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Livestock Farmer's Commitment to Children's Education: A PLS-SEM Analysis Study in Banyumas Regency

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Abstract. Education is the most powerful weapon and is the key to success. The livestock farmers' children's education is very important and related to the role of education in increasing knowledge, skill, and attitude, which improves the welfare of the farmer's family. Therefore, improving the farmers' commitment to children's education and the factors affected by it is necessary. Based on the previous statement, this study aimed to reveal the factors influencing farmers' commitment to children's education. This study was conducted in the Baturraden, Sumbang, Kembaran, and Sokaraja Subdistricts, Banyumas Regency, from January to February 2023, using a cross-sectional survey approach. A total of 525 livestock farmers were recorded as respondents. The data obtained were Structural Equational Modeling Partial Least Square (SEM-PLS) analyzed utilizing the SmartPLS 4 software. The results of this study showed that the increase in farmers' financial condition, children's desires, interests, and motivation could increase farmers' commitment to children's education. The farmers' knowledge of education services variables did not affect the farmers' commitment. Farmers' financial conditions could indirectly affect farmers' commitment through interests and motivation. A similar condition also occurred in farmers' children's desire and knowledge of education services. It could be concluded from this study that improving farmers' financial condition followed by intense government educational services information dissemination could improve farmers' commitment to children's education, which would enhance children's academic level in rural areas of Indonesia.

Keywords: Farmers' family, commitment, children's education, PLS-SEM, Banyumas regency

Abstrak. Pendidikan merupakan senjata paling ampuh dan menjadi kunci kesuksesan. Pendidikan anak peternak sangat penting dan berkaitan dengan peran pendidikan dalam meningkatkan pengetahuan, keterampilan, dan sikap sehingga meningkatkan kesejahteraan keluarga peternak. Oleh karena itu perlu ditingkatkan komitmen petani terhadap pendidikan anak dan faktor-faktor yang mempengaruhinya. Berdasarkan pernyataan sebelumnya, penelitian ini bertujuan untuk mengungkap faktor-faktor yang mempengaruhi komitmen petani terhadap pendidikan anak. Penelitian ini dilakukan di Kabupaten Banyumas pada bulan Januari-Februari 2023 dengan menggunakan metode survei dengan pendekatan cross sectional. Sebanyak 525 peternak tercatat sebagai responden. Data yang diperoleh adalah Structural Equational Modeling Partial Least Square (SEM-PLS) yang dianalisis menggunakan aplikasi SmartPLS 4. Hasil penelitian ini menunjukkan bahwa peningkatan kondisi keuangan petani, keinginan, minat, dan motivasi anak dapat meningkatkan komitmen petani terhadap pendidikan anak. Variabel pengetahuan petani terhadap layanan pendidikan tidak berpengaruh terhadap komitmen petani. Kondisi keuangan petani secara tidak langsung dapat mempengaruhi komitmen petani melalui minat dan motivasi. Kondisi serupa juga terjadi pada keinginan dan pengetahuan anak petani terhadap layanan pendidikan. Dari penelitian ini dapat disimpulkan bahwa perbaikan kondisi keuangan petani yang diikuti dengan intensifikasi sosialisasi layanan pendidikan pemerintah dapat meningkatkan komitmen petani terhadap pendidikan anak sehingga akan berdampak pada peningkatan tingkat pendidikan anak di pedesaan Indonesia.

Kata kunci: Keluarga petani, komitmen, pendidikan anak, PLS-SEM, kabupaten Banyumas

Introduction

Education is one of the pillars in achieving a sovereign, developed, and sustainable country, "Golden Indonesia 2045". To achieve the target, the government continues to grow more education facilities that can reach rural areas to create educational facilities that are evenly accessible for rural communities. This development was carried out because education is very important for developing human resources and agriculture in rural areas to improve agriculture production (Reimers and Klasen, 2013; Sugiarto et al., 2025). The research of Läpple et al. (2015) states that education showed a positive correlation with the adoption and intensity of innovation applications. The application of innovation can increase

productivity, thereby having an impact on improving the welfare of farmer families. Based on this statement, a justification can be made that education is essential for livestock families, especially for the next generation.

The importance of education for livestock families is not in line with the existing reality, namely that low education is still the main problem of not developing livestock businesses, especially for micro, small, and medium farms' scale in rural areas (Effendy et al., 2019; Tambunan, 2019). This condition is exacerbated by the fact that in rural farming families, children are not seen as assets for future investment but as part of the workforce that helps with production activities (Guntur and Lobo, 2017). This causes the children to be unable to focus on their education because they have to help their parents with their activities on the farm. Difficulty accessing education in rural areas is a cause of parent's low commitment to their children's education.. Based on these problems, this research was conducted to determine the factors influencing livestock farmer's commitment to children's education.

Research has never been studied to determine the factors influencing farmers' commitment to children's education. This study was important for a rapidly developing region like Banyumas Regency's subdistricts surrounding the city center of Purwokerto City. The subdistricts are Baturraden, Sumbang, Kembaran, and Sokaraja. These districts have a significant livestock production to provide and support the foodstuff of the city center of Banyumas Regency. Based on this, this research uses the structural equation model partial least square (SEM-PLS), which can study and discover new theories (Amam et al., 2019) so that factors can be identified that can influence this commitment. The PLS-SEM analysis also makes possible to determine a variable's direct and indirect influence on other variables. This research aims to define variables that directly and indirectly influence farmer's commitment to children's education.

Materials and Methods

The methodology used in this study was a cross-sectional approach survey method to obtain research data at one time, namely when the research is carried out. This study was conducted during January-February 2023. This case study was conducted in the rural area surrounding Purwokerto City. Purposively 4 sub-districts that were chosen as a study area, namely Baturraden (-7.319760284652375, 109.22521005443123), Sumbang (-7.329730759193572, 109.25668777044395), Kembaran (-7.413964545565567, 109.2987474858171), and Sokaraja (-7.440176932050549, 109.31077920799422). The reason for selecting the four sub-districts is related to the plan of expanding Banyumas Regency into several new administrative areas, one of which is Purwokerto City. The four sub-districts will be administratively included in the Purwokerto City area. They are expected to be able to support food needs, especially animal food needs, because they are sub-districts with a fairly large livestock population in Banyumas Regency Table 1. From each sub-district, 5 villages were chosen based on the highest farmers population. A total of 525 livestock farmers were involved as respondents in this research.

Table 1. Livestock Population of the Study Location per 2023 by Central Bureau of Statistics

Subdistrict	Livestock Population (Heads)			
	Beef Cattle	Dairy Cattle	Goat	Sheep
Baturraden	654	1665	4193	452
Sumbang	2655	184	8491	1002
Kembaran	1968	0	5238	1771
Sokaraja	744	0	2986	462

Table 2. Research Construct Variables and Indicators

Construct Variables	Code	Reference
Farmers' Financial (FF)		
Indicators		Developed from Patunru and Respatiadi (2017) and Purnawan et al. (2021)
a. My monthly income is sufficient to cover my daily needs	FF1	
b. I am capable of funding my children's education for up to 12 years	FF2	
c. I am capable of funding my children's higher education	FF3	
Children's Desire (CD)		
Indicators		
a. My children have dreams and goals in life	CD1	Developed from Fahmi and Rantika (2021) and Mandasari and Fauziah (2022).
b. My children enjoy studying in school	CD2	
c. My children want to reach higher education as possible	CD3	
d. My children prefer to go to school than work	CD4	
e. My children feel that going to higher education in the future will increase parents' well-being	CD5	
Knowledge of Education Services (KES)		
Indicators		Developed from Patunru and Respatiadi (2017)
a. 12 years compulsory education program	KES1	
b. Scholarship program for underprivileged people	KES2	
c. KIP-Kuliah/Bidikmisi scholarship program	KES3	
Farmers' Interest in Children's Education (FI)		
Indicators		
a. I know the importance of education	FI1	Developed from Flouri (2006)
b. I care about my children's education	FI2	
c. I am interested in funding my children to the highest level of education possible	FI3	
d. I prioritize my children going to school rather than helping me on the farm	FI4	
e. I support my children to achieve their dreams through education	FI5	
f. I would be happy if I could send my children to the highest level of education possible	FI6	
Farmer's Motivation to Children's Education (FM)		
Indicators		Developed from Zuhri et al. (2022)
a. I feel that education is necessary for my children (EM)	FM1	
b. The education is important for my children's future (EM)	FM2	
c. I feel the future is safer if my children get higher education (EM)	FM3	
d. I feel that by sending my children to a higher school my children will be better accepted in society (RM)	FM4	
e. I feel that by sending my children to higher education my children can interact well in society (RM)	FM5	
f. Through education my child will have better social skills (RM)	FM6	
g. The education could increase my children's skill and competence (GM)	FM7	
h. I feel that with higher education my children will get a decent job (GM)	FM8	
Farmer's Commitment to Children's Education (FC)		
Indicators		Developed from the theory of organizational commitment operated by Pardamean (2022) and Krismiwati Muatip et al. (2023)
a. I committed to supporting the government's 12 years of compulsory education	FC1	
b. program		
c. b. I am responsible for funding my children's education	FC2	
d. c. I support children to go to higher education	FC3	
e. d. I feel that by sending my children to school, he/she will have a better life	FC4	
f. e. My children have the right to receive educational funding and facilities from me	FC5	

The construct variable utilized in the current study consisted of 6 variables with 30 indicators. The construct variables, indicators, and coding from each construct variable are mentioned in Table 2. The four-point Likert scale method mentioned by Mircioiu and Atkinson (2017) was used in this study to measure the farmers' perception of those variables. Data obtained were analyzed utilizing Structural Equation Model Partial Least Square (SEM-PLS) to understand the direct effect of farmers' financial condition, children's desire, knowledge of education services, farmers' interest in children's education, and farmers' motivation to children's education on farmers' commitment to children's education (Hypothesis 1-11) and indirect effect of farmers' financial, children's desire, and knowledge of education service on farmers' commitment to children's education through farmers' interest in children's education, and farmers' motivation to children's education (Hypothesis 12-17). The SmartPLS 4 software was used to analyze the data.

The Structural Equation Model Partial Least Square (SEM-PLS) analysis requires various model fitness tests to ensure the model is reliable and valid. The analysis methodology in this research followed the previous study by Hair et al. (2021), and the model fitness tests used in this study consisted of coefficient of determination (R-square), statistical collinearity, reliability, and validity tests. The variance inflation factor (VIF) value was used to measure the statistical collinearity test with a threshold value of less than 5 (Hair et al., 2019). The outer loadings value was used to measure convergent validity, with the threshold value being more than 0.6 (Lin et al., 2016). The Cronbach alpha and composite reliability test for reliability test used a threshold value not less than 0.7 (Purba et al., 2021), and for the validity test, the average variance extracted threshold value should be more than 0.5 (Ab Hamid et al., 2017). The next stage is hypothesis testing using direct and indirect effects of the variables.

Results and Discussion

Figure 1 shows the path diagrams of the results of the structural equation model of farmers' commitment to children's education, which was analyzed using SmartPLS 4.0 software. Table 2 shows the model fitness test, which consisted of VIF, outer loadings, Cronbach alpha, composite reliability, and AVE values.

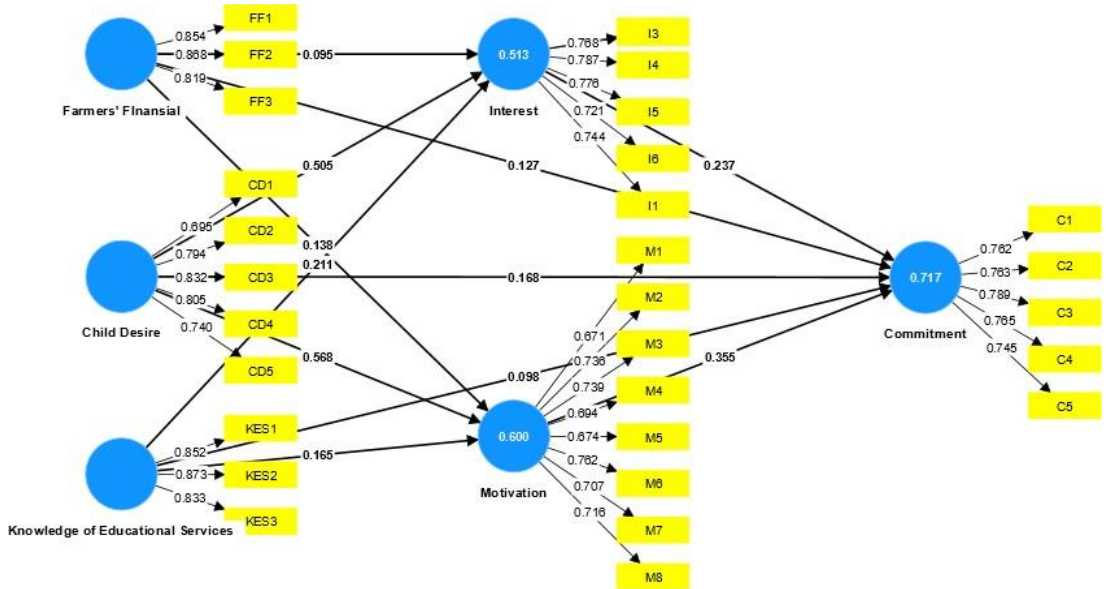

Figure 1. Immunity Performance of Experiment Goats

Based on the model fitness test results in Table 3, it could be seen that the model goodness is good, valid, and reliable because the value results in the model testing were still within the threshold mentioned in the materials and methods chapter, such as VIF value lower than 5, outer loading value >0.600, Cronbach alpha (reliability test) value >0.700, composite reliability value >0.700, and AVE value >0.500. Based on the R square test, it could be said that farmers' interest in children's education and farmers' motivation for children's education was affected by farmers' financial, children's desire, and knowledge of education services 51.3% and 60%, respectively. Farmers' commitment to children's education was affected by all of the five construct variables above by 71.7%, and the remainder is influenced by variables not used in this research. The importance of parental commitment to children's education will increase their involvement in educational activities. Parental involvement in their child's education will improve their academic success and social life (Kristiyani, 2013).

Table 3. Indicators' outer loading, reliability, and validity test results

Construct Variables	Indicators	VIF	Outer Loadings	Cronbach Alpha	Composite Reliability (rho_a)	Average Variance Extracted (AVE)
Farmer's Financial (FF)	FF1	1.795	0.854	0.804	0.815	0.718
	FF2	1.746	0.868			
	FF3	1.677	0.819			
Children's Desire (CD)	CD1	1.477	0.695	0.832	0.837	0.600
	CD2	1.886	0.794			
	CD3	2.043	0.832			
	CD4	1.949	0.805			
	CD5	1.614	0.740			
Knowledge of Education Service (KES)	KES1	1.737	0.852	0.812	0.814	0.727
	KES2	1.944	0.873			
	KES3	1.725	0.833			
Farmers' Interest (FI)	FI1	1.939	0.744	0.858	0.861	0.586
	FI2	2.055	0.768			
	FI3	1.996	0.794			
	FI4	2.019	0.787			
	FI5	2.076	0.776			
	FI6	1.758	0.721			
Farmers' Motivation (FM)	FM1	1.587	0.671	0.862	0.863	0.508
	FM2	2.041	0.736			
	FM3	1.896	0.739			
	FM4	1.944	0.694			
	FM5	2.071	0.674			
	FM6	1.998	0.762			
	FM7	1.774	0.707			
	FM8	1.726	0.716			
Farmers' Commitment (FC)	FC1	1.624	0.762	0.823	0.823	0.585
	FC2	1.695	0.763			
	FC3	1.770	0.789			
	FC4	1.632	0.765			
	FC5	1.564	0.745			

Table 4. Hypothesis testing on the effects of variables on farmer's commitment to children'seducation

Hypothesis	Path Effects	Path Coefficients	T Statistics	P Values	Results
H1	FF→FI	0.095	2.053	0.040	Confirmed
H2	FF→FM	0.138	3.036	0.002	Confirmed
H3	FF→FC	0.127	3.236	0.001	Confirmed
H4	CD→FI	0.505	12.484	0.000	Confirmed
H5	CD→FM	0.568	16.326	0.000	Confirmed
H6	CD→FC	0.168	3.597	0.000	Confirmed
H7	KES→FI	0.211	4.757	0.000	Confirmed
H8	KES→FM	0.165	3.850	0.000	Confirmed
H9	KES→FC	0.098	2.490	0.013	Rejected
H10	FI→FC	0.237	5.447	0.000	Confirmed
H11	FM→FC	0.355	6.798	0.000	Confirmed
H12	FF→FI→FC	0.023	1.843	0.065	Confirmed
H13	FF→FM→FC	0.049	2.830	0.005	Confirmed
H14	CD→FI→FC	0.120	5.079	0.000	Confirmed
H15	CD→FM→FC	0.059	6.069	0.000	Confirmed
H16	KES→FI→FC	0.050	3.555	0.000	Confirmed
H17	KES→FM→FC	0.059	3.268	0.001	Confirmed

H1-H17: Hypothesis 1-17; FF: Farmers' Financial; FI: Farmers' Interest; FM: Farmers' Motivation; FC: Farmers' Commitment; CD: Children's Desire; KES: Knowledge of Education Service

Table 4 shows the hypothesis testing, which consisted of examining the direct and indirect effects of construct variables on farmers' commitment to children's education. Education costs are one type of expense that parents must pay. These expenses will be even greater for farming families in rural areas where family members, including children, are part of the workforce (Gayatri et al., 2016). Children's education falls under the non-food family expenditure category, which, as noted by Hartoyo and Sahara (2021), accounted for more than 23% of farmers' family expenditures. It's a dilemma when farmers' families choose to send their children to school instead of having them work on farms, as this could reduce labor availability costs. Related to the previous statement, the farmers' financial condition significantly positively influences their interest, motivation, and commitment, both directly and indirectly. Takahashi and Barrett (2014) mentioned that the farmers with higher incomes could share more resources to invest in children's education. Larson et al. (2021) noted that one of the well-being factors of Indonesian farmers is the ability to fund the children's education to the university level. The financial condition of farming families influences their expenditure on children's education because, in minimal financial conditions, farming families' expenditure focuses on primary needs, namely food expenditure (Mottaleb et al., 2013). The government must provide more accessible education for children of non-formal workers, such as farmers so that sending children to school does not adversely affect their financial expenditures and economic status. Thus, the statement of Jones and Pratomo (2016) mentioned that the children of blue-collar parents achieve poor examination results, which will not occur again. Sugiarto et al. (2021) mentioned that farmers with higher education farmers with higher education have more interest in joining the farmers' group to obtain more knowledge, so the mindset would change from traditional non-profit-oriented to profit-oriented.

Children's desires positively and significantly affected the farmers' interest, motivation, and commitment to children's education directly and indirectly. This research found that when the farmers' children ask their parents for a good

education, this condition could increase the interest, motivation, and commitment of the farmers toward their children's education. The communication between farmers and their children should be intensive. If the children could express their desire to go to school rather than work on farms well, the farmers would try to provide children with education at their best. The parents' awareness of the importance of child education will imply the priority of family financial expenses, which encourages their children to go to school rather than support them on the farm (Hsin, 2007). The study by Julyyanti et al. (2022) stated that farmers had understood the risk of encouraging their children to work on the farm. Mulia and Kurniati (2023) added that the participation of parents in child education was very important to increase the quality of education and also human capital. Tamengge et al. (2021)stated that every farmer deals with the struggle of sending their children to school due to their low income. Related to this study's results, the government should pay attention to farmers' children's education because the farmers in rural communities currently have a better awareness of the importance of education.

In many conditions in rural areas, children are influenced by their parents, and if the parents are farmers, their children will tend to become farmers (Elder et al., 2020). However, with intense communication, parents will understand the importance of education in developing human resources and allocate more resources for children's educational expenditures (Donou-Adonsou et al., 2021). This condition is also followed by an understanding of current trends that require workers with a higher level of education (Marginson, 2016). The unexpected condition related to this issue is that some farmers perceive education as an escape from agriculture (Leavy and Hossain, 2014). If this has already occurred, the government should ensure that the agricultural families do not leave agriculture and encourage them to inherit the business from their children. This is related to the statement that educated farmers could increase their productivity and well-being through innovation adoption (Mariyono, 2019; Putra et al., 2017).

Farmers' knowledge of education services was not directly affected by the commitment to children's education but positively affected indirectly through farmers' interest and motivation, which also had a positive significant effect. The Indonesian government has superior programs to produce the best generation to achieve a Golden Indonesia 2045. The 12-year compulsory education program was a government program to ensure the children of Indonesia were educated to the level of Senior High School (Sekolah Menengah Atas/SMA) (Martin, 2019; Shaturaev, 2021). The Bidikmisi/KIP-Kuliah Scholarship provides opportunities for poor people and underdeveloped areas to gain access to education at universities to obtain a diploma or bachelor's degree so that they can improve their quality of life in the future (Nuraeni et al., 2023). The Bidikmisi scholarships provide opportunities for children from farming families to obtain higher education at universities (Wasahua et al., 2018). Dissemination of information about the program will increase interest and motivation (Stone, 2016).

Farmers' interest and motivation are positive and significant, affecting their commitment to children's education. Previous research by Muatip et al. (2022) mentioned that there was a strong correlation between the motivation and commitment of farmers related to their business. Another study noted that interest can positively influence a person's commitment (Nordin and Hassan, 2019). Strengthening the factors that could increase farmers' interest and motivation for children's education would indirectly increase the farmers' commitment to children's education. It's necessary to improve farmers' involvement in their children's education to strengthen the family-school

partnership, which has resulted in an increment of farmers' commitment to children's education (Hoover-Dempsey et al., 2010).

Conclusions

It could be concluded from the results that farmer's financial and children's desires positively and significantly affect farmers' commitment to children's education directly and indirectly through farmer's interest and motivation to send their children to school. Farmers' knowledge of educational services could increase their interest and motivation to send their children to school, indirectly affecting their commitment. The government needs to disseminate education programs and scholarships to farmer's families to increase their knowledge about programs and the farmer's children's desire to go to school. The hope is that education can increase the productivity and income of farming families, thereby increasing the family's welfare in the future. The limitation of this study is that the respondents are farmers who are not specifically explained, and the scale of ownership is very diverse. The researcher also did not consider the current conditions regarding the education of the children of farmers. The authors recommend the research based on the perspective of livestock farmers' children regarding this topic so that information about the education of livestock farmers' children becomes more holistic.

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