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Research Article

Analysis of the Effect of Capital, Labor, Raw Materials, and Production on the Income of Ikat Woven Fabric Artisans in Klungkung Regency

Ni Putu Sintyasari[1*], Ni Putu Martini Dewi[2]

[1-2] Universitas Udayana, Indonesia; email: putusintyasari@gmail.com
*Corresponding author: Ni Putu Sintyasari

Abstract. This study aims to comprehensively analyze the influence of capital, labor, raw materials, and production processes on the income of woven cloth artisans in Klungkung Regency, Bali. The woven cloth industry in this region holds significant historical and cultural value, yet faces challenges in increasing productivity and income. The study employed a quantitative approach with an associative method, combining data collection techniques through direct observation, structured interviews, and secondary data collection from relevant government agencies. The study population consisted of 120 artisan groups, with a sample of 92 groups determined using simple random sampling. Data analysis was conducted using descriptive statistics to map the general conditions of the respondents, and path analysis using SPSS software to identify direct and indirect relationships between variables. The results indicate that capital, labor, and raw materials positively and significantly influence woven cloth production volume. Furthermore, capital, labor, raw materials, and production simultaneously have a significant direct influence on artisan income, with raw materials emerging as the most dominant factor. These findings confirm that the availability of quality raw materials, the quantity and skills of the workforce, and capital adequacy play a central role in improving production performance and artisan welfare. In addition to direct influences, this study also found an indirect effect of capital, labor, and raw materials on income through the mediation of production variables. This suggests that efforts to improve production factors can automatically strengthen income, both directly and through increased production output. The study's recommendations include the need for policies that facilitate access to capital, workforce training, and a sustainable supply of raw materials to support the sustainability of the woven fabric industry as a vital component of the local creative economy and Bali's cultural heritage.

Keywords: capital, income, labor, production, raw materials.

1. Introduction

Indonesia is a country rich in cultural, ethnic, and traditional diversity. One of its cultural heritages that continues to grow and develop today is woven fabric ("kain tenun"). Each region in Indonesia has its own distinctive woven fabric, such as those from Java, Bali, East Nusa Tenggara (NTT), Sumatra, Bugis, and many other areas, each with unique characteristics. These fabrics employ a variety of techniques and weaving patterns. As handmade creations, they possess high artistic value and are often used in traditional ceremonies or serve as a symbol of local cultural identity worthy of preservation.

Handicrafts, including woven fabrics, play an important role in Indonesia's economy, especially within the creative industry and craft sectors. The weaving industry not only provides income for communities but also supports tourism and promotes Indonesian culture on a global scale. Woven fabrics are often popular souvenirs, and cultural festivals help promote the beauty and uniqueness of local crafts. This sector significantly contributes to economic growth through both craft product exports and job creation. The weaving textile industry can foster the growth of small and medium enterprises (SMEs), which in turn provide sources of livelihood for local communities. Besides preserving and promoting cultural heritage, the development of SMEs in the textile sector contributes to economic growth and improves community productivity.

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Development is a continuous process of change that aims to improve and progress toward targeted goals. Indonesia, as a developing country, aims to pursue economic growth (Indunil & Sudarno, 2014). Economic development is crucial for a country, particularly in increasing economic income and improving public welfare (Saputra, 2020). According to Todaro and Smith (2006), economic development is a multidimensional process involving changes in social structure, societal attitudes, and institutions, aiming to accelerate economic growth, reduce inequality, and eradicate poverty.

One of the macro-level indicators used to measure successful development is economic growth, which reflects the real impact of development policies. Promoting economic growth must consider the potential inequality it might create. Ideally, economic growth should reduce poverty and income inequality and support a fair and prosperous society. Regional economic development is often measured by growth and income levels, primarily through the Gross Regional Domestic Product (GRDP). High economic disparity between regions can be identified by GRDP differences across regions (Azim et al., 2022). Natural resource disparities across provinces also influence regional economic inequality. Provinces with limited natural resources may still drive economic development by improving human resource quality. Human resources are vital for development: even in provinces with scarce natural resources, strong human capital can increase productivity and stimulate economic growth (Azim et al., 2022). Economic development seeks not only to increase per capita income but also to ensure equitable income distribution. One strategy the government employs is to develop the industrial sector, particularly SMEs.

Economic development can also be described as a series of efforts and policies aimed at improving the standard of living. This includes expanding job opportunities, achieving more equitable income distribution, and strengthening regional economic ties through shifts from the primary sector to the secondary and tertiary sectors (Awaludin et al., 2023). Local economic development accompanied by increasing growth shows improvements in community prosperity. In general, economic growth refers to the expansion of economic activity that increases goods and services produced within a society, thus improving welfare (Yasin, 2020). Sukirno (2012) describes economic growth as a process where economic activities result in increased production of goods and services, leading to higher societal prosperity. The rate of regional economic growth is measured through GRDP growth based on constant prices. Industrialization plays a key role in this progress. The industrial sector is a major contributor to Indonesia's economic growth (Rany et al., 2020). GRDP data, as regional income statistics, are useful for evaluating development outcomes and planning future regional development. GRDP is calculated using three approaches: production, expenditure, and income, each presented in current and constant prices (Ummah, 2019).

Economic growth reflects increased national output, which improves the population's access to goods and services. It represents an expansion in a country or region's production capacity over a certain period, measurable through real Gross Domestic Product (GDP) or per capita product. Economic growth is inherently tied to rising production of goods and services. It is a unidimensional process measured through increased output and income (Sri Hartati, 2021). Regional GRDP illustrates an area's ability to generate output at a given time. GRDP calculation is based on two approaches: production and use. These reflect value-added composition by sector and by expenditure component. From the production side, GRDP is the total gross value-added from economic sectors based on their production activities (Ummah, 2019).

The GRDP condition of Bali Province is closely linked to the tourism sector, as Bali is one of Indonesia's and the world's top tourist destinations. Tourism significantly contributes to Bali's GRDP through accommodation, food and beverage services, transportation, and supporting sectors like handicrafts, including woven textiles. In general, Bali's GRDP is dominated by tourism, which significantly boosts regional income. Bali's tourism encompasses nature, culture, and art, which have developed extensively over the years. Domestic and international tourists positively impact the local economy by creating employment and increasing demand for local products.

Small and Medium Enterprises (SMEs) in Bali play a crucial role in the region's economy. They contribute significantly to Bali's GRDP and span across various sectors including handicrafts, food and beverages, textiles, and tourism-related products sold locally and internationally. These sectors not only generate employment but also enhance the value

of local products. For instance, Balinese handicrafts like sculptures, wooden carvings, and woven fabrics such as ikat are a major draw for tourists.

SMEs are industries categorized by their scale. Small industries refer to economic activities that convert basic goods into finished or semi-finished products or enhance the value of low-value goods. Medium industries follow a similar definition (BPS, 2021). Overall, SMEs offer strong economic potential. In Bali, the growth of the manufacturing sector is supported by SMEs, which serve as a cornerstone of development and economic drivers by adding value to various local commodities (Ayuningsasi, 2024).

Bali is globally renowned, partly due to the unique cultural characteristics of its people, admired by tourists. Balinese communities are known for their creativity in producing various crafts, both in rural and urban areas, including woven textiles, bamboo, rattan, wood crafts, and more, each with distinctive characteristics (Studi et al., 2024). This rich craft heritage underscores Bali's significant potential in tourism and creative industries.

The provincial government of Bali is committed to supporting the creative industry, especially MSMEs, through policies such as Governor Regulation No. 79 of 2018 and No. 99 of 2018, which promote the use and consumption of Bali's local products (Adnyani & Agustini, 2020). Alongside technological advances, modern textile factories now produce higher-quality and more affordable fabrics using advanced equipment (Soekanto, 2006: 261). These include fabrics for clothing, sashes, trousers, bags, batik, and others. Factory-based production is faster and more efficient than traditional weaving.

Weaving is a fabric-making technique based on a simple principle: interlacing threads lengthwise and crosswise. In other words, warp and weft threads intersect alternately. Woven fabrics are typically made from wood fiber, cotton, silk, and other materials (Studi et al., 2024). In Indonesia, especially in Bali, woven fabrics are typically produced at the household level. The art of weaving is closely tied to knowledge systems, cultural beliefs, the natural environment, and social organization. Given the diversity of social culture, weaving styles vary across regions. Thus, weaving is inherently particular, reflecting local cultural identities. The quality of woven products is usually assessed by material quality, color composition, motifs, patterns, and decorative variety (Saputra, 2020).

Woven fabrics, particularly Endek, flourished during the reign of King Dalem Waturenggong in Gelgel, Klungkung. Endek spread across the archipelago and is well-known among Balinese people. Traditionally produced, Endek experienced rapid development between 1985 and 1995. As technology advanced, non-mechanical looms (ATBM) were adopted. Major Endek production centers include Karangasem, Klungkung, Gianyar, Buleleng, Negara, and Denpasar. The word "Endek" is derived from "Gendekan" or "Ngendek," meaning to remain unchanged, referencing the dyeing process where tied sections retain their color. Endek holds philosophical and cultural significance for Balinese communities. It is a generational heritage worthy of preservation. The government has supported Endek through art exhibitions, encouraging designers to use it in fashion, providing artisan training to develop new products such as shoes, bags, souvenirs, and crafts, and issuing Bali Governor Circular Letter No. 04 of 2021 on the Use of Endek Woven Fabric (Sudiartini et al., 2022).

Klungkung Regency is one of Bali's most well-known centers of woven fabric production. BPS Regulation No. 19 of 2017 (amending Regulation No. 95 of 2015) classifies ikat woven fabric as a business group involving fabric production and pre-dye thread tying. This industry falls under category C, with Indonesian Standard Business Classification (KBLI) code 13122.

Woven fabric production is present across all districts of Klungkung Regency, particularly in Dawan and Klungkung Districts. Key production and marketing centers include Gunaksa Village, Paksebali Village, and Nusa Penida. Most production still relies on handlooms or ATBM, using manual, non-mechanical processes. The introduction of ATBM opened new opportunities for the Endek weaving industry, transforming it from a purely traditional practice into an income-generating industry. The use of ATBM helps preserve traditional characteristics while creating employment and reducing local unemployment. It sustains human involvement in the production process, thus playing a key socio-economic role.

The ikat weaving industry in Klungkung is concentrated in Klungkung District with 62 artisan groups, and in Dawan District with 50 groups. Nusa Penida has only eight artisan groups, focusing more on tourism and fisheries, while Banjarangkan District has no weaving artisans, as it specializes in gambelan (Balinese percussion instrument) production. The

concentration in Klungkung and Dawan is likely due to better market access, skilled labor, and strong weaving traditions.

2. Research Method

This study employed a quantitative approach with an associative research type, aiming to analyze the relationship between capital, labor, raw materials, and production variables on the income of ikat woven fabric artisans in Klungkung Regency. The research was conducted in Klungkung Regency, known as one of the main centers of traditional ikat weaving in Bali, particularly in Gelgel Village, which holds significant historical value in the development of Balinese weaving. The data used consisted of primary data collected through direct observation and interviews, as well as secondary data obtained from relevant government institutions such as the Department of Cooperatives, SMEs, Industry and Trade of Klungkung Regency, and the Central Bureau of Statistics (BPS) of Bali Province (Sugiyono, 2019).

The research subjects were 120 artisan groups producing ikat woven fabrics, spread across the districts of Nusa Penida, Dawan, and Klungkung. The Banjarangkan District had no artisan population. The sampling technique used was simple random sampling, and the sample size was determined using the Slovin formula, resulting in 92 artisan groups as respondents. The variables in this study consisted of independent variables: capital (X1), labor (X2), and raw materials (X3); a mediating variable: production (Y1); and a dependent variable: the income of ikat woven fabric artisans (Y2). The operational definitions of each variable were described based on monthly measurement units, either in rupiah or in terms of production and labor quantity (Arieska & Herdiani, 2018).

The data analysis techniques employed included descriptive statistics and path analysis using SPSS software. Path analysis was used to identify both direct and indirect effects among the variables, as well as to examine the role of production as a mediating variable. Hypothesis testing was carried out using the t-test for direct effects and the Sobel test for mediating effects, with a 5% significance level. The structural model in this study demonstrates that capital, labor, and raw materials influence not only production directly, but also income—both directly and indirectly—through production as a mediator (Ghozali, 2017).

3. Results and Discussion

Hypothesis Testing Results

Direct Effect

1) Direct Effect of Capital on the Production of Ikat Woven Fabric in Klungkung

   The regression coefficient for the relationship between the capital variable (X1) is 0.271, with a t-value of 2.607 and a significance value of 0.011. Since the t-value is greater than the t-table value (1.987) and the significance level is less than 0.05, it can be concluded that capital has a positive and significant effect on production. This means that the more capital is used, the greater the production generated by the ikat woven fabric artisans.

   Capital, in the form of money, equipment, or investment in technology, plays a crucial role in influencing production capacity. Adequate capital enables artisans to improve tools, adopt new technologies, and purchase raw materials at better prices. In the ikat weaving industry, available capital allows artisans to enhance production efficiency, expand production scale, and ultimately increase the volume of products that can be sold. This increase in production capacity directly impacts artisans' income. With sufficient capital, artisans can meet larger market demand and earn higher profits. Therefore, capital serves as a key driver in improving the economic welfare of ikat woven fabric artisans.

2) Direct Effect of Labor on the Production of Ikat Woven Fabric in Klungkung Regency

   Labor (X2) has a positive effect on production, with a regression coefficient of 0.710. The obtained t-value is 2.214 > t-table value of 1.987, and the significance is 0.029, which is less than 0.05. This indicates that labor has a positive and significant effect on production. An increase in the number of workers directly contributes to greater production capacity, reflecting the importance of labor in supporting the output of ikat woven fabric artisans in Klungkung Regency.

Labor is a vital factor in any production process, particularly in industries that rely on manual skills, such as ikat weaving. Artisans with a sufficient number of skilled workers are capable of producing high-quality products more efficiently. Increasing the number of skilled workers supports increased production capacity, which in turn leads to higher income. More labor allows artisans to produce more items and accelerate production processes. Furthermore, better-skilled workers can produce higher-quality products, increasing the competitiveness of ikat fabrics in the market and potentially yielding higher selling prices. Therefore, enhancing labor quality and skills is crucial to the success of this industry.

3) Direct Effect of Raw Materials on the Production of Ikat Woven Fabric in Klungkung Regency

Raw materials (X3) have a regression coefficient of 0.272 with a t-value of 5.477 > t-table 1.987 and a significance value of 0.000, less than 0.05. These results show that raw materials also have a positive effect on production. The more raw materials available, the higher the level of production that can be achieved.

Raw materials, as the main component of the production process, greatly influence the quality and quantity of the final product. In the ikat weaving industry, materials such as threads and dyes directly affect the quality of the fabric produced. When high-quality materials are used, the resulting products will have higher market value, which in turn increases artisans' income. Additionally, adequate supply of raw materials allows artisans to expand production capacity and better meet market demand. Inadequate or low-quality materials can hinder production, result in poor-quality products, and reduce competitiveness. Hence, the sustainability of affordable and high-quality raw material supply is essential for smooth production and the income growth of ikat woven fabric artisans.

4) Direct Effect of Capital on the Income of Ikat Woven Fabric Artisans in Klungkung Regency

The relationship between capital (X1) and income (Y2) has a regression coefficient of 0.151, with a t-value of 2.571 > t-table 1.988 and a significance value of 0.012, less than 0.05. This result indicates that capital has a positive and significant effect on the income of ikat woven fabric artisans. In other words, the more capital the artisans use, the higher the income they earn.

Capital refers to financial resources and equipment used to support production activities. Adequate capital enables artisans to purchase modern equipment, increase production capacity, and procure larger quantities of higher-quality raw materials. Without sufficient capital, artisans may struggle to improve production quality or meet market challenges. Larger capital investments also enable innovation in more efficient production techniques. For instance, artisans with capital access can upgrade their weaving tools, enhance product quality, and expand production scale. All of these contribute to increased production volumes, which in turn raise income. Thus, the greater the available capital, the higher the potential income, as artisans can satisfy larger market demands and generate more valuable products.

5) Direct Effect of Labor on the Income of Ikat Woven Fabric Artisans in Klungkung Regency

Labor (X2) also shows a positive effect on income, with a regression coefficient of 0.188. The t-value is 2.441 > t-table 1.988, and the significance value is 0.015, which is below 0.05, indicating that labor has a significant effect on the income of artisans. An increase in the number of workers contributes to higher income, highlighting the importance of labor in the ikat weaving production process.

Labor is equally important in every production sector, especially in manual skill-based industries such as ikat weaving. More skilled labor leads to a more efficient and higher-quality production process. Skilled laborers can produce better-quality products in less time, increasing production capacity and reducing order fulfillment time. Increasing the workforce also boosts overall production output, directly impacting income. Furthermore, if workers are skilled in advanced weaving techniques, the resulting products will have better quality, allowing artisans to charge higher prices. Therefore, developing workers' skills is essential to increasing production outcomes and artisans' earnings.

6) Direct Effect of Raw Materials on the Income of Ikat Woven Fabric Artisans in Klungkung Regency

Raw materials (X3) have the most dominant effect on income, with a regression coefficient of 0.376. The t-value is 4.267 > t-table 1.988 and the significance level is 0.000, below 0.05, indicating that raw materials significantly affect artisans' income. This suggests that having sufficient and high-quality raw materials is vital for increasing income. Without adequate raw materials, artisans' income will be limited.

Raw materials are a fundamental component in the production process of ikat woven fabric. The availability of sufficient and high-quality materials significantly affects both the quality and quantity of the final product. Premium raw materials, such as quality threads or dyes, lead to higher-quality products that can command better prices. Conversely, limited or poor-quality materials can result in substandard products and difficulty meeting market demand. Adequate raw materials allow artisans to scale up production. The more materials available, the more products can be made, directly contributing to higher income. Hence, a stable and high-quality supply of raw materials is crucial for successful production and income enhancement for ikat woven fabric artisans.

7) Direct Effect of Production on the Income of Ikat Woven Fabric Artisans in Klungkung Regency

The relationship between production (Y1) and income (Y2) shows a positive and significant effect, with a regression coefficient of 0.408, a t-value of 5.248 > t-table 1.988, and a significance level of 0.000, less than 0.05. This result indicates that increased production directly impacts increased income. The more products produced, the higher the income artisans can earn. This highlights the importance of production efficiency in improving the well-being of ikat woven fabric artisans in Klungkung Regency.

Higher production levels are directly associated with increased income. For ikat woven fabric artisans, producing more items means more products can be sold, thereby raising income. Additionally, production efficiency plays a crucial role in reducing costs and increasing profits. The more efficient the production process, the more products can be made in less time, enhancing profit potential. In the ikat weaving industry, factors such as the quality of raw materials, the number of workers, and available capital influence production capacity. Increasing production, in both volume and quality, enables artisans to improve their profitability. If artisans can produce more high-quality fabrics, they will have better market competitiveness and can sell their products at higher prices, ultimately contributing to increased income.

Sobel test

1) Testing the Indirect Effect of Capital on Income through Production of Ikat Woven Fabric in Klungkung Regency

$$S\beta1\beta7 = \sqrt{\beta7^2 s_{\beta12} + \beta1^2 s_{\beta72}}$$

$$S\beta1\beta7 = \sqrt{(0{,}408)^2(0{,}000)^2 + (0{,}203)^2 (0{,}034)^2}$$

$$S\beta1\beta7 = \sqrt{(0{,}166 \text{ x } 0) + (0{,}0412 \text{ x } 0{,}001136)}$$

$$S\beta1\beta7 = \sqrt{0 + 0{,}0000476}$$

$$S\beta1\beta7 = \sqrt{0{,}0000476}$$

$$S\beta1\beta7 = 0.00684$$

Based on the calculation above, to test the significance of the intervening variable, the Z value from Sβ1β7 is calculated using the following formula:

$$Z = \frac{\beta1\beta7}{S\beta1\beta7}$$

$$Z = \frac{0{,}0828}{0{,}00684}$$

$$Z = 12.12$$

The result shows that the indirect effect of Capital (X1) on Income (Y2) through Production (Y1) has a Z-value of 12.12, which is significantly higher than the critical Z-value of 1.96 at a 5% significance level. This means the indirect effect is statistically significant, indicating that capital has a significant indirect influence on income through increased production of ikat woven fabric in Klungkung Regency. In other words, the greater the capital

available, the higher the production will be, which ultimately increases the income of the business actors.

X1→Y1→Y2 = (0.203 × 0.408)
= 0.083

A value of 0.083 indicates that the indirect effect of capital on income through production is 8.3 percent.

2) Indirect Effect of Labor on Income through Production of Ikat Woven Fabric in Klungkung Regency

$$S\beta2\beta7 = \sqrt{\beta7^2 s_{\beta22} + \beta2^2 s_{\beta72}}$$
$$S\beta2\beta7 = \sqrt{(0{,}408)^2(0{,}080)^2 + (0{,}181)^2 (0{,}034)^2}$$
$$S\beta2\beta7 = \sqrt{(0{,}166464 \text{ x } 0{,}0064) + (0{,}032761 \text{ x } 0{,}001136)}$$
$$S\beta2\beta7 = \sqrt{0{,}000006816 + 0{,}00003722}$$
$$S\beta2\beta7 = \sqrt{0{,}000044036}$$
$$S\beta2\beta7 = 0.0066$$

To test the significance of the intervening variable, the Z value is calculated using the following formula:

$$Z = \frac{\beta2\beta7}{S\beta2\beta7}$$
$$Z = \frac{0{,}07385}{0{,}0066}$$
$$Z = 11.19$$

The result shows that the indirect effect of Labor (X2) on Income (Y2) through Production (Y1) has a Z-value of 11.19, which is greater than the critical Z-value of 1.96 at the 5% significance level. This indicates a statistically significant indirect effect, meaning labor significantly affects income through increased production of ikat woven fabric in Klungkung Regency. In other words, the more labor is involved, the greater the production, which in turn positively and significantly increases income.

X2→Y1→Y2 = (0.181 × 0.408)
= 0.083

A value of 0.083 indicates that the indirect effect of labor on income through production is 8.3 percent.

3) Indirect Effect of Raw Materials on Income through Production of Ikat Woven Fabric in Klungkung Regency

$$S\beta3\beta7 = \sqrt{\beta7^2 s_{\beta32} + \beta3^2 s_{\beta72}}$$
$$S\beta3\beta7 = \sqrt{(0{,}408)^2(0{,}000)^2 + (0{,}571)^2 (0{,}034)^2}$$
$$S\beta3\beta7 = \sqrt{(0{,}166464 \text{ x } 0{,}000) + (0{,}326041 \text{ x } 0{,}001136)}$$
$$S\beta3\beta7 = \sqrt{0 + 0{,}0003704}$$
$$S\beta3\beta7 = \sqrt{0{,}0003704}$$
$$S\beta3\beta7 = 0.0192$$

To test the significance of the intervening variable, the Z value is calculated using the following formula:

$$Z = \frac{\beta2\beta7}{S\beta2\beta7}$$
$$Z = \frac{0{,}23296}{0{,}0192}$$
$$Z = 12.13$$

The result shows that the indirect effect of Raw Materials (X3) on Income (Y2) through Production (Y1) has a Z-value of 12.13, which is greater than the critical Z-value of 1.96 at the 5% significance level. This indicates a statistically significant indirect effect, meaning that raw materials significantly affect income through increased production of ikat woven fabric in Klungkung Regency. In other words, the more raw materials are procured, the higher the production, which will positively and significantly impact the income of the business actors.

X3→Y1→Y2 = (0.571 x 0.408)
= 0.234

A value of 0.234 indicates that the indirect effect of raw materials on income through production is 23.4 percent.

Table 1. Direct, Indirect, and Total Effects of Capital, Labor, Raw Materials, and Production on the Income of Ikat Woven Fabric Artisans in Klungkung Regency

Variable Relationship	Direct Influence	Indirect Influence Through Y1	Total
X1→Y1	**0.203**	-	**0.203**
X2→Y1	**0.181**	**-**	**0.181**
X3→Y1	**0.571**	**-**	**0.272**
X1→Y2	**0.151**	(0.203 x 0.408) = 0.083	0.203 + (0.203 x 0.408) = 0.286
X2→Y2	**0.188**	(0.181 x 0.408) = 0.074	0.181 + (0.181 x 0.408) = 0.255
X3→Y2	**0.376**	(0.571 x 0.408) = 0.233	0.408 + (0.571 x 0.408) = 0.804
Y1→Y2	**0.408**	**-**	**0.408**

Source: Data attached to the author's thesis

Table 1 presents a summary of the direct, indirect, and total effects of the variables Capital (X1), Labor (X2), and Raw Materials (X3) on Production (Y1) and Income (Y2) of ikat woven fabric artisans in Klungkung Regency. The table shows that all independent variables have direct effects on both Y1 and Y2, and also contribute indirect effects through the mediating variable Production (Y1). Capital (X1) has a direct effect on income of 0.151 and an indirect effect through production of 0.083, resulting in a total effect of 0.234. Labor (X2) shows a direct effect of 0.188 and an indirect effect of 0.074, yielding a total effect of 0.262. Meanwhile, Raw Materials (X3) contribute the most to income, with a direct effect of 0.376 and an indirect effect of 0.233 through production, giving a total effect of 0.609. Production (Y1) itself also has a significant direct effect on income, with a coefficient of 0.408. This table highlights the important role of production as a mediating variable that strengthens the relationship between input variables (capital, labor, and raw materials) and the income increase of the artisans.

Discussion of Research Results

Effect of Capital, Labor, and Raw Materials on the Production of Ikat Woven Fabric in Klungkung Regency

1) Substructural Equation 1

The first substructural test in this study was conducted to determine the direct effect of capital, labor, and raw materials on the production of ikat woven fabric in Klungkung Regency. The regression equation results are shown as follows:

Y1 = - 14.089 + 0.203 X1 +0.181 X2 + 0.571 X3
Sb = (0.000) (0.080) (0.000)
T = (2.607) (2,214) (5,477)
Sig = 0.011 0.029 0,000
R2 = 0.738
F = 82,706
Sig. = 0.000
Ftable = 2.71

2) Structural Equation Summary

Table 2. S Summary of Path Coefficients – Substructure I

Connection	Standardized Regression Coefficient	thitung	Sig.	Information
X1→Y1	0.203	2,607	0.011	Positive and significant
X2→Y1	0.181	2,214	0.029	Positive and significant
X3→Y1	0.571	5,477	0,000	Positive and significant

Source: Data attached to the author's thesis

Note :
X1 = Capital
X2 = Labor
X3 = Raw Materials
Y1 = Production

Based on the substructural equation, the calculated F-value (Fhitung) = 82.706 > F-table = 2.71. This indicates that the estimated regression model of capital, labor, and raw materials is fit or appropriate to explain its influence on the production variable.

Effect of Capital, Labor, Raw Materials, and Production on Income

1) Substructural Equation 2

The second substructural test was conducted to examine the direct effect of capital, labor, raw materials, and production of ikat woven fabric in Klungkung Regency on income. The regression equation results are as follows:

Y2 = -499542.913 + 0.151X1 + 0.188X2 + 0.376 X3 + 0.408 X4
Sb = (0.039) (0.012) (0.020) (0.034)
t = (2,571) (2,441) (4,267) (5,248)
Sig = 0.012 0.015 0,000 0,000
R2 = 0.863
F = 136,595
Sig. = 0.000
Ftable = 2.48

2) Structural Equation

Table 3. Summary of Path Coefficients Substructure II

Relationship	Standardized Regression Coefficient	thitung	Sig.	Description
X1→Y2	0.151	2,571	0.012	Positive and significant
X2→Y2	0.188	2,441	0.015	Positive and significant
X3→Y2	0.376	4,267	0,000	Positive and significant
Y1→Y2	0.408	5,248	0,000	Positive and significant

Source: Data attached to the author's thesis. Description:

Note :
X1 = Capital
X2 = Labor
X3 = Raw Materials
Y1 = Production
Y2 = Income

Based on the substructural equation, the calculated F-value (Fhitung) = 136.595 > F-table = 2.48. This suggests that the estimated regression model of capital, labor, raw materials, and production is fit or appropriate to explain its influence on the income variable.

Standard Error of Estimate

To determine the value of e1, which shows the amount of variance in the production variable (Y1) not explained by the capital, labor, and raw materials variables, the following formula is used:

$e1 = \sqrt{1 - R_1^2}$
$e1 = = 0.512\sqrt{1 - 0{,}738}$

The value of e2, which indicates the amount of variance in the income variable (Y2) not explained by the capital, labor, raw materials, and production variables, is calculated as:

$e2 = \sqrt{1 - R_2^2}$
$e2 = = 0.370\sqrt{1 - 0{,}863}$

Total Determination Coefficient

To assess model validity, the total determination coefficient (R^2m) is used, calculated as follows:

R2m = 1 – (e1)2 (e2)2
R2m = 1 – (0.512)2 (0.3702)2
R2m = 1 – (0.262) (0.137)
R2m = 1 – 0.036
= 0.964

Note :
R^2m = total determination coefficient
e1, e2 = standard error of estimate

The coefficient of determination value of 0.964 means that 96.4% of the variability or changes in the observed data can be explained or predicted by the model used. In other words, this model is highly effective in explaining the relationship between the tested variables. The remaining 3.6% cannot be explained by the model and may be due to unobserved factors or data error.

4. Conclusion

The conclusions drawn from the analysis in this study illustrate the effects of capital, labor, raw materials, and production on the income of ikat woven fabric artisans in Klungkung Regency, as follows: Capital, labor, and raw materials have a positive and significant effect on the production of ikat woven fabric in Klungkung Regency. Sufficient capital enables an increase in production capacity, skilled labor accelerates the production process and enhances product quality, and high-quality raw materials directly influence the quantity and quality of the final product. Improvements in these three factors will increase the volume of production that can be marketed, which in turn will boost income. Therefore, these factors play an essential role in enhancing the production capacity and efficiency of artisans.

Capital, labor, raw materials, and production have a significant direct effect on artisans' income. Among them, raw materials have the most dominant influence on income, followed by labor, capital, and production. This finding indicates that the availability of sufficient and high-quality raw materials plays a key role in increasing artisans' income, followed by labor skills, the amount of capital, and production efficiency that supports the volume and quality of marketable products. Hence, improvements in these factors directly contribute to increased income for ikat woven fabric artisans in Klungkung Regency.

Capital, labor, and raw materials also exert a significant indirect effect on artisans' income through increased production. This indirect effect demonstrates that enhancements in capital, labor, and raw materials can elevate production levels, which ultimately has a positive impact on income. These inputs serve as supporting factors that boost production capacity, thereby improving the income of ikat woven fabric artisans in Klungkung Regency.

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