies taken by the government is to empower and grow Micro, Small and Medium Enterprises (MSMEs) (Rahmatina & Sulistyowati, 2018). Reality has proven that not only large industries are able to support the country's economy but also MSMEs are creating a significant number of job opportunities. This group has an important role in the development of a country (Jasra, 2011). MSMEs are considered as one of the drivers of economic growth throughout the world. One of the important roles of MSMEs is poverty alleviation in the form of opening employment opportunities through innovation and creativity as well as human resource development (Agyapong, 2010). However, Indonesia's current economic fundamentals are not yet solid, prompting the government to continue to empower MSMEs. So far, ceramic MSME products have been mass-produced, have similar variations, and have relatively cheap selling values, especially during the COVID-19 pandemic, making it difficult to compete in the market. This condition requires new product innovation breakthroughs, so that MSME products have a high selling value by combining decoration techniques and photocatalysts on MSME products as a form of product advantages that act as disposable, display, and functional objects that have never been done before. A business without creativity and innovation will never progress and consumers feel bored buying the resulting product (Lee et al., 2016; Atkinson & Rosenthal, 2014).

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The findings of Cheng and Huizingh (2014) implied that the existence of relationships with outsiders can increase the acquisition of all sources including information sharing which provides high innovation encouragement benefits. Support for the same opinion was also expressed by Cheng et al. (2016), no less said this is a driving force in business development which always revolves around creative innovation, and of course this provides maximum value to a growing business, not forgetting the need for collaboration from internal business. When different information is collected through supply chain collaboration, the value innovation of supply chain collaboration is a significant issue (Wu & Chiu, 2018). Business people nowadays must constantly explore possibilities in a variety of circumstances and form partnerships with partners, including suppliers and rivals, in order to build an effective and responsive supply chain to changing market demands. Businesses aim for stronger supply chain connections to take advantage of their suppliers' and customers' resources and expertise and satisfy market demands (Johansson et al., 2019). Collaboration with partners can help businesses develop market prospects, manage information flows, and boost performance (Al-Omoush et al., 2020; Muftahu & Jamil, 2021; Sukarma et al., 2020).

Products that have unique characteristics, attractive designs and even have high benefits will provide great opportunities to create market opportunities. The absence of innovation, and the characteristics of a product will reduce the product's image and reduce profitability for the business (Caballero-Morales, 2021). According to Aslam et al. (2020), the value of a product that is not unique and prominent will make the product mediocre and cannot increase profits from the business (Mariani & Wamba, 2020). Ceramic products initially only had a plain appearance and did not have a design, they did not have uniqueness and attractiveness of the product, let alone benefits, the product could not be sold, market customers felt bored, and this caused market saturation. Competitive advantage strategies include products that have high value and will be able to increase market demand which adjusts to the value of the products produced (Shao et al., 2020).

Market demand is the development of organizational capacities for resource and information identification, utilization, and assimilation from both internal and external sources to support overall supply chain activities (Chang et al., 2019). Market demand is categorized by prior research as the capacity to create market possibilities by having the power to establish distinct marketplaces where at reduced costs (Khorasany et al., 2018), By connecting the primary business processes of users' ends through suppliers and vendors, the market demand is a supply chain capabilities approach that offers potential for developing competitive advantage with partners and enhancing company performance (Zhu et al., 2020).
The ability of businesses to build unique talents and competitiveness is essential for the success of improving company performance. Investigating how supply chain collaboration and value creation may support rising market demand to attain competitive advantage is made possible by the useful theoretical framework of competitive advantage. The resource-based perspective (RBV) serves as the basis for this viewpoint (Barney, 1991). The resources of the company give it special characteristics that let it handle change and spot new chances (Barney, 1991). In particular, the RBV contends that resources are distributed differently among firms and that benefits result when resources are used to cultivate competencies that are uncommon, valuable, unique, and irreplaceable. This is since a company's deliberate and methodical actions can result in unique capabilities that enable it to achieve performance and competitive advantage. Resources are frequently important since they are combined with other resources and utilized in this way (Ho & Kuvaas, 2020). Collaboration within the supply chain also enables businesses to concentrate on their distinctive core competencies, which improves enterprise-specific capabilities and realizes economies of scale and learning effects, strengthening their competitive position (Hastig & Sodhi, 2020). Supply chain collaboration therefore aims to boost market demand by tightly integrating internal corporate tasks and successfully connecting them with the exterior operations of suppliers, clients, and other channel members (Birasnav et al., 2019). Mikalef et al. (2020) investigated the relational view of competitive advantage to create models and sets of hypotheses that ascertain how different products and market characteristics can affect the nature of the anticipated beneficial relationship between collaboration and supply chain performance. Viewed from this perspective, we can realize that the level of supply chain collaboration has a significant relationship to market demand opportunities, market demand opportunities are a driver of competitive advantage and enterprise performance. The main problem of research on ceramic SMEs is how companies can perform?

2. Literature and Development of Hypotheses

2.1 Relationship of supply chain collaboration value innovation with MSME performance

The product design development in the small ceramics industry produces a visual semantic quality analysis that will be used as a basis for exploring the form of innovation value from a product (Raif et al., 2022). Creativity and innovation in the business world, entrepreneurs in the economic perspective of using ideas, will have great opportunities to face challenges and increasingly fierce business competition. Creativity and innovation in increasing the productivity of MSMEs, the lack of creativity and innovation makes business productivity decrease (Li et al., 2019). The application of alternative improvements to the process of making ceramics results in an increase in MSME businesses (Wit et al., 2019). The research hypothesis is formulated as follows:

H_1: *Supply chain collaboration values innovation positively and significantly influences MSME performance.*

Relationship of Market Demand with MSME performance

The product design development method with case studies of mug products in the small ceramics industry produces a visual semantic quality analysis that will be used as a basis for exploring the form of innovation value from a ceramic product (Raif et al., 2022). Creativity and innovation in the business world, entrepreneurs in the economic perspective of using ideas, will have great opportunities to face challenges and increasingly fierce business competition. Value added and product business revenue generates a high value ratio since it has a percentage of revenue (Aloupi-Siotis, 2020). Creativity and innovation in increasing the productivity of MSMEs, the lack of creativity and innovation reduce the business productivity (Li et al., 2019). The application of alternative improvements to the process of making ceramics results in an increase in MSME businesses (Wit et al., 2019; Mickiewicz et al., 2016). We thus propose the second hypothesis as follows:

H_2: *Market demand positively and significantly influences MSME performance.*

Relationship of Supply chain collaboration value innovation with Competitive Advantage

In order to support consumer loyalty, foster creativity, innovation, and ensure business continuity, it is crucial for businesses to establish networks, such as those for acquiring product materials and marketing systems. It is common to define supply chain collaboration as two or more chain members cooperating to forge a competitive advantage through information sharing, group decision-making, and the sharing of rewards resulting from higher profitability from meeting end-user needs as opposed to acting independently (Zhang et al., 2019). Collaboration across firms enhances flexibility, delivery speed, product quality, and other non-financial metrics, as proved by Chaudhuri et al. (2018) and Hoffmann et al. (2018). Wong et al. (2020) asserted that supply chain collaboration's value of innovation is a resource that improves corporate performance and capacities. We thus propose the third hypothesis as follows:

H_3: *Supply chain collaboration value innovation positively and significantly influences Competitive Advantage*

Relationship of Market Demand with Competitive Advantage

Market orientation is a company's view of customers, competitors, and coordination between functions within a company and it is able to achieve competitive advantage and superior performance (Line et al., 2019). Market-oriented companies need to develop competitors' strengths and weaknesses, use knowledge to develop and implement strategies to create superior advantages and superior performance. The study conducted by Liao (2018) describes the dimensions of market orientation, including customer orientation and competitor orientation. For companies to implement these two orientations, a superior strategy is needed and combines the third dimension, namely coordination between functions to increase the company's resistance to competitors and increase customer satisfaction (Al-Hakeem, 2022). Mostafiz et al. (2021) studied the model of the antecedents and consequences of market orientation. The results of the study show the policy role of senior managers, dynamics in cooperation between departments within the company, and organizational systems as an antecedent of market orientation, followed by the role of employee response, customer response, and firm performance because of market orientation. Furthermore, it explains that a successful market orientation according to Nakos et al. (2019) has 3 main requirements, namely: focus on customers, coordinated marketing, and coordination between departments in the company. Companies must understand customer needs, so companies are able to implement orientation, both reactive and proactive orientation. Reactive orientation generally makes companies concentrate on understanding and satisfying current consumer needs (Trudel, 2019). The research hypothesis is formulated as follows:

H_4: *Market Demand positively and significantly influences Competitive Advantage.*

Relation of Competitive Advantage with MSME performance

Competition in business can affect the smooth operation of the company (Ying et al., 2019). The company carries out various strategies to maintain good market position in competition (Abeysekara et al., 2019). According to Lestari et al. (2020), competitive strategy which is a strength or core competency of a company must always be improved to gain competitive advantage to support the achievement of company performance. Resource mobility is the heterogeneity of resources that must be managed properly and effectively in business because these resources can be easily obtained and owned by similar businesses, so it is necessary to carry out collaborative business strategies with changes in the business environment (Crick & Crick, 2020). Broadly speaking, the resources-based view states that resources are a company's sustainable advantage, namely resources that are valuable, rare, cannot be imitated, and have no substitutes in products (Mardatillah et al., 2020). The resources in question include all assets, capabilities, distribution processes, product characteristics, information, and knowledge (Mikalef et al., 2020). These resources are under the control of the business unit for the implementation of business strategy in order to achieve effectiveness and efficiency in implementing RBV to improve business performance (Chumphong et al., 2020).

H_5: *Competitive Advantage positively and significantly influences MSME performance.*

Competitive Advantage mediation in supply chain collaboration value innovation, with MSME performance

Maintaining the current business is a dream for every business actor, the value of a product from product quality and product uniqueness will maximize the market share of MSME players' products (Normal & Setini, 2022). This can help reduce expenses and can have an effect called Network Effects, namely the value of the product will increase since more people use it (Tucker, 2019) and indirectly providing sales profits for the product (Hasan et al., 2022). According to Tien et al. (2020), companies differentiate their products through advertising, sales efforts, and changing product designs or packaging (Martin, 1994:241). Consumers will be more interested in differentiation because the goods produced by companies are considered different, there are many choices in terms of taste, color, shape and packaging that are presented or unique according to consumers so that consumers are interested in buying these products. The process of making photocatalyst ceramic products uses two basic techniques as differentiation elements that can increase the product benefits, namely decoration techniques and environmentally friendly photocatalysts to increase sales value, and encourage business performance (Sharma et al., 2020). Product differentiation, brand image, product quality, and price simultaneously have a significant effect on consumer purchasing decisions (Han et al., 2019; Amjath-Babu et al., 2020).

H_6: *Competitive Advantage strengthens relationship between supply chain collaboration value innovations on MSME performance.*

Competitive Advantage Mediation on Market Demand MSME performance

An increase in market share shows how much the product handled can dominate the market for similar products compared to competitors to get customers (Arthur, 1996). Dynamic marketing capability is a research focus variable between resources and expertise of business actors. Resource-based dynamic marketing capability view is a fundamental phenomenon of low system achievement to achieve marketing capability to benefit from communication, promotion in a changing environment (Foss, 2011). Expertise from resources in developing business strategies for businesses can be a determining factor in the success of increasing business performance in an uncertain environment, with innovation collaboration capabilities.

H_7: *Competitive Advantage strengthens relationship between Market Demand on MSME performance*.

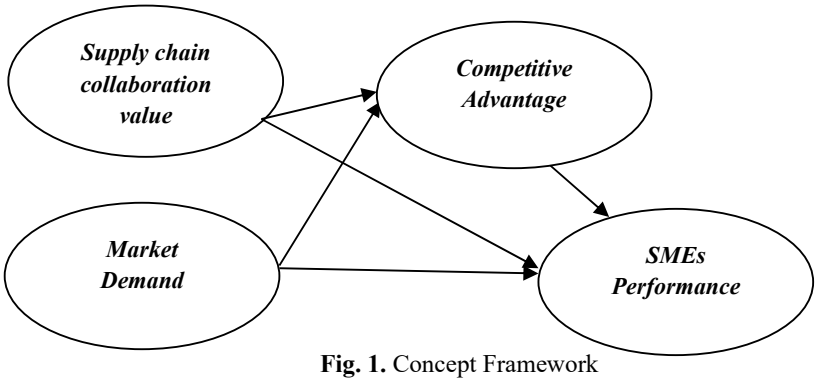

Fig. 1. Concept Framework

3. Method

By testing the hypothesis, this research uses quantitative methods. Data collection was carried out by sending questionnaires to ceramic SMEs, in which survey instruments and indicators were made considering supply chain collaboration innovations, market demand, SME performance, and competitive advantage and MSME performance. This study collected samples from 200 ceramic SMEs in Bali. Purposive sampling was used during the sampling procedure, considering the presence and experience of UMKM Ceramics in operational, financial and marketing processes. A five-point scale is used to evaluate indicators. To control for research variables for empirical tests, indicators were set. A five-point Likert scale was used to evaluate the indicators of the five constructs, resulting in the validity and reliability of the instrument (1 strongly disagree – 5 strongly agree).

4. Result and Discussion

4.1 Results

Validity and Reliability of the results

It is important to do a confirmatory analysis with a construct measuring function to determine the factor analysis of the validity and reliability of the indicators. All distributions in this study have a normal distribution because all indicators have

a data value of 0.6 so that all indicators are said to be valid (Gunawan et al., 2019). The Composite Reliability and Average Variance Extracted (AVE) figures also demonstrate this. The indicators that have been identified can accurately measure each construct, or it may be claimed that the five measurement models are reliable, as shown in Table 1 by the five constructs having Composite Reliability over 0.6. The higher the correlation between the indicators that make up a construct, the better the Convergent Validity value is given. Each construct's AVE value in this investigation was over 0.5, indicating that the model under test had no issues with convergent validity. Table 1 presents the summary of the results.

Table 1
Validity and Reliability

Variable Indicators	Loading Factor	Cronbach's Alpha	Composite Reliability	AVE
Supply Chain Collaboration Value Innovations (x1)		0.812	0.878	0.844
X1.1	0.889			
X1.2	0.825			
X1.3	0.919			
X1.4	0.902			
X1.5	0.887			
Market Demand (x2)		0.838	0.836	0.762
X2.1	0.918			
X2.2	0.874			
X2.3	0.854			
X2.4	0.867			
Competitive Advantage (Y1)		0.881	0.926	0.828
Y1.1	0.924			
Y1.2	0.881			
Y1.3	0.891			
Y1.4	0.889			
Y1.5	0.897			
SMEs Performance (Y2)		0.932	0.951	0.831
Y2.1	0.882			
Y2.2	0.912			
Y2.3	0.916			
Y2.4	0.824			

Source: Processed by the author

Structural Model Test

R-Square (R^2)

The reliability and strength of the association between exogenous and endogenous variables are assessed using R-Square. The coefficient of determination in the endogenous construct is represented by the R-Square value (R^2). The R-Square (R^2) value range is 0.67 (strong), 0.25 (moderate), and 0.19, respectively (weak). According to Table 2, the competitive advantage endogenous variable has an R-Square at a weak level (0.279), while the SMEs Performance variable has an R-Square at a strong level of 0.772. Table 2 below lists each endogenous variable's R-Square value (R2):

Table 2
Measurement Estimated Value

Variable	R Square	R Square Adjusted
Competitive Advantage	0.279	0.264
SMEs Performance	0.772	0.904

When the Q-Square value is more than 0, the estimated model and parameters are good; conversely, when it is less than 0, the model is considered to have poor predictive relevance. The Q-square value is $Q^2 = 1-(1-R_1^2)(1-R_2^2) = 0.836$. The Q-Square computation yielded a result of 0.836, indicating that 83.6% of the models had a very good value. The model can explain the variable relationship value of 83.6%. The structural model is assessed using the Goodness of Fit Index (GoF), and the total measurement is determined by multiplying the root mean of the AVE by R^2. We also have GoF value = 0.5255 and Average AVE (0.844+0.762+0.828+ 0.831)/4=0.816
The average result obtained from the sum of R^2 and AVE is 1.34
The sum of the two and the square root gets a value of: GoF = √1.34
The GoF results of this study are 1.15 with the provisions that the GoF is considered small if it has a value of 0.25, is 0.36 and is included in the high category if it has a value above.

4.2 Discussion

Two substantial positive connections, hypotheses 4 and 5, are shown in Table 3 as a direct association between the independent and dependent variables. While hypotheses 1, 2, and 3 are rejected since the values possessed do not meet, these three hypotheses have a T-statistic value above 1.96 and a p-value of less than 0.005.

With regard to hypothesis 6 and 7, there are two indirect relationships that are mediated by competitive advantage. The acceptance of hypothesis 7 results in a T-statistic of 2.031 > 1.96 and a p-value of 0.000 < 0.043, making hypothesis 7 a full mediation. The sixth hypothesis is disregarded since it yields a T-statistic of 1,626 <1.96 and a p-value of 0.105 > 0.005.

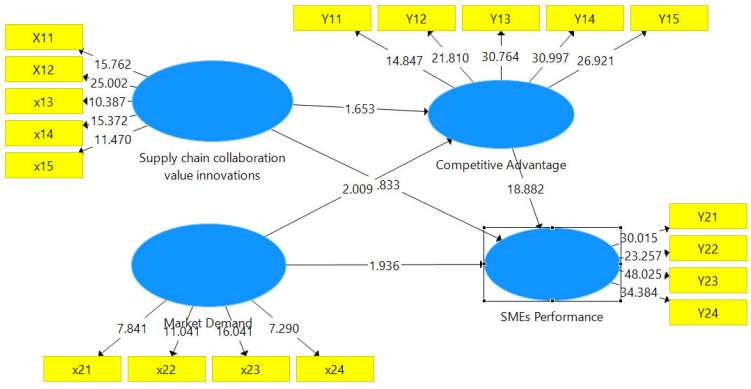

Fig. 2. Processed Path Analysis Results

Table 3
Hypothesis Results

	Original sample	Sample Means	Standard Deviation	T-Statistic	P-Value	Description
Direct Relationship Hypothesis						
H1: Supply Chain Collaboration Value Innovations ➔SMEs Performance	-0.146	-0.146	0.080	1.833	0.057	Not Significant
H2:Market Demand➔SMEs Performance	0.167	0.167	0.086	1.936	0.053	Not Significant
H3: Supply Chain Collaboration Value Innovations ➔ Competitive Advantage	0.245	0.263	0.148	1.653	0.099	Not Significant
H4: Market Demand➔ Competitive Advantage	0.315	0.317	0.157	2.009	0.045	Significant
H5: Competitive Advantage ➔ SMEs Performance	0.859	0.859	0.046	18.882	0.000	Significant
Indirect Relationship Hypothesis						
H6: Supply Chain Collaboration Value Innovations ➔ Competitive Advantage➔ SMEs Performance	0.211	0.227	0.130	1.626	0.105	No Mediation
H7: Market Demand ➔ Competitive Advantage➔ SMEs Performance	0.271	0.271	0.133	2.031	0.043	Full Mediation

5. Discussion

5.1 Supply Chain Collaboration Value Innovations and SMEs Performance (H1)

This study shows that supply chain collaboration value innovation does not have any positive impact on MSME performance. The results of the analysis are not in line with Kristinae et al. (2020), Raif et al. (2022) and Li et al. (2019). This effort cannot make changes to create new products to meet market achievements faster so that the performance of MSMEs is not visible.

5.2 Market Demand dan SMEs Performance (H2)

This study shows that market demand does not have any positive impact on the performance of ceramic SMEs. So far, ceramic artisans have only mass-produced their products and without special patterns or special values. It only fulfills existing market demand without being able to provide added value and benefits to the environment or customer satisfaction. This finding is not in line with the results of Ottosson (2004), Wit et al. (2019) and Mickiewicz et al. (2016), which indicate that market demand will provide impetus for the progress of a business.

5.3 Supply Chain Collaboration Value Innovations dan Competitive Advantage (H3)

This study shows that Supply Chain Collaboration Value Innovations have no effect on competitive advantage. Value creation in SMEs cannot maintain a sustainable competitive advantage and a sustainable business. Innovation around the supply chain does affect channel relationships and competitive advantage. It is possible that what is happening between MSME actors still has egoism in their business relationships, information is closed and competition occurs, there are no shoulder to shoulder

fellow MSME actors. Of course, this research is not in line with research Mickiewicz et al. (2016), Chaudhuri et al. (2018) and Hoffmann et al. (2018).

5.4 Market Demand and Competitive Advantage (H4)

One effort that can be done is to differentiate products that are relevant to current conditions, namely creating multifunctional ceramic products as disposable, display and functional objects. The market will be owned by SMEs and advantages will be obtained when there is product differentiation produced and will provide high value to the product so that it will increase profits and create special customers. This is in line with Obal and Gao (2020) and Bhunia et al. (2023), in ceramic SMEs there are several ceramic products produced such as: Glazed ashtrays with coral leaf motifs, Lampshades of various shapes and decorations, Flower vases decorated with glazed leaves: as a place to put flowers on indoor tables, Flower pots with various forms, meru and songket patterned tiles: as disposable objects in the form of tiles attached to the wall, as display objects decorated with shiny and attractively colored meru and songket, and as functional items that can purify/filter the air and reduce bacteria in indoor.

5.5 Competitive Advantage and SMEs Performance (H5)

This study shows that competitive advantage has a positive impact on MSME performance. The competitive advantage created by MSME actors is to create products with different innovations, namely the development of previous products. Products that have beneficial values for the environment and have artistic value indirectly create distinct advantages among ceramic business actors. This research is in line with Moon and Lee (2018).

5.6 Supply Chain Collaboration Value Innovations, Competitive Advantage and SMEs Performance (H6)

So far, the network between ceramic SMEs is still individual; there are no associations or collaborations that will encourage potential sources for continuity and innovation in the process of ceramic products. There are still very few photocatalyst SMEs, limited sources of materials and processing equipment are not able to make the business run well. Creation of excellence in product production is still lacking and minimal; this is because collaboration in obtaining information or other sources is still limited. This research is not in line with Fidel et al. (2004).

5.7 Market Demand, Competitive Advantage and SMEs Performance (H7)

Competitive advantage is the mediator between supply chain collaboration value innovations and the performance of MSMEs where excellence becomes full mediation. Najmaei and Sadeghinejad (2009) and Foss (2011) found that competitive advantage coincided with the value of collaboration and business performance. Therefore, this study suggests that ceramic SMEs are able to create their advantages and be able to create unique markets that are different and have their own characteristics and colors which will ultimately improve the performance of SMEs.

6. Conclusions and Suggestions

Market demand is created for products that are unique in terms of color, style and benefits so that continuous innovation is always needed from the relationship between actors, organizations in the ceramics industry. The special market reach owned by MSME actors will make it easier in terms of promotion, increasing sales and ultimately improving the performance of the MSMEs themselves. The photocatalyst ceramics market has great potential, characterized by innovative products resulting from plain ceramics, patterned ceramics and photocatalyst patterned ceramics. This should continue to be supported by collaboration between individual actors, organizations or the government so that it will make it easier to obtain sources of material or information both from downstream and upstream.

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