Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 5, 1923-1939
2024
Publisher: Learning Gate
DOI: 10.55214/25768484.v8i5.1924

Ambidextrous leadership, customer orientation, environmental innovation to improve service innovation capability through digital capabilities and technological capabilities as mediating variables in Umkm in Berau District, East Kalimantan

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Abstract: Berau District is in the northern part of East Kalimantan Province and borders directly with North Kalimantan Province. As of 2014, the administrative territory of Berau District was divided into 13 districts with a total of 100 villages and 10 villages. Micro, Small and Medium Enterprises (MSMEs) are economic drivers in Berau district that are still faced with classical problems such as infrastructure, licensing, marketing, distribution and financing as well as post- 19 recovery processes. In connection with the problem, to build micro, small enterprises, and corporations, it is necessary to support the healthy real sector to combat poverty through the strengthening of the purchasing power of better society and the help of financing with light interest. The purpose of this research. Based on the background and the formula of the problems that have been outlined earlier, then the purpose of this research is to develop a model of the conceptual framework by means of proof and analysis; (1). The impact of ambidextrous leadership on digital capabilities on MSME perpetrators in Berau district (2), the impact of customer orientation on digital capacity on MSE perpetrator in Beru district (3), the effect of environmental innovation on digital Capabilities in MSE Perpetrator in Berau district (4). The effect of digital capability on technological capacities in the UMKM Perpetrant in Berea district (5), the influence of digital capacities on service innovation capability in UMM Perpetrator at Beraus district (6). The total sample that meets the criteria in this study is 353 samples and is processed using SmartPLS data processing. The results of this study indicate that there is a direct relationship between the impact of Ambidextrous Leadership, Customer Orientation, Environmental Innovation on Service Innovation Capability.

Keywords: *Berau, Dynamy capability, Technology, UMKM.*

1. Background

For an organization, creativity and innovation are vital needs, because creativity is the backbone for organizational survival. Creativity is the ability to develop new ideasand new ways of looking at problems into opportunities, while innovation is the ability toapply creative solutions to problems and opportunities for the growth of a business (Zimmerer and Scarborough, 2019). In order to create a creative organization, it is necessary for the organization to be able to make rapid environmental changes, both in technology and product standards.

Given that in the current era technology plays a very important role, it requires theability of organizations to provide innovative services by utilizing technology. The utilization of technology has now been used in various circles, one of which is small-scalebusiness actors. Almost all sectors now utilize technology for progress. The moresophisticated the technology used by, the easier and

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faster the activities carried out. The need for time and cost efficiency causes entrepreneurs to feel the need to apply technologyin their company. In addition, in this era of globalization, almost all business entities are required to make changes to increase their competitiveness. This can be realized if there is *ambidextrous leadership*, namely a leader who is still able to develop existing businesses, as well as being able to create new *profitable* businesses. In addition, it is necessary to form a customer-oriented mindset, and try to create an atmosphere of *environmental innovation*. These factors will further encourage organizations to implement/use *digital capability*. The use of digitized information will further encourageorganizations to utilize technology for automation. This certainly aims to facilitate work that was previously done manually. In the long run, the organization will be able to provide innovative services for customers.

The conceptual framework model as described, will then be tested on Micro, Smalland Medium Enterprises (MSMEs) in Berau Regency, East Kalimantan. Berau Regency is one of the autonomous regions in East Kalimantan Province, has considerable potentialin the tourism industry, this can be seen from the many tourist attractions in Berau Regency. The type of tourism that is in great demand by people is nature tourism. Improving the quality of human resources, one of which can be done by opening up the widest possible employment opportunities for the community.

Table 1.
Micro, small and medium enterprises in berau regency.

District	2019	2020	2021
Tanjung Redeb	806	884	4.592
Sambaliung	42	602	2.419
Gunung Tabur	117	104	988
Teluk Bayur	63	346	1.321
Kelay	10	33	55
Segah	24	52	131
Derawan Island	76	147	779
Maratua	22	200	340
Tabalar	23	79	502
Biatan	51	32	51
Talisayan	45	386	673
Batu Butih	39	300	351
Biduk-Biduk	54	69	836
KTP outside Berau	-	-	59
Total	1.372	3.234	13.097

Source: Dinas Koperidag Berau, 2023

Based on the data obtained related to MSMEs in Berau Regency, the general problem faced by MSMEs in Berau Regency is that MSMEs grow rapidly but are less able to compete in utilizing technology. On the other hand, the ability to carry out management and problems at the institutional level. According to Tambunan (2018), MSME actors tend to face problems such as lack of capital, lack of raw materials, unavailability of markets and lack of qualified human resources, which has implications for income and financial performance. In fact, a study by Mshenga et al. (2013) found that MSME leadership behavior plays a role in technological capabilities. This indicates that efforts are needed to overcome the problems faced by business actors dominated by MSMEs in order to improve the leadership behavior and income of business actors. For this reason, it is necessary to understand the factors that influence leadership behavior inMSME business actors in Berau Regency. Based on the above background, the research problem can be formulated as follows:

1. Does *ambidextrous leadership* have a significant effect on *digital capability* in MSMEplayers in

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ISSN: 2576-8484
Vol. 8, No. 5: 1923-1939, 2024
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Berau Regency?

2. Does *customer orientation* have a significant effect on *digital capability* in MSMEplayers in Berau Regency?

3. Does *environmental innovation* have a significant effect on *digital capability* inMSME players in Berau Regency?

4. Does digital capability have a significant effect on *technological capabilities* inMSME players in Berau Regency?

5. Does digital capability have a significant effect on *service innovation capability* inMSME players in Berau Regency?

6. Do *technological capabilities* have a significant effect on *service innovation* capability in MSME players in Berau Regency?

2. Overview

2.1. Dynamic Capabilities

The *dynamic capabilities* theory was first developed by Teece and Pisano (1994),according to them *dynamic capabilities are* related to the organization's ability to create, reshape, assimilate knowledge and skills in order to remain standing strong in a rapidly changing competitive environment.

2.2. Ambidextrous Leadership

Ambidextrous leadership is defined as the ability to encourage explorative and exploitative behaviors by increasing or decreasing variance in their behaviors and the flexibility of switching between them. Ambidextrous leadership style, which has both opening and closing leadership behaviors, is considered more effective in innovation (Alghamdi, 2018; Ketkar & Puri, 2017; Tian et al., 2020).

2.3. Customer Orientation

In achieving superior performance, an organization must create sustainable superior value for its customers. The desire to create superior value for customers drives businessesto create and maintain market orientation (Narver and Slater, 1990). As mentioned by Slater and Narver (1994:22), an organization is market oriented when "its culture is systematically and fully committed to continuously creating superior customer value".

2.4. Environmental Innovation

Following a (natural) RBV perspective, it is claimed that SMEs that adopt an environmental orientation are more likely to acquire valuable, rare, inimitable and irreplaceable new resources (Hart, 1995; Sinha & Akoorie, 2010; Hart & Dowell, 2010) and, in turn, are in a better position to generate product and process innovations. This is especially true if companies, and SMEs more specifically, target the development of environmental innovations or 'eco-innovations'.

2.5. Digital Capabilities

Digital "capabilities" means the abilities or skills required to perform a specific task (Day, 1994; Drucker, 1985; Li & Calantone, 1998) or, in other terms, "the collectionof abilities and expertise needed to achieve a target." Digital capabilities can be thought of as skills needed to go beyond pure IT to include specific technologies, such as social media or mobile, as analytical skills to drive value from big data, and we can also conceptualize them as digital outcomes or operations.

2.6. Technological Capabilites

Changes in product and process technology are closely related to competition, whichis concerned with the adoption of an innovation that is sustained by the firm in the production, distribution and

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sale of new products or services (Zander & Kogut, 1995). Organizational capabilities can provide firms with the ability to adopt industry innovations, and in this case these capabilities are defined as technological capabilities.

2.7. Service Innovation Capability

Service innovation capability is defined as the ability to apply useful knowledge from multiple resources to creative new services, processes, and systems (Atuahene-Gima2005; Boer et al. 2000; Hurley and Hult 1998; Yang et al. 2009). Examining theunderlying mechanisms for cultivating service innovation capabilities is critical to enhancing hotels' competitive advantage.

With proportions based on theoretical and empirical studies, it will explain how many hypotheses and how the influence between the variables. After identifying thevariables and how the influence between the variables, the next step is to describe the conceptual framework. The conceptual framework can be seen in Figure 1, as follows:

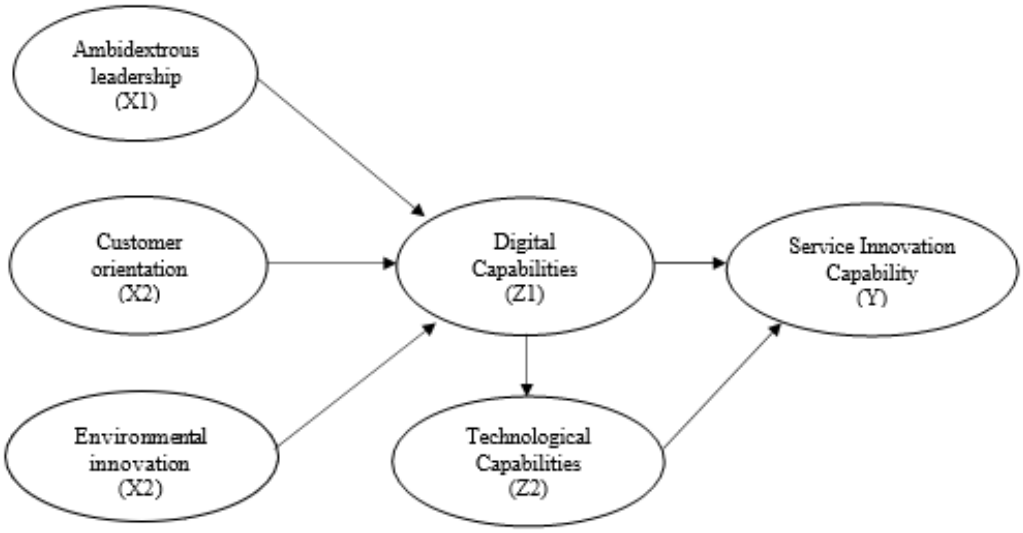

Figure 1.
Conceptual framework research.

2.8. The Influence of Ambidextrous Leadership on Digital Capabilities

Ambidextrous leadership refers to a leader's ability to manage day-to-day operations (*exploitation*) and develop new innovations (exploration) simultaneously. Benner and Tushman (2015) point out that the logic of innovation activities has fundamentally changed due to the dramatic decrease in communication and information processing coststriggered by digitization and the internet. Thus, the question arises as to whether and how *ambidextrous* learning affects organizational performance in *Digital Capabilities*. Thus, entrepreneurial leadership may be an antecedent of ambidextrous learning in digital transformation, yet its important role does not seem to have attracted attention. Therefore, Ambidextrous Leadership is considered to improve Digital Capabilities. Thus the following hypothesis is proposed:

H1: Ambidextrous Leadership has a significant effect on *Digital Capabilities*.

2.9. The Effect of Customer Orientation on Digital Capabilities

Previous research has shown that market orientation has a positive and significant impact on firm performance, and market-oriented firms contribute to the firm's success instrategy development (Atuahene-Gima, 1996). Scholars regard *Customer Orientation* as the most decisive factor in market-oriented strategy, and it is regarded as a set of beliefs that give the highest priority to the interests of

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customers (Deshpandé, 1993). Therefore, *Customer* Orientation is considered to play an important role in building *Digital Capabilities*. Thus the following hypothesis is proposed:
H_2: *Customer Orientation has a significant effect* on *Digital Capabilities*.

2.10. The Effect of Environmental Innovation on Digital Capabilities

Digital "capabilities" means the abilities or skills required to perform a specific task (Day, 1994; Drucker, 1985; Li & Calantone, 1998) or, in other terms, "the collection of abilities and expertise needed to achieve a target." Digital Capabilities can be thought of as the skills required to go beyond pure IT to include specific technologies, such as socialmedia or mobile, as analytical skills to drive value from big data, and we can also conceptualize them as digital outcomes or operations. *Environmental Innovation* helps companies to recruit, motivate, and retain human resources with Environmental Innovation. In addition, Ardito et al. (2021) found a relationship between *EnvironmentalInnovation* and *Digital Capabilities*. Thus the following hypothesis is proposed:
H_3: *Environmental Innovation has a significant effect* on *Digital Capabilities*.

2.11. The Effect of Digital Capabilities on Technological Capabilites

Technological Capabilites have enabled organizations to create opportunities tosupport their competitive advantage. In this case, understanding the dynamics that affect

the adoption of digital technologies becomes critical to their success El-Haddadeh (2020).examines the specific aspects of digitalization that affect technology adoption in organizations Karimi and Walter (2015). analyzes the impact of dynamic capabilities on digital disruption in firm performance. Digital disruption reduces intermediation costs (Sutherland, 2018) and combines technologies more efficiently (Karimi & Walter, 2015).*Digital Capabilities* in this sense are then considered to influence *Technological Capabilites*. Thus the following hypothesis is proposed:
H4: *Digital Capabilities* has a *significant effect* on *Technological Capabilites*.\

2.12. The Effect of Digital Capabilities on Service Innovation Capability

Kohli and Grover (2008) define Digital Capabilities as the internal ability to provide customer information when needed. According to Lyytinen, Yoo and Boland (2016), Digital Capabilities are digital systems that produce new results and structures without theparticipation of uncoordinated third-party actors and without deliberate planning by system creators. *Service Innovation Capability* is defined as the ability to apply useful knowledge from various resources to creative new services, processes and systems(Atuahene-Gima 2005; Boer et al. 2000; Hurley and Hult 1998; Yang et al. 2009). Good *Digital Capabilities* will increase *Service Innovation Capability*. Thus the following hypothesis is proposed
H_5: *Digital Capabilities have a significant effect on Service Innovation Capability*.

2.13. Effect of Technological Capabilites on Service Innovation Capability

Technological capability refers to a firm's ability to develop new products and servicesby aligning its strategy with innovative processes (Wang, 2007). Such capabilities involveknowledge and skills in acquiring, using, absorbing, adapting, improving, and generating new technologies (Bell & Pavitt, 1995 Malhotra, Mathur, Diddi & Sagar, 2021;). These capabilities enable the development of new products and technologies, improve manufacturing processes and quality control skills, and predict technological changes in the industry (DeSarbo, 2005). Whereas *Service Innovation Capability* is defined as the ability to apply useful knowledge from various resources to creative new services, processes, and systems (Atuahene-Gima 2005; Boer et al. 2000; Hurley and Hult 1998; Yang et al. 2009). Good *Technological Capabilites* can improve *Service Innovation Capability*. Thus, the following hypothesis is proposed:
H_6: *Technological Capabilites has a significant effect on Service Innovation Capability*.

Edelweiss Applied Science and Technology
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DOI: 10.55214/25768484.v8i5.1924

3. Research Methods

Based on the background and problem formulation, the research design used is *CausalExplanatory Research*, which is research used to show the position of the variablesstudied and the influence between one variable and another. (Sugiyono, 2019). This *Causal Explanatory Research* research is used to test the independent variables of*ambidextrous leadership*, *customer orientation*, *environmental innovation* on *digitalcapabilities*, and their consequences on *technological capabilites* and *service innovation capabilities*.

The sampling method in this study used *purposive sampling* method. The number of MSMEs that use technology in this study is 3,000 businesses. The population contained in this study is 3,000 MSME actors divided into 13 sub-districts in Berau Regency, East Kalimantan Province, Indonesia.

Based on the above calculations, the number of samples determined is 353 MSMEbusiness actors who use technology in running a business. The number of respondents is considered representative to obtain writing data that reflects the state of the population. Samples were taken based on *probability sampling* techniques*; simple random sampling*,where researchers provide equal opportunities for each MSME actor in the population tobe selected as a sample which is done randomly by taking into account the 13 sub-districtsin Berau Regency in the population itself.

Structural equation modeling (SEM) is a combination of multvariate techniques that analyze the relationship simultaneously between dependent and independent variables and provide complete information about the relationship between constructs and their indicators, and provide complete information about the relationship between constructs that have been hypothesized simultaneously. In general, there are two types ofSEM that have been widely recognized, namely covariance-based structural equation modeling (CB-SEM) developed by Joreskorg (1969) and partial least squares path modeling (PLS-SEM) or often called variance or component-based structural equation modeling developed by World (1974) (Bookstein, 1982).

4. Research Results

4.1. Descriptive Statistics

Descriptive statistical analysis provides an overview or description of data seen from the average value (mean), median, standard deviation, maximum, minimum (Ghozali, 2014). Descriptive analysis is useful for understanding, describing, explaining data or events collected in a study and not up to generalization.

Category Classification of *Mean* Score:

1 - < 1,8 : Very low 3.4 - < 4.2 : High

1,8 - < 2,6 : Low 4,2 - < 5,0 : Very high

2,6 - < 3,4 : Medium

Table 2.
Descriptive statistics.

Variable	N	Min.	Mix.	Mean	Std. deviation
Ambidextrous leadership	353	8	39	18.54	6.020
Customer orientation	353	6	28	15.54	4.875
Environmental innovation	353	4	20	10.03	3.695
Digital capabilities	353	5	23	11.18	3.471
Technological capabilities	353	4	16	8.80	2.889
Service innovation capability	353	4	19	8.79	3.205
Valid N (listwise)	353				

The descriptive test results in Table 2 show the minimum (4), maximum (39), andaverage (18.54) *Ambidextrous Leadership* values of 353 data, and have a standard deviation of 6.020. The *Customer Orientation* variable has a minimum value (6), maximum (28), average (15.54), and standard deviation

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ISSN: 2576-8484
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(4.875) with a total of 353 data. The *Environmental Innovation* variable has 353 data with a minimum value (4), maximum(20), average (10.03), and standard deviation (3,695). The *Digital Capabilities* variable has a total of 353 data with a minimum value (5), maximum (23), average (11.18), and standard deviation (3.471). *Technological Capabilities* variable has a total of 353 data with a minimum value (4), maximum (16), average (8.80), and standard deviation (2.889).Furthermore, the *Service Innovation Capability* variable has a total of 353 data with a minimum value (4), maximum (19), average (8.79), and standard deviation (3.205).

4.2. Evaluation of the Measurement Model (Outer Model)

To assess the Fit Model of a research model, the analysis technique using the PLS-based SEM method requires 2 stages, namely by assessing the outer model and inner model.

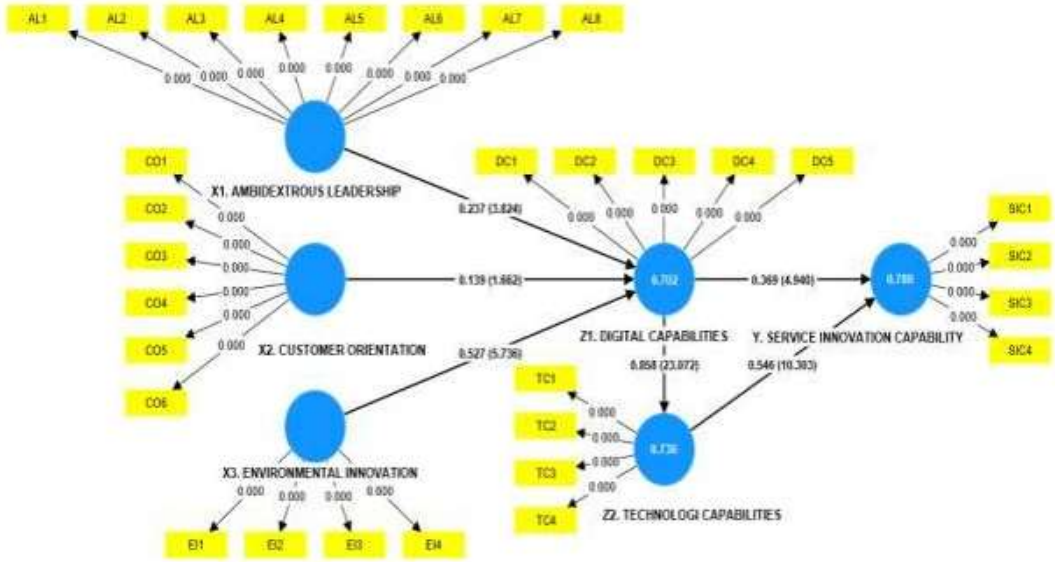

Figure 2.
Display of PLS algorithm calculation results.

4.3. Validity Test

There are two tests in using data analysis techniques in SmartPLS 3.0 to assess theouter model, namely convergent validity and discriminant validity.

4.4. Convergent Validity

A high loading factor value indicates that each construct indicator converges at onepoint. The rule of thumb commonly used to assess convergent validity is that the loading factor value must be more than 0.7 for confirmatory research and the loading factor value between 0.6-0.7 for explanatory research is still acceptable. The following is a table of 3loding factor values of all statements in the questionnaire (Haryono, 2017).

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 5: 1923-1939, 2024
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Table 3.
Outer loading.

Variables	AL	CO	EI	SIC	DC	TC
AL1	0.793					
AL2	0.774					
AL3	0.827					
AL4	0.770					
AL5	0.822					
AL6	0.867					
AL7	0.878					
AL8	0.782					
CO1		0.909				
CO2		0.907				
CO3		0.907				
CO4		0.944				
CO5		0.907				
CO6		0.892				
DC1					0.881	
DC2					0.894	
DC3					0.851	
DC4					0.843	
DC5					0.806	
EI1			0.945			
EI2			0.945			
EI3			0.942			
EI4			0.931			
SIC1				0.918		
SIC2				0.912		
SIC3				0.914		
SIC4				0.909		
TC1						0.912
TC2						0.925
TC3						0.806
TC4						0.842

Based on table 3 above, the results show that the overall *loading factor* value fromG to U can be said to be valid because the *loading factor* value is above 0.5, which meansthat construct validity has been met. This makes it clear that the statements on the questionnaire instrument have been able and accurate in measuring the research variables.

4.5. Discriminant Validity

Evaluation of discriminant validity aims to determine whether the construct has adequate discriminant. The evaluation is carried out by comparing the discriminant validity and AVE values. If a construct has a *discriminant validity* value greater than AVE, it can be declared a valid construct. The recommended AVE value is greater than 0.5 (Haryono, 2017). The following is table 4 of the results of the comparison of discriminantvalidity with AVE.

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ISSN: 2576-8484
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Table 4.
Comparison of discriminant validity and AVE values.

Variables	AL	CO	EI	SIC	DC	TC	AVE
AL							0.665
CO	0.767						0.830
EI	0.740	0.895					0.885
SIC	0.760	0.782	0.771				0.834
DC	0.764	0.813	0.869	0.740			0.732
TC	0.836	0.812	0.857	0.817	0.836		0.761

Table 4 states that the *discriminant validity* value of each construct has a value greater than AVE, so it can be concluded that each construct used is valid and in accordance with the indicators that researchers use in research.

4.5. Cross Loading

Discriminant validity is also carried out based on *cross loading* measurements with constructs. If the construct correlation on each indicator is greater than other constructs, it means that the latent construct can predict indicators better than other constructs.

Table 5.
Discriminant validity column cross loadings.

Variables	AL	CO	EI	SIC	DC	TC
AL1	0.793	0.591	0.595	0.621	0.596	0.646
AL2	0.774	0.568	0.502	0.559	0.504	0.561
AL3	0.827	0.581	0.611	0.555	0.633	0.619
AL4	0.770	0.523	0.449	0.485	0.463	0.533
AL5	0.822	0.575	0.561	0.559	0.585	0.628
AL6	0.867	0.614	0.606	0.626	0.599	0.666
AL7	0.878	0.636	0.604	0.617	0.604	0.673
AL8	0.782	0.633	0.617	0.587	0.601	0.656
CO1	0.684	0.909	0.825	0.696	0.720	0.714
CO2	0.654	0.907	0.791	0.676	0.713	0.642
CO3	0.674	0.907	0.760	0.677	0.695	0.732
CO4	0.681	0.944	0.787	0.694	0.723	0.693
CO5	0.656	0.907	0.761	0.646	0.670	0.687
CO6	0.616	0.892	0.763	0.657	0.644	0.669
DC1	0.688	0.688	0.712	0.616	0.881	0.712
DC2	0.647	0.724	0.747	0.578	0.894	0.673
DC3	0.592	0.703	0.755	0.608	0.851	0.631
DC4	0.562	0.585	0.640	0.569	0.843	0.595
DC5	0.528	0.549	0.613	0.549	0.806	0.627
EI1	0.693	0.791	0.945	0.699	0.779	0.768
EI2	0.645	0.784	0.945	0.637	0.742	0.720
EI3	0.660	0.828	0.942	0.703	0.780	0.770
EI4	0.643	0.824	0.931	0.705	0.757	0.738
SIC1	0.643	0.677	0.676	0.918	0.648	0.705
SIC2	0.652	0.687	0.682	0.912	0.617	0.701
SIC3	0.624	0.661	0.640	0.914	0.594	0.650

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SIC4	0.671	0.680	0.665	0.909	0.634	0.683
TC1	0.720	0.728	0.748	0.722	0.694	0.912
TC2	0.714	0.707	0.736	0.659	0.704	0.925
TC3	0.571	0.529	0.578	0.568	0.555	0.806
TC4	0.659	0.656	0.702	0.658	0.680	0.842

Based on Table 5 above, it shows that each question indicator has the highest *loading factor* value on each intended latent construct than other latent constructs,meaning that each question indicator is able to be predicted well by each latent constructin other words, discriminant validity is valid.

4.6. Instrument Reliability Test

4.6.1. Composite Reliability

Composite reliability is to determine whether the construct has high reliability or not. The composite reliability value is above 0.7, so it can be said that the construct is reliable.

Table 6.
Composite reliability.

Variables	Composite reliability (rho_a)	Composite reliability (rho_c)	AVE
AL	0.931	0.941	0.665
CO	0.960	0.967	0.830
EI	0.957	0.969	0.885
SIC	0.935	0.953	0.834
DC	0.911	0.932	0.732
TC	0.902	0.927	0.761

In Table 6 above, it is known that the *composite reliability* and AVE values arereliable or trustworthy because the values are more than 0.8, 0.7, and 0.6. So it can beconcluded that all constructs meet the criteria for reliability and validity in accordancewith the specified criteria so that they can be used to continue the research.

Table 7.
Cronbachs alpha.

Variables	Cronbach's alpha
AL	0.928
CO	0.959
EI	0.957
SIC	0.934
DC	0.908
TC	0.895

4.7. Cronbachs Alpha

Table 7 above shows that the AL (0.928), CO (0.959), EI (0.957), SIC (0.934),DC (0.908), and TC (0.895) constructs are greater than 0.6, so *Cronbachs Alpha* has been met. A valid *Cronbachs Alpha* value will strengthen and support the composite reliability value, which means that there is no reliability/undimensionality problem inthe model. so in other words, the construct is reliable.

4.8. Structural Model (Inner Model)

4.8.1. R-Square Test

To assess the model with SmartPLS 3.0 starts by looking at the R-Square (R2) foreach dependent

latent variable. The results of the R-Square (R2) estimation using SmartPLS 3.0 are presented in Table 8.

Table 8.
R square.

	R-square	Adjusted R-square
SIC	0.780	0.777
DC	0.702	0.700
TC	0.736	0.734

From the results of Table 8 obtained above, it shows that the exogenous constructs of *Ambidextrous Leadership*, *Customer Orientation*, *Environmental Innovation* can explain the diversity of endogenous constructs of *Service Innovation Capability* inimproving service capabilities to MSMEs by 0.780 or 78.0% and in improving digital capabilities by 0.702 or 70.2%. Meanwhile, in increasing technological capabilities by 0.736 or 73.6%. Sipayung (2021) states that the *R-square* value of 0.67 is declared strong,

0.33 is declared moderate and 0.19 is declared weak. So it can be concluded that the resultsobtained from the R-square value of SIC (*Service Innovation Capability*) of 0.780 and DC(*Digital Capabilities*) of 0.702 and TC (*Technological Capabilites)* of 0.736 can be declared moderate.

4.9. Predictive Relevence $(Q)^2$

The second step for testing the inner model is done by looking at the Predictive Relevence value (Q 2) To calculate Q 2, the formula can be used:

$$Q^2 = 1 - (1-R^2_1)(1-R^2_2)(1-R)^2$$
$$Q^2 = 1 - (1-0.780)(1-0.702)(1-0.736)$$
$$Q^2 = 0.982$$

The results above show results greater than 0 (>0), so it can be concluded that thisstudy has good observation values generated by the model and also its parameter estimates.

4.10. Goodness of Fit (GoF)

The last inner model testing step is to determine the Goodness of Fit (GoF) value. Unlike CBSEM, the GoF value in PLS-SEM must be calculated manually. There are several research classifications in assessing GoF, small GoF value = 0.1, medium GoF = 0.25 and large GoF = 0.38. The formula for determining the GoF value is:

$$GoF = \sqrt{AVE \; x \; R^2}$$

Then the GoF value can be calculated as :

$$GoF = \sqrt{0{,}665 \; x \; 0{,}780}$$

$GoF = 0.636$

From the above calculations, it can be concluded that the data to be processed meets the assumptions of the structural equation model.

4.11. Hypothesis Testing

Hypothesis testing to see the significance of a variable relationship is through thet-statistic value on the *Path Coefficients*. The results of the *Path Coefficients* test are presented in table 9 below:

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 5: 1923-1939, 2024
DOI: 10.55214/25768484.v8i5.1924

Table 9.
Path coefficients.

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T-statistics	P-values
AL -> DC	0.237	0.241	0.062	3.824	0.000
CO -> DC	0.139	0.132	0.084	1.662	0.048
EI -> DC	0.527	0.531	0.092	5.736	0.000
DC -> SIC	0.269	0.268	0.054	4.940	0.000
DC -> TC	0.758	0.759	0.033	23.072	0.000
TC -> SIC	0.546	0.547	0.053	10.303	0.000

4.12. The Effect of Ambidextrous Leadership on Digital Capabilities

The results of hypothesis 1 (one) show that *ambidextrous leadership* has a positive effect on *digital capabilities*. This is consistent with the research of Mueller, Renzl, & Will(2020) who found that there is a positive relationship between *ambidextrous leadership* and *digital capabilities* in increasing the ability to encourage exploratory and exploitative behaviors for an employee in team members Leaders encourage and stimulate the creativity of the work team while ensuring that the business is run efficiently. This research is also similar to the research of Rosing, Frese, & Bausch (2011). This is in line with the theory of *dynamic capabilities* related to the ability of organizational leaders to create, reshape, assimilate knowledge and skills to remain standing strong in a rapidly changing competitive environment.

This result is in accordance with the research of Darjat Sudrajat (2013) and Chien S.Y and Tsai C. H (2012) which found that *ambidextrous leadership is* considered to increase *digital capabilities*. The results of this study are in accordance with previous research conducted by Kaehler et al. (2014), Biedenbach and Müller (2012) and Wang and Ahmed (2007) which state that there is a significant positive effect of *ambidextrous leadership* on *digital capabilities*. So, it can be concluded that *digital capabilities are* important for umkmto improve *digital capabilities*.

4.13. The Effect of Customer Orientation on Digital Capabilities

The results of hypothesis 2 (two) show that *customer orientation* has a positive effect on *digital capabilities*. The findings of this study reveal how important it is for MSMEs to have customer capabilities. Looking back, several studies show that customer capabilities have a significant effect on the performance of micro, small and medium enterprises (MSMEs) (Avlonitis, G.J. and Giannopoulos, A.A, 2012; Cavazos-Arroyo & Puente-Diaz, 2019; Phiri, 2020; Santos Vijande et al., 2012). A study conducted in Jordan found that customer capabilities have a significant effect on technological capabilities among MSMEs (Alshamayleh et al., 2013).

Some researchers argue that this orientation is limited by the current level ofcustomers only to incremental improvements that cannot create radical innovations (Im & Workman, 2014). However, many researchers see a positive relationship between *customerorientation* and successful innovation in *digital capabilities* (Grinstein, 2008). Therefore, *customer orientation* is considered to play an important role in building *digital capabilities*.

4.14. The Effect of Environmental Innovation on Digital Capabilities

The results of hypothesis 3 (three) show that *environmental innovation* has a positive effect on *digital capabilities*, this shows that this study supports previous researchconducted by Septiana Novita Dewi, Aris Tri Haryanto (2016) and Benner, M.J. andTushman, M.L (2013) which found a relationship between *environmental innovation* and *digital capabilities*. Furthermore, according to legitimacy theory, companies implementenvironmentally friendly innovations to get positive value from society or consumers. Thepublic accepts the company as a company that cares

about the environment while carrying out its business activities for profit (Agustia et al., 2019; Mardiana & Wuryani, 2019; D.Zhang et al., 2019; F. Zhang et al., 2020), but that contradicts the findings of research conducted (Husnaini & Tjahjadi, 2021; Mariyamah & Handayani, 2019; Utomo, 2016).

The results of this study are in accordance with previous research conducted by Wang and Ahmed (2007), Woiceshyn and Daellenbach (2005) and Zahra and George (2002) which state that there is a significant positive effect of *Environmental Innovation* on *Digital Capabilities*. So, it can be concluded that *Environmental Innovation* is important for MSMEs to improve *Digital Capabilities*.

4.15. The Effect of Digital Capabilities on Technological Capabilites

The results of hypothesis 4 (four) show that *digital capabilities* have a positive effect on *technological capabilities*. This study confirms research (Alyahya, 2021; Bader et al., 2022; Nuseir & Refae, 2022; Purwanti et al., 2022), digital capabilities have a significant effect on technological capabilities. One study found that digital capabilities have a significant impact on improving business performance (Gunawan & Sulaeman, 2020). Another study found that the impact of digital marketing capability strategies has consequences on profit margins and the ability of businesses to grow (Phiri, 2020).

Consistent with Yoo, Boland, Lyytinen and Majchrzak (2012), multiple products or subsystems can be designed and controlled using the same digital tools. Researches found that there is a strong influence of *Digital Capabilities* on *Technological Capabilites of* MSMEs (A. Owoseni & Twinomurinzi, 2018), and in other contexts, technological capabilities were also found to have an effect on increasing the ability to innovate an MSME and company (C. H. Chen & Cates, 2018; Masyhuri et al., 2021). It was also found that integrating technology in a business line can hoist innovative capabilities in an effort to improve performance (Raymond et al., 2013). Finally, responding to the dominance of social media in marketing, Borah, Iqbal, & Akhtar (2022) found that the use of social media as another form of mobile application can improve MSME performance through the encouragement of innovative capabilities. *Digital capabilities* in this sense are then considered to influence *technological capabilities*.

4.16. The Effect of Digital Capabilities on Service Innovation Capability

The results of hypothesis 5 (five) show that *digital capabilities have* a positive effect on *service innovation capability*. This strengthens the findings of research conducted by Wardaya et al., (2019) found that digital capabilities have a mediating effect on the relationship between service innovation capabilities and marketing performance, with innovation as a mediator (Wardaya et al., 2019).

Another study examined the impact of digital service innovation on improving MSME businesses and found that digital capabilities mediate the relationship between digital service innovation and firm performance (Jung & Shegai, 2023). The results of this study are in accordance with previous research conducted by Saunila (2014), Wang and Ahmed (2007) and Zhang (2004) which state that there is a significant positive effect of *Digital Capabilities* on *Service Innovation Capability*. So, it can be concluded that *Digital Capabilities* are important for companies to improve *Service Innovation Capability*.

4.17. Effect of Technological Capabilites on Service Innovation Capability

The results of hypothesis 6 (six) show that *technological capabilites* have a positive effect on *service innovation capability*. The results of research conducted by Rajapathirana & Hui (2017) emphasize that technological capabilities can facilitate companies to apply the right process technology to develop new products that meet market needs and eliminate competitive threats. It helps to shape and manage the various capabilities of the company to support integrating capabilities and stimulus for innovation services successfully. Dadfar, Dahlgaard, Brege, & Alamirhoor (2013) have identified that superior innovation capabilities tend to implement and develop new product variations to the existing product portfolio.

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 5: 1923-1939, 2024
DOI: 10.55214/25768484.v8i5.1924

Technological Capabilites is stated as the company's capability to create *Service Innovation Capability* by developing and introducing to the market new products and services or reducing the costs that burden the value creation process (Pekka & Thomas, 2006). This result is in accordance with the research of Darjat Sudrajat (2013) and Chien S.Y and Tsai C. H (2012) which found the results that *Technological Capabilites* have a positive effect on *Service Innovation Capability*.

5. Conclusion

This study provides empirical evidence regarding the influence of *ambidextrous leadership*, *customer orientation*, *environmental innovation* to improve *service innovation capability* through *digital capabilities* and *technological capabilities* as mediating variablesin MSMEs in Berau Regency, East Kalimantan. The number of samples that met the criteria in this study amounted to 353 samples and were processed using SmartPLS data processing.Based on the analysis and discussion that has been carried out, it can be concluded that:

1) *Ambidextrous leadership* has a positive effect on *digital capabilities*. This shows that *ambidextrous* leadership plays an important role in creating and realizing the ability of MSMEs to improve digital capabilities for quality human resources. *Ambidextrous* leadership will always support and encourage employees to become active MSME business actors by increasing digital capabilities.

2) *Customer Orientation* has a positive effect on *Digital Capabilities*. This shows the mostdecisive factor in market-oriented strategies, and is considered a set of beliefs that can give the highest priority to customer interests, so that MSME players can improve marketing capabilities, including innovation performance, client satisfaction, and loyaltythrough improving digital capabilities.

3) *Environmental Innovation* has a positive effect on *Digital Capabilities*, indicating that environmental innovation in preserving the environment is so important today for the sustainability of an MSME business. Environmental issues have become one of the important factors that determine the sustainability of an MSME business. Where leaders do not consider that running a business is not only a matter of profit but must also considerthat directing business to environmental innovation is also very important for business sustainability with the concept of environment, economy, the business can be developedbecause through digital capabilities it can reduce the impact of environmental damage.

4) *Digital Capabilities* has a positive effect on *Service Innovation Capability*, indicating that the higher the *Digital Capabilities* carried out by MSME players in Berau Regency, the higher the service innovation capability. Digital activities carried out by MSME players in Berau Regency are not limited by space and time because they have used digital media. *The* increase in *Service Innovation Capability carried* out will make new variants, modifications in accordance with customer tastes in creating new products, modifying old products, improving each product quality in order to compete and imitate competingproducts with their own characteristics.

5) *Digital Capabilities* has a positive effect on *Technological Capabilites*, indicating that the ability needed to thrive in this era is when it is able to dominate digital forms of information and communication. Capabilities in information technology are useful for reducing costs in business activities, especially for MSMEs to allocate and save their budget for other uses. Apart from being able to be used by MSME players to monitor competitors' activities, digital capabilities can also serve as additional information to MSME players regarding what good things have not been done by MSME players to increase their competitiveness in the market to generate, process, and disseminate information in every form.

6) *Technological Capabilites* has a positive effect on *Service Innovation Capability*, indicating that good technological capabilities can be able to build information that is useful in building the competitive advantage of MSMEs to increase service innovation. technological capabilities have a positive effect on competitive advantage, competitors make MSMEs use digital media to penetrate

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 5: 1923-1939, 2024
DOI: 10.55214/25768484.v8i5.1924

the market to business competitors by *differentiating* business results. Competitive advantage will be obtained if an MSME can use their superior resources, including technological skills to achieve superior customer value and relatively low costs.

References

[1] Armstrong, J.S. and Overton, T.S. (1977), "Estimating nonresponse bias in mail surveys", Journal of Marketing Research, Vol. 14 No. 3, pp. 396-402.
[2] Arregle, J.L., Hitt, M., Sirmon, D.G. and Very, P. (2007), "The development of organizational social capital: attributes of family firms", Journal of Management Studies, Vol. 44 No. 1, pp. 73-95.
[3] Athuahene-Gima, K. (1995), "An exploratory analysis of the impact of market orientation on new product performance: a contingency approach", Journal of Product Innovation Management, Vol. 12 No. 4, pp. 275-293.
[4] Athuahene-Gima, K. (1996), "Market orientation and innovation", Journal of Business Research, Vol. 35 No. 2, pp. 93-103.
[5] Athuahene-Gima, K. (2005), "Resolving the capability-rigidity paradox in new product innovation", Journal of Marketing, Vol. 69 No. 4, pp. 61-83.
[6] Avlonitis, G.J. and Giannopoulos, A.A. (2012), "Balanced market orientation: qualitative findings on a fragile equilibrium", Managing Service Quality, Vol. 22 No. 6, pp. 565-579.
[7] Beck, L., Janssens, W., Debruyne, M. and Lommelen, T. (2011), "A study of the relationships between generation, market orientation, and innovation in family firms", Family Business Review, Vol. 24 No. 3, pp. 252-272.
[8] Benner, M.J. and Tushman, M.L. (2013), "Exploitation, exploration, and process management: the productivity dilemma revisited", Academy of Management Review, Vol. 28 No. 2, pp. 238-256.
[9] Carney, M. (2005), "Corporate governance and competitive advantage in family firms", Entrepreneurship: Theory & Practice, Vol. 29 No. 3, pp. 249-265.
[10] Chang, Y.Y. and Hughes, M. (2012), "Drivers of innovation ambidexterity in small- to mediumsized firms", European Management Journal, Vol. 30 No. 1, pp. 1-17.
[11] Christensen, C. (1997), The Innovator's Dilemma, Harvard Business School Press, Boston, MA. Christensen, C. and Bower, J.L. (1996), "Customer power, strategic investment, and the failure of leading firms", Strategic Management Journal, Vol. 17 No. 3, pp. 197-218.
[12] Christensen, C., Cook, S. and Hall, T. (2005), "Marketing malpractice", Harvard Business Review, Vol. 12, December, pp. 74-83.
[13] Chua, J.H., Chrisman, J.J. and Sharma, P. (1999), "Defining the family business by behavior", Entrepreneurship: Theory and Practice, Vol. 23 No. 1, pp. 19-39.
[14] De Massis, A., Frattini, F., Pizzurno, E. and Cassia, L. (2015), "Product innovation in family versus nonfamily firms: an exploratory analysis", Journal of Small Business Management, Vol. 53 No. 1, pp. 1-36.
[15] Deng, Z., Hofman, P.S. and Newman, A. (2013), "Ownership concentration and product innovation in Chinese private SMEs", Asia-Pacific Journal of Management, Vol. 30 No. 3, pp. 717-734.
[16] Eddleston, K.A., Kellermanns, F.W. and Sarathy, R. (2008), "Resource configuration in family firms: linking resources, strategic planning, and technological opportunities to performance", Journal of Management Studies, Vol. 45 No. 1, pp. 26-50.
[17] Gómez-Mejía, L.R., Nunez-Nickel, M. and Gutierrez, I. (2001), "The role of family ties in agency contracts", Academy of Management Journal, Vol. 44 No. 1, pp. 81-95.
[18] Grinstein, A. (2008),"The effect of market orientation and its components on innovation consequences: a meta-analysis", Journal of the Academy of Marketing Science, Vol. 36 No. 2, pp. 166-173.
[19] Habbershon, T.G. and Williams, M.L. (1999), "A resource-based framework for assessing the strategic advantages of family firms", Family Business Review, Vol. 12 No. 1, pp. 1-25.
[20] Institute for Family Business (2011), The UK Family Business Sector. Working to Grow the UK Economy, Institute for Family Business, London.
[21] Jansen, J.J.P., Van den Bosch, F.A.J. and Volberda, H.W. (2006), "Exploratory innovation, exploitative innovation, and performance: effects of organizational antecedents and environmental moderators", Management Science, Vol. 52 No. 11, pp. 1661-1674.
[22] Jaworski, B.J. and Kohli, A.K. (1993), "Market orientation: antecedents and consequences", Journal of Marketing, Vol. 57, July, pp. 53-70.

[23] Jensen, M.C. and Meckling, W.H. (1976), "Theory of the firm: managerial behavior, agency costs and ownership structure", Journal of Financial Economics, Vol. 3 No. 4, pp. 305-360.
[24] Kohli, A.K. and Jaworski, B.J. (1990), "Market orientation: the construct, research propositions, and managerial implications", Journal of Marketing, Vol. 54 No. 2, pp. 1-18.
[25] Kumar, V., Jones, E., Venkatesan, R. and Leone, R.P. (2011), "Is market orientation a source of sustainable competitive advantage or simply the cost of competing?", Journal of Marketing, Vol. 75 No. 1, pp. 16-30.
[26] La, K.V. and Kandampully, J. (2004), "Market oriented learning and customer value enhancement through service recovery management", Managing Service Quality, Vol. 14 No. 5, pp. 390-401.
[27] Lee, J. (2006), "Family firm performance: further evidence", Family Business Review, Vol. 19 No. 2, pp. 103-114.
Liu, S. (2013), "The role of service innovativeness in the relationship between market orientation and innovative performance: moderator or mediator?", The Service Industries Journal, Vol. 33 No. 1, pp. 51-71.
[28] Lukas, B.A. and Ferrell, O.C. (2000), "The effect of market orientation on product innovation", Journal of Academy of Marketing Science, Vol. 28 No. 2, pp. 239-247.
[29] Miller, D., Le Breton-Miller, I. and Scholnick, B. (2008), "Stewardship vs. Stagnation: an empirical comparison of small family and non-family businesses", Journal of Management Studies, Vol. 45 No. 1, pp. 51-78.
[30] Mueller, J., Renzl, B., & Will, M. G. (2020). Ambidextrous leadership: a metareview applying static and dynamic multi-level perspectives. Review of Managerial Science, 14(1), 37–59. https://doi.org/10.1007/s11846-018-0297-98
[31] Narver, J.C. and Slater, S.F. (1990), "The effect of a market orientation on business profitability", Journal of Marketing, Vol. 54, pp. 20-35.
[32] Nasution, H.N. and Mavondo, F.T. (2008), "Organizational capabilities: antecedents and implications for customer value", European Journal of Marketing, Vol. 42 Nos 3/4, pp. 477-501.
[33] Nasution, H.N., Mavondo, F.T., Matanda, M.J. and Ndubisi, N.O. (2011), "Entrepreneurship: its relationship with market orientation and learning orientation and as antecedents to innovation and customer value", Industrial Marketing Management, Vol. 40 No. 3, pp. 336-345.
[34] Rachael Adiza, G., & Margaret, D. (2020). Leadership Ambidexterity and Employee Normative Commitment of Hotels in Bayelsa State, Nigeria. In International Journal of Social Sciences and Management Research E-ISSN (Vol. 6, Issue 2). www.iiardpub.org
[35] Juan CH, Fang SY, Chou CH, Tsai TY, Lin YT. Clinical characteristics of patients with pneumonia caused by Klebsiella pneumoniae in Taiwan and prevalence of antimicrobial-resistant and hypervirulent strains: a retrospective study. Antimicrob Resist Infect Control. 2020;9(1):1–8
[36] Nieto, M.J., Santamaria, L. and Fernandez, Z. (2015), "Understanding the innovation behavior of family firms", Journal of Small Business Management, Vol. 53 No. 2, pp. 382-399.
[37] Sandvik, I.L. and Sandvik, K. (2003), "The impact of market orientation on product innovativeness and business performance", International Journal of Research in Marketing, Vol. 20 No. 4, pp. 355-376.
[38] Schulze, W.S. and Gedajlovic, E.R. (2010), "Whither family business?", Journal of Management Studies, Vol. 47 No. 2, pp. 191-204.
[39] Short, J.C., Payne, G.T., Brigham, K.H., Lumpkin, G. and Broberg, J.C. (2009), "Family firms and entrepreneurial orientation in publicly traded firms: a comparative analysis of the S&P 500", Family Business Review, Vol. 22 No. 1, pp. 9-24.
[40] Slater, S.F. and Narver, J.C. (1994), "Does competitive environment moderate the market orientation-performance relationship", Journal of Marketing, Vol. 58 No. 1, pp. 46-55.
[41] Sugiyono. (2019). Metodelogi Penelitian Kuantitatif dan Kualitatif Dan R&D. Bandung: ALFABETA.
[42] Smith, W.K. and Tushman, M.L. (2005), "Managing strategic contradictions: a top management model for managing innovation streams", Organization Science, Vol. 16 No. 5, pp. 522-536.
[43] Tokarczyk, J., Hansen, E., Green, M. and Down, J. (2007), "A resource-based view and market orientation theory examination of the role of 'familiness' in family business success", Family Business Review, Vol. 20 No. 1, pp. 17-31.
[44] Wernerfelt, B. (1984), "A resource-based view of the firm", Strategic Management Journal, Vol. 5 No. 2, pp. 171-180.
[45] Wu, Z., Chua, J.H. and Chrisman, J.J. (2007), "Effects of family ownership and management on small business equity financing", Journal of Business Venturing, Vol. 22 No. 6, pp. 875-895.
[46] Young, M.N., Peng, M.W., Ahlstrom, D., Bruton, G. and Jiang, Y. (2008), "Corporate governance in emerging economies: a review of the principal-principal perspective", Journal of Management Studies, Vol. 45 No. 1, pp. 198-220.
[47] Zimmerer dan Scarborough. (2019), "Family business and market orientation: construct validation and comparative analysis", Family Business Review, Vol. 24 No. 3, pp. 233-251.
[48] Zahra, S.A., Hayton, J.C., Neubaum, D.O., Dibrell, C. and Craig, J. (2008), "Culture of family commitment and strategic flexibility: the moderating effect of stewardship", Entrepreneurship: Theory & Practice, Vol. 32 No. 6, pp. 1035-1054.

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 5: 1923-1939, 2024
DOI: 10.55214/25768484.v8i5.1924

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