

Enhance Eco-Handloom Product Performance: Entrepreneurial Orientation and Pro Competition Absorptive Capacity

Liharman Saragih^{1*}, Romindo M Pasaribu²

¹²Universitas HKBP Nommensen, North Sumatra, Indonesia

Correspondence: saragihliharman@gmail.com¹

Abstract

In the Lake Toba region, a lot of weavers attempt to make eco-handloom items like ulos. However, in order to compete, they must improve their ability to absorb in order to make eco-handloom. In this regard, we aimed to assess the Product Performance using partial least squares structural equation modeling (PLS-SEM) in 242 weavers on the coast of Lake Toba in Indonesia. The impact of Entrepreneurial Orientation on Product Performance, with Pro Competition Absorptive Capacity as a moderator investigated in this study. According to the study's findings, eco-handloom weavers must have an entrepreneurial mindset in order to improve the performance of their products. The results shows that Entrepreneur Orientation effects on Product Performance is positive and significant. The moderating effects of Pro Competition Absorptive Capacity on the relationship between Entrepreneurial Orientation and Product Performance is positive and significant. Businesses that adopt an entrepreneurial attitude are more equipped to innovate, adapt, and prosper in cutthroat marketplaces. According to the facts, integrating various viewpoints improves the weaver capacities and promotes long-term success.

KEYWORDS

entrepreneurial orientation; pro competition absorptive capacity; product performance; weavers and eco-handloom.

Introduction

An investigation into Indonesian weaving carried out by (Ingram, 2019) that there are as many as 1180 weavers, 90% of whom are women, in 40 weaving groups in 60 villages on 11 islands in Indonesia. The traditional weaving tradition is increasingly declining (Niessen, 2009), and some weavers prefer the handloom over the traditional loom called "gedokan". The use of natural dyes and handwoven techniques makes ulos a potential sustainable fashion product (Khandual & Pradhan, 2018; Mukendi et al., 2020). The use of natural dyes and handwoven techniques makes ulos a potential sustainable fashion product because traditional weaving embodies local identity, cultural values, and sustainable manufacturing processes; thus, traditional weaving is in a strong position to respond to the current market trend of sustainable fashion (Wanniarachchi et al., 2020). The signal of the decline in the number of weavers is also marked by the decreasing competitive advantage of the artisans. Ulos artisans have a sustained competitive advantage in design and motif development, whereas traditional artisans only have an unused competitive advantage.

The sustainability of the existence of an MSME organisation can be seen from its performance (Kotane & Kuzmina-Merlino, 2017). Performance is a series of organisational activities over time that demonstrate the fundamentals for determining the degree to which the company has successfully attained its defined objectives (Singh et al., 2016) or how well the device performs what it is designed to do (Ullman, 2010). When MSMEs encounter insufficient resources and infrastructure, inadequate financial literacy, and untrained personnel (Hassan et al., 2018) they cannot compete in the long term and is not profitable (Taheri et al., 2019), Entrepreneurial orientation is an approach

that can facilitate survival and maintain competitiveness (Buccieri et al., 2020). Entrepreneurial orientation is a strategic framework that underpins organisational choices and actions (Rauch et al., 2009). Some research findings indicate that the effective utilisation of entrepreneurial orientation skills can address external threats, drive profit maximisation, and enhance organisational performance (Jiang et al., 2018), helping organisations achieve their goals quickly (Anderson et al., 2015), ensuring the survival and enabling the response to various external threats to the organisation (Adesanya Oluwatoyin et al., 2018), strengthen the internal processes of organisations, particularly for small and medium firms, to provide innovative products and secure a competitive advantage (Isichei et al., 2020a). Several factors for a product's success in entering the market include the availability of resources (Evanschitzky et al., 2012), and the ability to develop resources (Haverila, 2012). The capability to create new products is closely related to knowledge management orientation and good relationships with external parties (Woschke & Haase, 2016). If the sources of knowledge are managed well (Blumentritt & Johnston, 1999), it will produce Knowledge Management Capacity (Chen & Huang, 2009). A good capacity will also result in the ability to absorb knowledge, known as Knowledge Absorptive Capacity (Tsai, 2001). Study (Ahlin et al., 2014) found evidence of a beneficial moderating influence of absorptive capacity—organisations with greater absorptive capacity exhibit enhanced efficiency in managing external knowledge flows, hence fostering innovative results. Study (Qi et al., 2021) using Absorptive Capacity moderation and has implications for corporate green innovation practices. In the contemporary fashion landscape, designers globally have a significant impact with eco-handloom woven, creating environmentally sustainable garments (Saepudin et al., 2023). Eco-handloom woven aims to shape the future textile and apparel industries. Eco-handloom weaving will shape textiles. It promotes designs that affect manufacturing, use, and disposal as well as cut, form, and drape. Eco-fashion reuses clothing with recovered materials to reduce waste. Ulos must be followed globally for eco-handloom products (Bureekhampun & Maneepun, 2021). It is relevant to understand how the absorptive capacity of MSMEs, especially in developing an entrepreneurial orientation, ultimately enables MSMEs actors to achieve eco-handloom woven product performance that can enhance competitiveness.

The Batak tribe, who generally live along the shores of Lake Toba in Indonesia, have known handwoven cloth since the 14th century, coinciding with the arrival of handlooms from India, which they call "ulos." Until now, there are still Ulos using natural materials such as thread and natural dyes and woven with traditional weaving, called eco-handloom woven. It produced according to Batak community (Toba, Simalungun, Karo, Mandailing, or Pakpak). Customer will use ulos without violating tribal customs, for example, at birth ceremonies, wedding parties, and funerals. It is also different design ulos between men and women.

(Ulman, 2010) defines performance is an assessment of the functionality and behavior of a device in executing its intended purpose. The performance of a product can be assessed by how well it implements its intended functions, such as speed, efficiency, lifespan, accuracy, and noise (Ulrich & Eppinger, 2011) or through a perception assessment by consumers (Avlonitis & Salavou, 2007; Salavou & Avlonitis, 2008), comparisons with key competitors in terms of sales volume, revenue growth, gross profit margin, net profit, market share, changes in market share, and entry into new markets over three years (Gatignon & Xuereb, 1997), work capability, compliance with specifications, aesthetics, and perceived quality (Jaya et al., 2020), as well as how the New Product Development process unfolds (Osteras et al., 2006).

(Hubka & Eder, 2012) said Performance variables pertain to three categories: design properties (e.g., function, shape, tolerance, surface, material, and dimensions), internal properties (e.g., strength, stiffness, hardness, elasticity, corrosion resistance, etc.), and exterior attributes. The measurement of product performance can also be viewed from the NPD process (Yi et al., 2021a), which includes desired performance, predicted performance, and actual performance (Yi et al., 2021b). The performance measures of ethnic products consist of work capability, compliance with specifications, aesthetics, and perceived quality (Jaya et al., 2020).

It is essential to understand at least the organisation's ability to develop a new product and how the managers, in this case, the artisans, possess market orientation, specifically entrepreneurial orientation. On the other hand, it will also be evident how the artisans' entrepreneurial orientation and their absorptive capacity in adopting various processes contribute to producing high-performing products.

Numerous academics have employed the concept of absorptive capacity in analyses at various levels: individual and organisational (Cohen & Levinthal, 1990; Lane & Lubatkin, 1998; Rua et al., 2017; Zahra & George, 2002). Nevertheless, the majority of research on absorptive ability concentrates on large organisations with sophisticated frameworks and a robust research and development focus. Minimal research addresses absorptive capacity theory of small and medium-sized enterprises (Gray, 2006) and external knowledge-search breadth, but not depth, is related to the development of process innovation external knowledge-search breadth, but not depth, is related to the development of process innovation (Aliasghar et al., 2023).

It examines the capacity of MSMEs to assimilate and administer knowledge as a vital determinant for the effective implementation of innovation and entrepreneurial development. Large enterprises and MSMEs exhibit a substantial disparity in their capacity to assimilate new knowledge, attributable to their distinct characteristics. The perspective (Sexton & Barrett, 2003) on the challenges and characteristics of MSMEs is that they have limited staff capacity and capabilities, limited time and resources for external interactions, and are often dominated by a single owner or small owners.

Absorptive capacity within an organisation can occur at the individual, organisational, and national levels, resulting in heterogeneous characteristics. Understanding that MSMEs have limitations, as (Sexton & Barrett, 2003) stated, this research proposes the concept of absorptive capacity suitable for MSMEs. Absorptive capacity refers to a company's ability to acquire, integrate, and assimilate external knowledge within the organisational setting (Cohen & Levinthal, 1990; Roberts et al., 2012; Scuotto et al., 2017; Zahra & George, 2002).

One key factor is the company's ability to leverage knowledge and learning (García-García et al., 2017). To that end, MSMEs must develop their absorptive capacity (Ali et al., 2020) by effectively acquiring, assimilating, transforming, and utilising existing knowledge. Absorptive capacity in MSMEs is a critical factor in their ability to innovate, adapt to market changes, and maintain growth, particularly in the context of MSMEs (Rodríguez-Serrano & Martín-Armario, 2019; Tzokas et al., 2015).

Entrepreneurial orientation has become an exciting topic in academic research (Chavez et al., 2020). Entrepreneurial orientation is a strategic framework that underpins organisational choices and actions (Rauch et al., 2009). Two leading streams of thought in EO include those around Miller (1983)/Covin and Slevin (1989, hereafter M/CS) and Lumpkin and Dess (1996, hereafter LD) in (Covin & Slevin, 1989). The conceptual differences highlighted between M/CS and LD typically focus on how each characterises organisational

entrepreneurship based on a set of dimensions such as innovation, proactivity, and risk-taking as offered by M/CS, along with the addition of competitive aggressiveness and autonomy by LD (Wales et al., 2020). Autonomy denotes the readiness to undertake independent actions and accept accountability. Proactivity embodies a forward-thinking outlook and the innovative endeavors of entrepreneurs. Innovation embodies an entrepreneur's disposition to pursue novel prospects. Competition stimulates personal ambition and the aspiration to succeed and triumph. Risk-taking denotes the act of capitalising on opportunities and engaging in investments with unpredictable results (Lumpkin & Pidduck, 2021)

In turbulent markets, barriers in the MSMEs sector when competing for sustained efficiency and profitability (Taheri et al., 2019) include, for example, insufficient resources and infrastructure, inadequate financial awareness, and untrained human capital. (Taheri et al., 2019) In this context, entrepreneurial orientation is a technique that may assist MSMEs in surviving and maintaining competitiveness (Buccieri et al., 2020), offering innovative products/services and gaining a competitive advantage (Isichei et al., 2020b), helping organisations achieve their goals quickly (Anderson et al., 2015), providing a basis for constructing, integrating, and reconfiguring internal and external environments to enable SMEs to withstand difficult circumstances (Adesanya Oluwatoyin et al., 2018; Darwis, 2017), and even encouraging profit maximisation and enhancing organisational performance. (Aftab et al., 2022; Jiang et al., 2018)

Methods

This research uses a purposive sampling technique, using convenience-based within selected weaving centres of handloom weavers centers in 4 district: Samosir, Toba, Tapanuli Utara, Dairi. Then, from each region, samples were randomly taken with consideration of the willingness of the weavers to be respondents.

The data collection procedure was carried out through survey techniques among weavers. This survey will be conducted in person, depending on availability and respondent preferences. We used a 5-point Likert-type scale anchored at 1 (Strongly disagree) and 5 (Strongly Agree) to measure Entrepreneur Orientation, Pro competition Absorptive Capacity, Product Performance.

From the data, there are 1.192 weavers spread across the Lake Toba region. Using the Slovin Margin of Error (e) approach of 5%, a sample size of 316 is obtained. Therefore, a sample was taken considering the representation of each district, resulting in 252 questionnaires returned. As many as 242 were eligible for testing, the rest were incomplete.

Product Performance is an independent variable measured using 5 indicators: the resulting eco-handloom woven products have alignment in function and benefits of the eco-handloom woven products themselves, with motifs, designs, and patterns that meet the requirements set for their creation. Eco-handloom woven products have adopted cultural and customary norms. The materials used in eco-handloom woven products meet the specified standards. Eco-handloom woven products have been modified (tailored to market needs) without diminishing the meaning, significance, or benefits of eco-handloom woven products themselves.

The Entrepreneurial Orientation is measured using three dimensions: Risk-taking, Innovativeness, and Proactiveness. Risk-taking measured with 2 indicators: introduce improvement and creative. Innovativeness measured 3 Indicators: taking risks, consider the risks, seek opportunities. Proactiveness measured with 2 indicators: striving to develop new products, a new motif before others.

Pro Competition Absorptive Capacity measured using 4 indicators: absorb knowledge sourced from other artisans, absorb knowledge sourced from family, utilize all sources of knowledge, conducted an experiment with less in-house research.

We utilized partial least squares structural equation modeling (PLS-SEM) to analysed the data and presented the moderating Pro Competition Absorptive Capacity in effect Entrepreneurial Orientation on Eco-Handloom Product Performance. Partial Least Square (PLS)-SEM was chosen because it has the advantage in analyzing more complex models, accommodating non-normally distributed data, and able to test the role of mediation variables simultaneously. (Hair Jr et al, 2021) argues that techniques in PLS and SEM are considered more suitable for contemporary research. The analysis stages include: evaluation of the measurement model (outer model), to assess convergent and discriminant validity and also construct reliability. because there are dimensions and indicators, first order and second order tests are conducted. The next analysis is the evaluation of the structural model (inner model). Evaluation of the Structural Model in PLS-SEM is an important step in research to understand the relationship between the main concepts under study. The purpose of evaluating the structural model is to determine whether the proposed relationships among variables exist and how strong they are. The first stage of the analysis involved testing for collinearity among variables. Second, conducting hypothesis testing by looking at direct effects, and moderation effects. Then, the third stage is carried out by testing the kindness and compatibility of the model (R-Square, Q-Square and the Goodness of Fit Index test). Predictive Power Model: a) Q-squared prediction, b) Motion Vector (MV) Prediction Summary, and c) Cross-Validated Predictive Ability Test (CPAT).

Result and Discussion

With the development of eco-handloom weaving, many challenges are faced, particularly on the product side. One of them is the functional ties of eco-handloom woven as a regular activity, so the design of eco-handloom woven must adhere to general rules, using heavy and rigid materials, high prices, and imported threads (Ocktaviany, 2019)

A further problem is that the weavers are predominantly women residing in rural areas (Nugroho et al., 2020). The presence of women weavers has not been adequately empowered as a cultural treasure of significant economic and artistic worth (Nugroho et al., 2020). The deferral of weaving is apparent at traditional occasions, harvest festivals, or when individuals aspire to enhance their living conditions through education, migration, or employment outside the community only residents of the village desire to remain and acquire weaving skills. (Ingram, 2019) study on weaving in Indonesia revealed that there are 1,180 Indigenous weavers, 90% of whom are women, organised into 40 weaving groups spanning 60 villages on 11 islands, facing a risk of decline

The religious aspect of the eco-handloom woven weaving tradition will progressively adjust to market requirements. The practice of traditional weaving is diminishing, with particular academics asserting that it has become extinct (Niessen, 2009). Additional research about regional languages reveals that 49% of the 707 languages in Indonesia are endangered (Simons & Fennig, 2017) and that 90% of the languages in Indonesia with less than 100,000 speakers face the threat of extinction (Glaser, 2014).

If eco-handloom woven is exclusively utilised for traditional attire, its production may persist but is likely to experience a further decrease. Using eco-handloom woven as a material for garments, purses, footwear, or other accessories commodifies it. This is inevitable, but it can be guided to remain closely -

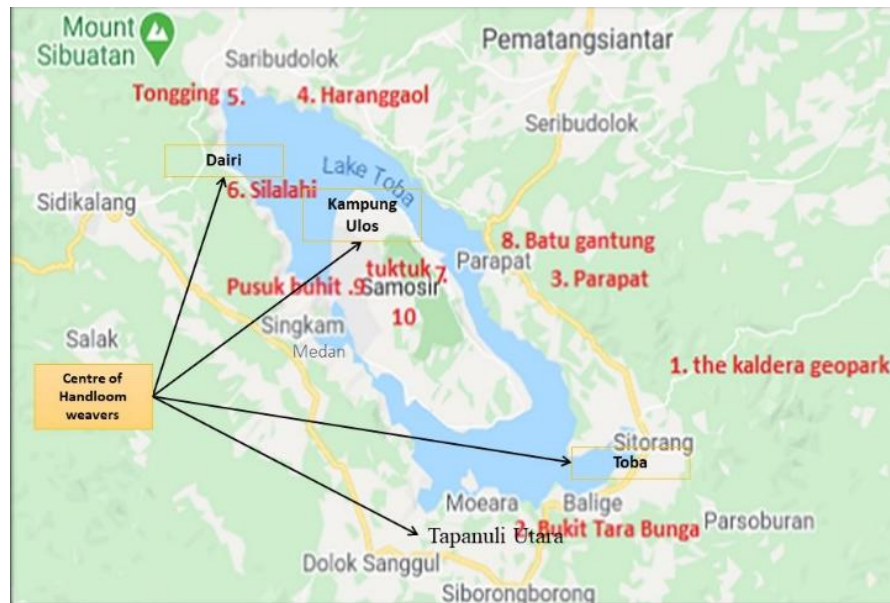


Figure 1. Centre of Handloom Weavers in Toba Lake

Table 1. Respondent Description

		Percent
Gender	Female	94.60%
	Male	5.40%
Age	Above 50 years	40.1%
	41- 50 years	17.8%
	31-40 years	21.1 %
	24- 30 years	12.0 %
	17 - 23 years	9.1 %
Regency	Dairi	32.6 %
	Samosir	24.0 %
	Tapanuli Utara	16.9 %
	Toba	26.4 %
Education	Bachelor	0.8 %
	Elementary School	9.1 %
	Junior Senior High School	6.2 %
	Senior High School	83.9 %
Number of years of business operation	< 1 years	4.5 %
	1 - 5 years	21.5 %
	6 - 10 years	23.1 %
	> 10 years	50.8 %
Omzet per Month (ldr)	< 10 Millions	76.4 %
	10 - 50 Millions	23.6 %

Source: Data Process, 2024

aligned with the traditional values of form, function, and significance inherent in traditional eco handloom woven items. Without the revitalisation of commodification, the Batak community will "lose their trace" and fail to comprehend the shapes, functions, and significances of their historical traditions, rendering eco-handloom woven only a remnant of memory (Zulkifli & Ridwan, 2019). Consequently, designers must thoroughly comprehend the function of eco-handloom woven to ensure that the produced items adhere to standard criteria upon their design. This way, fashion items can be developed with innovative designs and motifs, accompanied by various colour schemes and thread quality (Priherdityo, 2016). The number of traditional artisans tends to decrease, and they even have the potential to become rare (Barnes, 2011). Some weavers prefer machine weaving or non-machine looms. This is marked by the rarity of several old weaving motifs, as the weavers no longer reproduce them. Each Batak woven motif has a unique and irreplaceable cultural value.

Our potential respondent was identified as a weaving artisan on the coast of the Toba Lake in Indonesia who had weaving experience. This survey was carried out in the artisans' centre, located around the shores of Lake Toba, located in Dairi, Samosir, Sigaoi Toba, Tapanuli Utara Regency Figure 1. With sampling errors not exceeding 5%, we calculated that the minimum sample size required for research was 242 to guarantee the reliability of the quantitative analysis. The survey was conducted in direct contact with the artisans. Survey participants were explained about the purpose of the study and confirmed to participate fully voluntarily following the information consent form before conducting the survey. The survey lasted for two months, from November-December 2023. Our survey sample consisted of individual artisans with an income group of less than 10 million per month. This indicates that women are more commonly associated with eco-handloom weaving, whereas men tend to go to the fields. In addition, women manage the household while weaving eco-handlooms at home (Nugroho et al., 2020).

On the other hand, the existence of female weavers has not been optimally empowered as a cultural heritage of high economic and artistic value. This is evident from the postponement of weaving if there are traditional activities, harvest festivals, or even the desire to improve living standards through education, migration, or seeking work outside the village. Only those who live in the town want to stay and learn weaving. A study on weaving in Indonesia conducted by (Ingram, 2019) found that there are 1,180 Indigenous weavers, 90% of whom are women, in 40 weaving groups across 60 villages on 11 islands in Indonesia, and they are at risk of decline. Finding artisans in fertile agricultural areas such as Simalungun Regency and Karo Regency is tricky. So, weavers are generally located around the shores of Lake Toba, which usually does not have fertile agricultural areas. The demographic characteristics of respondents are presented in Table 1.

Artisans are present at all age levels; data shows that 40.1 % are over 50. This indicates that eco-handloom weaving is a choice of work at home when one can no longer work outside, such as in the fields or other activities. Generally, the sales turnover of eco-handloom woven artisans is below IDR 10,000,000, or about 185 artisans, 76.4 %. Suppose the eco-handloom woven is sold at a local trader's price of around IDR 1,000,000 per piece of eco-handloom woven per week. Several eco-handloom woven centres, such as those in North Tapanuli Regency, are artisans who produce eco-handloom woven made

from thread and natural dyes. From the beginning of the threading process to becoming eco-handloom woven, it takes about a month of work. The selling price of eco-handloom woven can reach around IDR 5,000,000 at the artisans's place.

The education of artisans is high school or equivalent a total of 83.9 % or 203 respondents. The second rank is elementary school graduates at 9.2%, and the third rank is junior high school graduates at 6.2 %. There are two respondents with bachelor's degrees who, in addition to being artisans, also work as thread suppliers, distributing eco-handloom woven to traders or directly to consumers

The Entrepreneurial Orientation of Handloom Weavers in the Lake Toba Area of Indonesia

The Entrepreneurial is measured using three dimensions: Risk-taking, Innovativeness, and Proactiveness. Each dimension is assessed with several indicators categorised on a response scale ranging from 1 to 5. The tabulation of respondents' answers is presented in Appendix A, which was conducted with 242 respondents at the eco-handloom woven crafts centre in Lake Toba.

The overall average score for the Entrepreneurship Orientation variable statement items is 4.57, all VIF values below 3 (Table 5) are free from Common Method Bias (Kock, 2017). Based on these results, it can be concluded that the entrepreneurial orientation of eco-handloom woven fabric artisans is no multicollinearity issue. The overall average score ranges from 4.53 to 4.63. The highest average score of 4.63 is obtained from the first statement of the risk-taking dimension, which is R4. Meanwhile, the lowest overall average score of 4.53 is obtained from the first and second statements of the Innovation dimension. This shows that artisans possess an entrepreneurial spirit, capable of taking risks that are seen as positive in engaging in eco-handloom weaving and striving to start creating product motifs.

In the dimension of innovation, artisans were given two questions. The results of the first question indicate that generally, artisans agree to actively introduce improvements and innovations, especially by introducing new product motifs, patterns, and designs; no artisan disagrees with the idea of not innovating. In response to the second question, eco-handloom woven artisans will creatively use methods or techniques, especially in weaving eco-handloom, by creating models and patterns that meet market needs. Creating a new motif design, a new colour combination

Three questions were posed to the artisans to address the dimension of risk-taking. The research results show that artisans generally agree that this business activity is risky. Thus, the artisans consider that risk is a positive thing that, if it occurs, will cause the product to be unsold, the Risk of product failure, and the Risk of losing in competition. To address this issue, artisans will always calculate the risks of seeking opportunities by emphasising experimentation with patterns, such as creating new colour combinations or motifs. Two craftsmen did not comment on the second question. This shows that artisans believe traditional eco-handloom woven will continue to sell well.

In the Proactive dimension, the craftsman will answer two questions. The research results show that, in general, artisans agree to make efforts or take initiatives to develop new products. Artisans will also start by creating new patterns and colour combinations. The development of new products will make eco-handloom woven increasingly attractive with designs, patterns, or colour combinations that will continuously adapt to market needs. There is only one neutral.

Overall, the artisans have responded very well to innovation and risk-taking, which is rated very good, and they are striving to be proactive, which is also rated very good. In

the dimension of innovation, generally, the artisans did not respond with a disagreement or strong disagreement, which means that artisans need to be active in creating patterns and creative in weaving eco-handloom, such as making new designs. The reason is that the woven products will not sell if it is not done.

In the dimension of risk-taking, it shows that no artisans answered very disagree or disagree. Everything in this activity is risky, including the risk of not being successful, the Risk of having the wrong motives, and the Risk of violating customs and culture. In the proactive dimension, none of the artisans responded strongly or disagreed. From here, it can be seen that the design of eco-handloom woven, which has evolved into fashion, has resulted in a shift in function, not only in customs. This requires the creativity of the craftsman.

In this study, it is found that Entrepreneurial Orientation (EO) measured unidimensionally (Miller, 2011); (Covin & Slevin, 1989) has a significant contribution to SMEs. In the unidimensional approach, the three dimensions of EO are considered to operate together to influence the company's performance. A high unidimensional EO has a positive and significant impact on the performance improvement of ulos weavers 's products. Proactive and innovative weavers tend to create new products. Unidimensional EO encourages weavers to be more daring in taking risks, which ultimately triggers the commodification of products, whether in terms of design, color, or motif. For weavers, EO uses a unidimensional approach due to resource limitations, allowing all three dimensions to be applied simultaneously by the weavers.

The Performance of Handloom Weavers in the Lake Toba Area of Indonesia

The Product Performance Variable consists of five questions. The resulting eco-handloom woven products have alignment in function and benefits of the eco-handloom woven products themselves, with motifs, designs, and patterns that meet the requirements set for their creation. Eco-handloom woven products have adopted cultural and customary norms. The quality of the materials used in eco-handloom woven products meets the specified standards. Eco-handloom woven products have been modified (tailored to market needs) without diminishing the meaning, significance, or benefits of eco-handloom woven itself. This question was also given to all respondents; the results can be seen in Appendix A.

The overall average score for the product performance variable statement items is 4.65. The overall average score ranges from 4.60 to 4.70. The fifth statement, the highest average score, was obtained R13. Meanwhile, the lowest overall average score of 4.63 was obtained from the second statement R14"

In response to the question, "The eco-handloom woven products produced have suitability in function and benefits of the eco-handloom woven products themselves," respondents generally answered strongly agree (60.74%). In comparison, one respondent (0.41%) answered neutral. In the second question, generally, respondents answered strongly agree (70.25%), and one respondent (0.41%) answered disagree. For the third question, "eco-handloom woven products have adopted customary norms," respondents generally answered strongly agree (64.05%), and two respondents (0.83%) answered disagree. Regarding the question "the quality of the eco-handloom woven product materials meets the specified specifications," respondents generally answered strongly agree (65.70%). Meanwhile, for the fifth question stating that "eco-handloom woven products have been modified (adjusted to market needs) without diminishing the meaning, significance, and benefits of eco-handloom woven itself," respondents answered strongly agree at a rate of 68.18%.

The Product Performance variable is already outstanding if we look at all the statements. The products made are to the

specifications and meet customary needs, such as elements of colour, texture, and shape. Eco-handloom woven has also adapted to market needs. Thus, it will be a consideration for artisans to maintain the commodification of the product without diminishing its meaning and significance, making eco-handloom woven both a cultural necessity and a fashion requirement.

Overall, no craftsmen responded with strong disagreement or disagreement. This is evident from eco-handloom weaving, which requires that eco-handloom weaving have a correspondence in function and the benefits of the eco-handloom woven product itself. Motif, design, and patterns are what is needed for the creation of eco-handloom woven products. Eco-handloom woven products have adopted cultural/custom norms. The quality of the materials used in eco-handloom woven products meets the specified standards. The eco-handloom woven product has been modified (tailored to market needs) without diminishing the meaning, significance, or benefits of the eco-handloom woven itself.

Looking into the connection between how well a product works and how good weavers can make products better. When an situation changes, it helps they learn how to deal with new situations. The success of the weavers and the quality of the products rest on this flexibility. Research shows that a strong learning culture in a company improves the performance of its products. (Dirani, 2009) says that an culture makes people happier with their jobs which leads to better product performance. This fits with Fanbasten's findings, which say that has a direct effect on product performance, including product innovation, through the role it plays as a mediator on innovation capabilities (Fanbasten, 2014).

Uğurlu & Kurt (2016) discovered MSME that learn quickly are better able to improve their product innovation, especially in settings that are always changing. Lin & Lee (2017) say that a better responses to changes in the environment, which are necessary for creating new products and making old ones better. A good workplace can make people happier at work, more motivated to use what they've learned, and more successful products (Egan et al., 2004). Salomo et al (2008) found that companies that promote new ideas have better products. This is especially important in fields where quick changes and new ideas are needed to stay in business. Being able to learn from both successes and failures helps the weavers keep improving their product and meeting customer expectations.

Absorptive Capacity of Handloom Weavers in the Lake Toba Area of Indonesia

The variable consists of four items of questions. All respondents were also given these questions; the results can be seen in Appendix A. The overall average score for the variable items is 4.72. The overall average score ranges from 4.67 to 4.74. The highest average score was obtained from the fourth statement, which is R11. Meanwhile, the lowest overall average was obtained from the first statement R8.

In the item question R9 the majority of respondents answered strongly agree (66.90%) and agree (33.10%). In the second item question R9, the research results showed that respondents answered strongly agree at 73.55% and agree at 26.45%. In the item question R10, respondents answered strongly agree at 72.73% and agree at 27.27%. In the question R11 the research results showed that 73.97% strongly agreed and 31.5% agreed. No respondents answered disagree, strongly disagree, or very strongly disagree with any of the questions.

The above statement also indicates that all statement items show that the variable is already outstanding. The artisans can now conduct simple research, such as testing

colour and model designs. This is done by learning from other artisans, close families, and outside sources such as government programs or others. An exciting development in several artisan centres is that they can now produce eco-handloom woven products using natural dyes, and the local government facilitates this program.

Overall, the respondents did not answer "Strongly Disagree," "Disagree," and "Somewhat Disagree." This indicates that the artisans will strive to absorb all information to produce an eco-handloom woven product with cultural and artistic value. Observations at the eco-handloom woven centre in Toba district indicate that artisans learn through generations. To remain competitive, it is necessary to have the ability to absorb all knowledge from both within and outside the craftsmen and to be able to conduct simple research, which they refer to as trial and error, resulting in modifications that are suitable for sale.

Research indicates that organisations with high absorptive capacity are better positioned to leverage external knowledge for their learning and innovation processes. (Silva et al., 2024) absorptive capacity enables organisations to identify, assimilate, and utilise new knowledge effectively, leading to improved performance and innovation outcomes. The ability to absorb and apply external knowledge is crucial for organisations seeking to remain competitive in rapidly changing markets. Moreover, the relationship between absorptive capacity and learning is essential, and social integration mechanisms are needed to enhance absorptive capacity (Briel et al., 2018). Their research indicates that efficient internal and external teamwork and communication are essential for knowledge absorption facilitating learning processes. The relationship between leadership styles and absorptive capacity is significant. (Zadeh et al., 2020) explore how transformational and transactional leadership styles positively influence the learning processes associated with absorptive capacity. This indicates that leadership is critical in fostering an environment where learning and knowledge absorption can thrive, enhancing the organisation's overall capacity to innovate and adapt. Moreover, (Distel, 2019) examination of the micro-foundations of absorptive capacity indicates that individual-level characteristics considerably affect organisation and knowledge integration processes.

Reliability and Validity

Table 2 presents the correlations among the variables included in the empirical study and the descriptive statistics. In accordance with prior studies, we evaluated five criteria to assess the constructions of the study model: content validity, construct dimensionality, composite reliability, average variance extracted (AVE), and discriminant validity. The study's measurement items were derived from validated scales found in the literature.

Appendix A shows that all items have outer loadings above 0.70 for the first order in Entrepreneur Orientation with three dimensions. And then, it continues to the second order—all the outer loading above 0.7 Appendix B. We tested outer loading relevance (Hair et al., 2021). Table 2 shows that the minimum value of Cronbach's alphas rho_a is 0.788 and rho_c is 0.876, while the minimum CR indicates that the reflective constructs used in this research all have acceptable construct reliability.

In addition, AVE values (min AVE) = 0.624) for all constructs are more significant than the threshold of 0.5 (Fornell & Larcker, 1981), indicating convergent validity.

Discriminant validity was further checked using the Fornell-Larcker criterion, cross-loading, and the heterotrait-monotrait (HTMT). The results in Table 2 show that the square root values of AVEs are more significant than the corresponding correlations between the constructs, fulfilling Fornell-Larcker's criterion (Table 3). As indicated in Table 4, the maximum HTMT value is EO (0.861) and above the threshold of 0.9

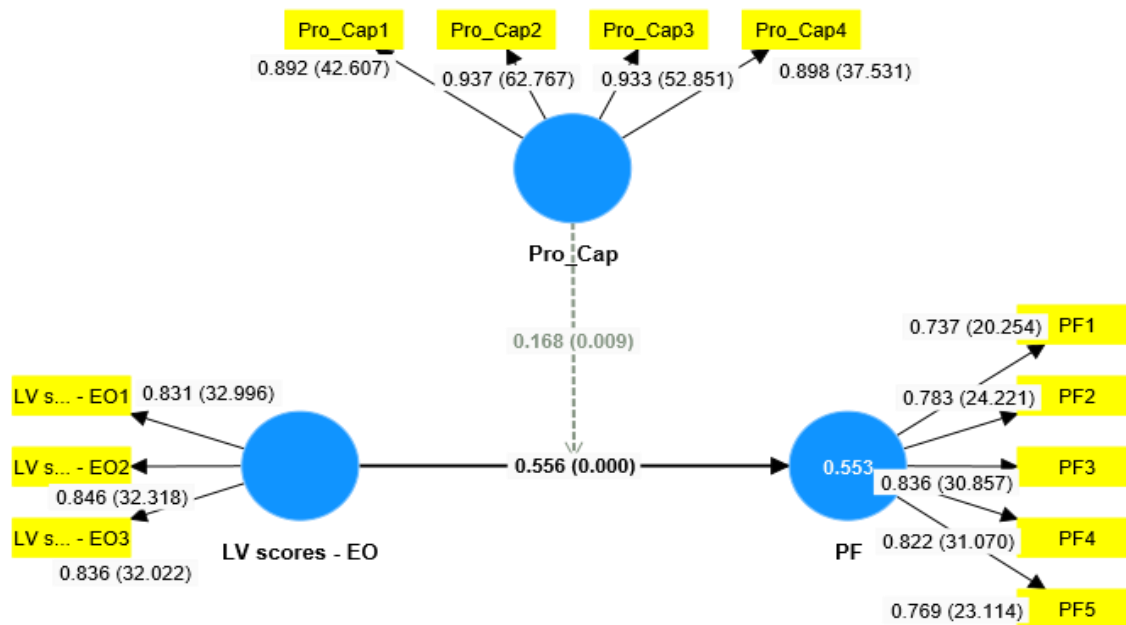


Figure 2. Research Model

Table 2. Construct Reliability and Validity

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
LV scores - EO	0.788	0.789	0.876	0.702
PF	0.849	0.851	0.892	0.624
Pro_Cap	0.935	0.937	0.954	0.838

Source: Data Process, 2024

Table 3. Results of Discriminant validity -Fornell & Larcker

	LV scores - EO	PF	Pro_Cap
LV scores - EO	0.838		
PF	0.709	0.79	
Pro_Cap	0.533	0.537	0.915

Source: Data Process, 2024

Table 4. Discriminant Validity Heterotrait-Monotrait (HTMT)

	Heterotrait-monotrait ratio (HTMT)
PF <-> LV scores - EO	0.861
Pro_Cap <-> LV scores - EO	0.62
Pro_Cap <-> PF	0.597

Source: Data Process, 2024

Table 5. Variance Inflation Factor (VIF)

	VIF
LV scores - EO -> PF	1.479
Pro_Cap -> PF	2.177
Pro_Cap x LV scores - EO -> PF	1.592

Source: Data Process, 2024

Table 6. R-Square of endogenous latent variables and the predictive relevance

	R-square	Q ² (=1-SSE/SSO)
PF	0.553	0.431

Source: Data Process, 2024

(Henseler et al., 2015). Cross-loading values of each

indicator are strongly correlated with their variables and have a higher correlation than other items (Appendix C), so the results support discriminant validity.

Direct and Moderating Analysis

They control the standard method bias variance inflation factor (VIF) test (Kock, 2017). Therefore, if all VIFs resulting from a full collinearity test are equal to or lower than 3.3, the model can be considered free of standard method bias in Table 5. Therefore, the model can be considered free from common method bias, as shown in Figure 2.

The evaluation of the relevance of the route coefficients in the inner model of PLS-SEM utilised the 5000 sub-sample bootstrapping technique (Hair, Jr. et al., 2022). The results in Table 6 show that the values of R² for Product Performance (R² = 0.553, p < 0.001) are more significant than the adequate level of 10% (Falk & Miller, 1992). Similarly, the values of Stone-Geisser Q² for Product Performance (Q²=0.431) are above 0, thus indicating that the model has a predictive relevance regarding the reflective endogenous constructs and achieves satisfactory nomological validity. The review of new product

H1a posits the effects of entrepreneur orientation on product performance, while H2 predicts the moderating effects of absorptive capacity on the relationship between entrepreneur orientation and product performance. The results in Table 7 show that the relationship is positive and significant ($\beta = 0.556$, P values < 0.05) with an effect size of $f^2=0.0467$, supporting H1.

The results further present the positive and significant effects of absorptive capacity when moderating entrepreneur orientation on product performance ($\beta = 0.168$, p < 0.05) with an effect size of $f^2 = 0.034$. effect entrepreneur orientation on product performance when absorptive capacity is controlled, H2 is supported. The absorptive capacity of weavers as micro enterprises differs from the absorptive capacity of small and medium enterprises. with limited resources, the process of absorbing external knowledge sources is smaller compared to organizations that already have investments. What is interesting about these artisans is that they conduct small-scale research (in-house training). conducting experiments with thread combinations to create new patterns. If it goes wrong, it will be repeated. conducting surveys with other artisans to find out the latest patterns. The environment of artisans who are in the same area and have familial relationships makes this activity learnable by anyone. Unlike other businesses that have

Table 7. Results of PLS-SEM estimation

	Relationships	Original sample (O)	F square	VIF	SD	T Stat	P values	Accept or reject
H1	EO -> PF	0.556	0.467	1.479	0.064	8.707	0	Accept
H2	Pro_Cap xEO -> PF	0.168	0.034	1.592	0.064	2.603	0.009	Accept

Source: Data Process, 2024

Table 8. Results of Test Motion Vector (MV) Prediction Summary

	Q ² predict	PLS-SEM_RMSE	PLS-SEM_MAE	LM_RMSE	LM_MAE	PLS or LM
PF1	0.328	0.41	0.322	0.42	0.329	PLS
PF2	0.282	0.398	0.302	0.41	0.311	PLS
PF3	0.286	0.424	0.311	0.431	0.33	PLS
PF4	0.381	0.391	0.288	0.399	0.279	PLS
PF5	0.35	0.386	0.288	0.378	0.271	LM

Source: Data Process, 2024

Table 9. Results of Test Cross Validated Predictive Ability Test (CVPAT)

	PLS loss	IA loss	Average loss difference	t value	p-value
PF	0.161	0.239	-0.078	8.914	0
Overall	0.161	0.239	-0.078	8.914	0

Source: Data Process, 2024

their own places, such as closed corporate environments.

Predictive Power Model

According to (Hair Jr et al, 2021), Table 8 and Table 9 show the predictive power of the model can be seen from a) Q square prediction, b) Motion Vector (MV) Prediction Summary, and c) Cross Validated Predictive Ability Test (CPAT).

Q² predicts five Product performance indicators > 0.00, meaning all are in good condition. The Average loss difference calculation results comparing PLS Loss with the Average Indicator are positive for all indicators (table), and the test of the prediction error difference between PLS and other comparison models shows that the Average Indicator has a p-value < 0.05. The comparison of the predictive power of the SEM-PLS model is better than that of the Average Indicator, as indicated by the Average Loss Difference being negative and statistically significant.

Finally, compare the PLS model's Motion Vector (MV) Prediction Summary values with the LM model. The PLS-Sem RMSE is smaller than the LM RMSE, with four indicators. Overall, the PLS Model is better used compared to the Linear model.

Conclusion

The relationship between entrepreneurial orientation is complex, considerably affecting Eco-handloom Product Performance. Eco-handloom weaver that adopt an entrepreneurial orientation are more adept at innovating, adapting, and succeeding in competitive markets. The evidence indicates that integrating these orientations strengthens thier capacities and promotes sustained success.

The relationship between product performance and entrepreneurial orientation is substantial. Although weaving activities are a cultural heritage where products are adapted to customs. However, with market changes, artisans are required to innovate, create, and take risks to commodify their products. The ability to absorb knowledge from both internal and external sources and conductin house- research to produce new products.

Absorptive capacity is a primary feature of weavers, supporting the successful acquisition and application of

external knowledge. Eco-handloom weavers that nurture strong absorptive capacity are more suited to innovate and adapt, leading to outstanding performance and competitive advantage. The data suggests that building a culture of learning, supported by good leadership and social integration, is critical for boosting absorptive ability and, subsequently, product performance.

Consequently, handloom weavers must possess the ability with "absorptive capacity" and specify what it means behaviorally (acquiring, assimilating, transforming, applying knowledge). This is achieved by emphasising entrepreneurial attitude, including design innovation, risk-taking, and proactivity.

Lastly, it is important to note that there are certain limitations to our study that could lead to further research. First, we apply contextual specificity of data to weavers centers in Lake Toba. Second, because our data is cross-sectional self-report, we should exercise caution when interpreting the results in terms of causality and suggest specific future research (e.g., longitudinal design, objective performance indicators, multi-source data, qualitative follow-up on knowledge acquisition routes).

The ability of an Eco-handloom weavers to recognise the value of external knowledge, assimilate it, and apply it for the benefit them. The benefits of Pro competition absorptive capacity are crucial as they help the Eco-handloom weavers effectively absorb knowledge from the external environment and use it to enhance internal less in-house research. Thus, the performance of the eco-handloom woven product will continue to improve.

Author contributions

Liharman Saragih and Romindo M Pasaribu oversaw the entire process, from literature selection and search to report preparation and policy implications. The authors contributed to all investigational efforts related to the study, as well as report writing and changes based on reviewer comments. Finally, before publication, all authors read comments and made modifications to the final version.

Acknowledgements

The authors gratefully acknowledge all partners for their constructive guidance and valuable comments in all aspects of the work.

References

- Adesanya Oluwatoyin, D., Iyiola Oluwale, O., Borishade Taiye, T., Dirisu Joy, I., Olokundun Maxwell, A., Ibidunni Ayodotun, S., & Omotoyinbo Charles, A. (2018). Entrepreneurial orientation and business performance of non-oil exporting SMEs in Lagos State, Nigeria. *International Journal of Entrepreneurship*.
- Aftab, J., Veneziani, M., Sarwar, H., & Ishaq, M. I. (2022). Entrepreneurial orientation, entrepreneurial competencies, innovation, and performances in SMEs of Pakistan: Moderating role of social ties. *Business Ethics, the Environment & Responsibility*, 31(2), 419–437. <https://doi.org/https://doi.org/10.1111/beer.12415>
- Ahlin, B., Drnovšek, M., & Hisrich, R. D. (2014). Exploring the moderating effects of absorptive capacity on the relationship between social networks and innovation. *Journal of East European Management Studies*. <https://doi.org/10.1688/JEEMS-2014-02-Ahlin>
- Ali, I., Ali, M., Salam, M. A., Bhatti, Z. A., Arain, G. A., & Burhan, M. (2020). How international SME's vicarious learning may improve their performance? The role of absorptive capacity, strength of ties with local SMEs, and their prior success experiences. *Industrial Marketing Management*, 88, 87–100.
- Aliasghar, O., Sadeghi, A., & Rose, E. L. (2023). Process innovation in small- and medium-sized enterprises: The critical roles of external knowledge sourcing and absorptive capacity. *Journal of Small Business Management*. <https://doi.org/10.1080/00472778.2020.1844491>
- Anderson, B. S., Kreiser, P. M., Kuratko, D. F., Hornsby, J. S., & Eshima, Y. (2015). Reconceptualizing entrepreneurial orientation. *Strategic Management Journal*. <https://doi.org/10.1002/smj.2298>
- Avlonitis, G. J., & Salavou, H. E. (2007). Entrepreneurial orientation of SMEs, product innovativeness, and performance. *Journal of Business Research*. <https://doi.org/10.1016/j.jbusres.2007.01.001>
- Barnes, R. (2011). Niessen, Sandra: Legacy in Cloth. Batak Textiles of Indonesia. *Anthropos*. <https://doi.org/10.5771/0257-9774-2011-2-697>
- Blumentritt, R., & Johnston, R. (1999). Towards a strategy for knowledge management. *Technology Analysis and Strategic Management*. <https://doi.org/10.1080/095373299107366>
- Briel, F. von, Schneider, C., & Lowry, P. B. (2018). Absorbing Knowledge From and With External Partners: The Role of Social Integration Mechanisms. *Decision Sciences*, 50(1), 7–45. <https://doi.org/10.1111/deci.12314>
- Bucciari, D., Javalgi, R. G., & Cavusgil, E. (2020). International new venture performance: Role of international entrepreneurial culture, ambidextrous innovation, and dynamic marketing capabilities. *International Business Review*, 29(2), 101639. <https://doi.org/https://doi.org/10.1016/j.ibusrev.2019.101639>
- Bureekhampun, S., & Maneepun, C. (2021). Eco-Friendly and community sustainable textile fabric dyeing methods from Thai buffalo manure: From pasture to fashion designer. *SAGE Open*, 11(4), 21582440211058200.
- Chavez, R., Yu, W., Sadiq Jajja, M. S., Lecuna, A., & Fynes, B. (2020). Can entrepreneurial orientation improve sustainable development through leveraging internal lean practices? *Business Strategy and the Environment*, 29(6), 2211–2225.
- Chen, C.-J., & Huang, J.-W. (2009). Strategic human resource practices and innovation performance—The mediating role of knowledge management capacity. *Journal of Business Research*, 62(1), 104–114.
- Cohen, W. M., & Levinthal, D. A. (1990). Absorptive Capacity: A New Perspective on Learning and Innovation. *Administrative Science Quarterly*. <https://doi.org/10.2307/2393553>
- Covin, J. G., & Slevin, D. P. (1989). Strategic management of small firms in hostile and benign environments. *Strategic Management Journal*, 10(1), 75–87.
- Darwis, G. (2017). Accelerated transformation of Indonesian SME's: embracing entrepreneurial orientation and innovation on achieving dynamic capability to increase competitiveness. *Borderless Communities & Nations with Borders*, 1089.
- Dirani, K. M. (2009). Measuring the learning organization culture, organizational commitment and job satisfaction in the lebanese banking sector. *Human Resource Development International*. <https://doi.org/10.1080/13678860902764118>
- Distel, A. P. (2019). Unveiling the Microfoundations of Absorptive Capacity: A Study of Coleman's Bathtub Model. *Journal of Management*. <https://doi.org/10.1177/0149206317741963>
- Egan, T. M., Yang, B., & Bartlett, K. R. (2004). The effects of organizational learning culture and job satisfaction on motivation to transfer learning and turnover intention. *Human Resource Development Quarterly*. <https://doi.org/10.1002/hrdq.1104>
- Evanschitzky, H., Eisend, M., Calantone, R. J., & Jiang, Y. (2012). Success factors of product innovation: An updated meta-analysis. *Journal of Product Innovation Management*. <https://doi.org/10.1111/j.1540-5885.2012.00964.x>
- Falk, F., & Miller, N. (1992). A primer for soft modeling (Book, 1992) [WorldCat.org]. *The University of Akron Press*.
- Fanbasteen, N. (2014). Enhancing Business Performance through Learning Organization and Knowledge Sharing Capability: The Mediating Effect of Innovation Capability using PLS Method. *The Winners*. <https://doi.org/10.21512/tw.v15i2.623>
- Fornell, C., & Larcker, D. F. (1981). Structural Equation Models with Unobservable Variables and Measurement Error: Algebra and Statistics. *JMR, Journal of Marketing Research*, 18(3), 382.
- García-García, R., García-Canal, E., & Guillén, M. F. (2017). Rapid internationalization and long-term performance: The knowledge link. *Journal of World Business*. <https://doi.org/10.1016/j.jwb.2016.09.005>
- Gatignon, H., & Xuereb, J. M. (1997). Strategic orientation of the firm and new product performance. *Journal of Marketing Research*. <https://doi.org/10.2307/3152066>
- Glaser. (2014). *Linguist shines light on endangered Indonesian languages*.
- Gray, C. (2006). Absorptive capacity, knowledge management and innovation in entrepreneurial small firms. *International Journal of Entrepreneurial Behaviour and Research*. <https://doi.org/10.1108/13552550610710144>
- Hair, J. F., M. Hult, G. T., M. Ringle, C., & Marko, Sarstedt. (2021). A primer on partial least squares structural equation modeling (PLS-SEM). Sage.
- Hair Jr et al. (2021). Partial least squares structural equation modeling (PLS-SEM) using R: A workbook (p. 197). Springer Nature. In *Structural Equation Modeling: A Multidisciplinary Journal*.
- Hair, Jr., J. F., M. Hult, G. T., M. Ringle, C., Sarstedt, & Marko. (2022). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM) [3 ed]. In *Sage Publishing*.
- Hassan, M. U., Iqbal, Z., Malik, M., & Ahmad, M. I. (2018). Exploring the role of technological developments and open innovation in the survival of SMEs: an empirical study of Pakistan. *International Journal of Business Forecasting and Marketing Intelligence*. <https://doi.org/10.1504/ijbfmi.2018.088629>
- Haverila, M. J. (2012). Product-firm compatibility in new product development in technology companies. *Journal of High Technology Management Research*. <https://doi.org/10.1016/j.hitech.2012.06.008>
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*. <https://doi.org/10.1007/s11747-014-0403-8>
- Hubka, V., & Eder, W. E. (2012). *Theory of technical systems: a total concept theory for engineering design*. Springer Science & Business Media.
- Ingram, W. (2019). Deities, Dyers, and Dollars: Balancing Culture, Conservation, and Commerce with Indonesia's Indigenous Weavers. *TEXTILE*, 17(2), 120–134. <https://doi.org/10.1080/14759756.2018.1473982>
- Isichei, E. E., Emmanuel Agbaeze, K., & Odiba, M. O. (2020a). Entrepreneurial orientation and performance in SMEs: The mediating role of structural infrastructure capability. *International Journal of Emerging Markets*. <https://doi.org/10.1108/IJOEM-08-2019-0671>
- Isichei, E. E., Emmanuel Agbaeze, K., & Odiba, M. O. (2020b). Entrepreneurial orientation and performance in SMEs: The mediating role of structural infrastructure capability. *International Journal of Emerging Markets*. <https://doi.org/10.1108/IJOEM-08-2019-0671>
- Jaya, P. E. J., Utama, M. S., Yasa, I. G. W. M., & Yuliarmi, N. N. (2020). Improving competitiveness and well-being through human resources quality, local culture, and product performance. *Cogent Business Management & Marketing*, 7(1), 1831247.
- Jiang, X., Liu, H., Fey, C., & Jiang, F. (2018). Entrepreneurial orientation, network resource acquisition, and firm performance: A network approach. *Journal of Business Research*. <https://doi.org/10.1016/j.jbusres.2018.02.021>
- Khandual, A., & Pradhan, S. (2018). Fashion brands and consumers approach towards sustainable fashion. In *Fast fashion, fashion brands and sustainable consumption* (pp. 37–54). Springer.
- Kock, N. (2017). Common method bias: A full collinearity assessment method for PLS-SEM. In *Partial Least Squares Path Modeling: Basic Concepts, Methodological Issues and Applications*. https://doi.org/10.1007/978-3-319-64069-3_11
- Kotane, I., & Kuzmina-Merlino, I. (2017). Analysis of Small and Medium Sized Enterprises' Business Performance Evaluation Practice at Transportation and Storage Services Sector in Latvia. *Procedia Engineering*. <https://doi.org/10.1016/j.proeng.2017.01.093>
- Lane, P. J., & Lubatkin, M. (1998). Relative absorptive capacity and interorganizational learning. *Strategic Management Journal*. [https://doi.org/10.1002/\(sici\)1097-0266\(199805\)19:5<461::aid-smj953>3.3.co;2-c](https://doi.org/10.1002/(sici)1097-0266(199805)19:5<461::aid-smj953>3.3.co;2-c)
- Lin, H. C., & Lee, Y. D. (2017). A study of the influence of organizational learning on employees' innovative behavior and work engagement by a cross-level examination. *Eurasia Journal of Mathematics, Science and Technology Education*. <https://doi.org/10.12973/eurasia.2017.00738a>

- Lumpkin, G. T., & Pidduck, R. J. (2021). Global Entrepreneurial Orientation (GEO): An Updated, Multidimensional View of EO. In A. C. Corbett, P. M. Kreiser, L. D. Marino, & W. J. Wales (Eds.), *Entrepreneurial Orientation: Epistemological, Theoretical, and Empirical Perspectives* (Vol. 22, pp. 17–68). Emerald Publishing Limited. <https://doi.org/10.1108/S1074-75402021000022002>
- Miller, D. (2011). Miller (1983) revisited: A reflection on EO research and some suggestions for the future. *Entrepreneurship Theory and Practice*, 35(5), 873–894.
- Mukendi, A., Davies, I., Glozer, S., & McDonagh, P. (2020). Sustainable fashion: current and future research directions. In *European Journal of Marketing*. <https://doi.org/10.1108/EJM-02-2019-0132>
- Niessen, S. (2009). Legacy in Cloth. *Batak Textiles of Indonesia*. KITLV Press Leiden.
- Nugroho, C., Nurhayati, I. K., Nasionalita, K., & Malau, R. M. U. (2020). Weaving and Cultural Identity of Batak Toba Women. *Journal of Asian and African Studies*, 56(6), 1165–1177. <https://doi.org/10.1177/0021909620958032>
- Ocktaviany, T. (2019). Desainer Wignyo Rahadi Eksplorasi Kain Ulos Harungguan Menjadi Busana Siap Pakai. *INews.Id*.
- Osteras, T., Murthy, D. N. P., & Rausand, M. (2006). Product performance and specification in new product development. In *Journal of Engineering Design*. <https://doi.org/10.1080/09544820500275735>
- Priherdityo, E. (2016). Ulos Rasa Modern Bagi Kaum Muda.
- Qi, G., Jia, Y., & Zou, H. (2021). Is institutional pressure the mother of green innovation? Examining the moderating effect of absorptive capacity. *Journal of Cleaner Production*. <https://doi.org/10.1016/j.jclepro.2020.123957>
- Rauch, A., Wiklund, J., Lumpkin, G. T., & Frese, M. (2009). Entrepreneurial orientation and business performance: An assessment of past research and suggestions for the future. *Entrepreneurship: Theory and Practice*. <https://doi.org/10.1111/j.1540-6520.2009.00308.x>
- Roberts, N., Galluch, P. S., Dinger, M., & Grover, V. (2012). Absorptive capacity and information systems research: Review, synthesis, and directions for future research. In *MIS Quarterly: Management Information Systems*. <https://doi.org/10.2307/41703470>
- Rodríguez-Serrano, M. Á., & Martín-Armario, E. (2019). Born-Global SMEs, Performance, and Dynamic Absorptive Capacity: Evidence from Spanish Firms. *Journal of Small Business Management*. <https://doi.org/10.1111/jsbm.12319>
- Rua, O. L., Monteiro, A. P., & Soares, A. M. (2017). Entrepreneurial orientation and export performance: the mediating effect of organisational resources and dynamic capabilities. *J. for International Business and Entrepreneurship Development*. <https://doi.org/10.1504/jibed.2017.10003726>
- Saepudin, D., Shojaei, A. S., Barbosa, B., & Pedrosa, I. (2023). Intention to purchase eco-friendly handcrafted fashion products for gifting and personal use: a comparison of national and foreign consumers. *Behavioral Sciences*, 13(2), 171.
- Salavou, H., & Avlonitis, G. (2008). Product innovativeness and performance: A focus on SMEs. *Management Decision*. <https://doi.org/10.1108/00251740810890168>
- Salomo, S., Talke, K., & Strecker, N. (2008). Innovation field orientation and its effect on innovativeness and firm performance. *Journal of Product Innovation Management*. <https://doi.org/10.1111/j.1540-5885.2008.00322.x>
- Scuotto, V., Del Giudice, M., & Carayannis, E. G. (2017). The effect of social networking sites and absorptive capacity on SMES' innovation performance. *Journal of Technology Transfer*. <https://doi.org/10.1007/s10961-016-9517-0>
- Sexton, M., & Barrett, P. (2003). A literature synthesis of innovation in small construction firms: insights, ambiguities and questions. *Construction Management and Economics*, 21(6), 613–622.
- Silva, A. M., Santa, R., Fajardo, M., Cruz, M., Estrada, M., Ferreira, D., & Gómez, D. (2024). Knowledge Management and Its Impact on Social Performance in Solidarity Organizations: The Role of Absorptive Capacity and Organizational Learning. *Ciriec-España Revista De Economía Pública Social Y Cooperativa*, (110), 291–319. <https://doi.org/10.7203/ciriec-e.110.26025>
- Simons, G. F., & Fennig, C. D. (2017). Ethnologue: Languages of Honduras Twentieth edition data. *Ethnologue: Languages of the World*.
- Singh, S., Darwish, T. K., & Potočník, K. (2016). Measuring Organizational Performance: A Case for Subjective Measures. *British Journal of Management*, 27(1), 214–224. <https://doi.org/https://doi.org/10.1111/1467-8551.12126>
- Taheri, B., Bititci, U., Gannon, M. J., & Cordina, R. (2019). Investigating the influence of performance measurement on learning, entrepreneurial orientation and performance in turbulent markets. *International Journal of Contemporary Hospitality Management*, 31(3), 1224–1246. <https://doi.org/10.1108/IJCHM-11-2017-0744>
- Tsai, W. (2001). Knowledge transfer in intraorganizational networks: Effects of network position and absorptive capacity on business unit innovation and performance. *Academy of Management Journal*. <https://doi.org/10.2307/3069443>
- Tzokas, N., Kim, Y. A., Akbar, H., & Al-Dajani, H. (2015). Absorptive capacity and performance: The role of customer relationship and technological capabilities in high-tech SMEs. *Industrial Marketing Management*. <https://doi.org/10.1016/j.indmarman.2015.02.033>
- Ullman, D. G. (2010). *The mechanical design process*. McGraw-Hill Companies, Inc.
- Ulrich, K., & Eppinger, S. (2011). *EBOOK: Product Design and Development*. McGraw Hill.
- Wales, W. J., Covin, J. G., & Monsen, E. (2020). Entrepreneurial orientation: The necessity of a multilevel conceptualization. *Strategic Entrepreneurship Journal*, 14(4), 639–660.
- Wanniarachchi, T., Dissanayake, K., & Downs, C. (2020). Improving sustainability and encouraging innovation in traditional craft sectors: the case of the Sri Lankan handloom industry. *Research Journal of Textile and Apparel*. <https://doi.org/10.1108/RJTA-09-2019-0041>
- Woschke, T., & Haase, H. (2016). Enhancing new product development capabilities of small- and medium-sized enterprises through managerial innovations. *Journal of High Technology Management Research*. <https://doi.org/10.1016/j.hitech.2016.04.005>
- Yaşar Uğurlu, Ö., & Kurt, M. (2016). The Impact of Organizational Learning Capability on Product Innovation Performance: Evidence from the Turkish Manufacturing Sector. *EMAJ: Emerging Markets Journal*. <https://doi.org/10.5195/emaj.2016.99>
- Yi, H. T., Amenuvor, F. E., & Boateng, H. (2021a). The impact of entrepreneurial orientation on new product creativity, competitive advantage and new product performance in smes: The moderating role of corporate life cycle. *Sustainability (Switzerland)*. <https://doi.org/10.3390/su13063586>
- Yi, H. T., Amenuvor, F. E., & Boateng, H. (2021b). The impact of entrepreneurial orientation on new product creativity, competitive advantage and new product performance in smes: The moderating role of corporate life cycle. *Sustainability (Switzerland)*. <https://doi.org/10.3390/su13063586>
- Zadeh, M. R., Haak-Saheem, W., Darwish, T. K., & Singh, S. (2020). The Impact of Leadership on Absorptive Capacity: New Insights From the UAE. *Canadian Journal of Administrative Sciences / Revue Canadienne Des Sciences De L Administration*, 37(4), 448–458. <https://doi.org/10.1002/cjas.1561>
- Zahra, S. A., & George, G. (2002). Absorptive capacity: A review, reconceptualization, and extension. In *Academy of Management Review*. <https://doi.org/10.5465/AMR.2002.6587995>
- Zulkifli, & Ridwan, M. (2019). Revitalization of the traditional values lost due to the commodification of art/crafts: a case study of Batakese traditional Ulos. *Asian Ethnicity*. <https://doi.org/10.1080/14631369.2019.1608812>