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Case Study

Identification of Internal Academic Factors Affecting Academic Entrepreneurship: A Case Study

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A B S T R A C T

Academic Entrepreneurship is an entrepreneurial activity conducted by scientists/academics who market their research results commercially to achieve specific economic benefits or rewards. This research focuses on academic entrepreneurship that occurs at Andalas University. There is still a lack of academics whose research products for commercialization are about 22.73%. It is because there are factors that influence academic entrepreneurship activities at Andalas University. One of them is the internal academic factor. The internal factors are Control System, Organizational Culture, Human Resource Management System, Organizational Structure, and Academic Leadership Behavior. The purpose of this study is to analyze the university's internal factors on academic entrepreneurship. This research uses a quantitative approach derived from 106 Andalas University academics with Structural Equation Modelling (SEM) methods with SmartPLS Software. The result obtained in this study is that the control system exerts a positive and negative influence on academic entrepreneurship. In contrast, other factors have a significant positive influence on academic entrepreneurship. The research results show that the university's control system, organizational structure, and human resources had no significant positive effect on academics at Andalas University. Meanwhile, entrepreneurial behavior and organizational culture have a significant positive effect on academic entrepreneurship at Andalas University. Further research should be analyzed for all universities with innovative products and are ready for commercialization throughout Indonesia. This research is still a case study and needs to be developed.

INTRODUCTION

The development of science and technology provides many life changes, one of which is research and development. Research is an effort to develop science to obtain new findings. These new findings can be in the form of proof or finding new knowledge. Therefore, research can be defined as an attempt to prove, develop, and discover [1]. In contrast, development is an activity in expanding or deepening existing knowledge [1]. In general, research and development is a method used to validate and develop products [2]. Research and development activities are carried out to assess changes to the activities that occur and produce a new product through the development stage [3]. Research and development are important for universities, and this is also contained in the Tri Dharma of Higher Education regarding education, research, development activities, and community service [4].

In this day and age, there have been many innovative products that the company has produced. Not only can companies produce innovative products, but universities are also required to produce innovative products. It is helpful to establish relationships with the industry to accelerate commercialization [5]. These innovative products are helpful for the performance of higher education innovations. More and more universities are producing innovative products, meaning they have good innovation performance.

Research and development related to science, innovation research, and technology are carried out by the National Research and Innovation Agency (BRIN). This institution is an institution in charge of government affairs in the field of research and technology. The National Research and Innovation Agency has the task of carrying out, developing, and conducting studies and implementing integrated innovations (Presidential Regulation on the National Research and Innovation Agency, 2019). The National Research and Innovation Agency oversees the Science Techno Park, which carries out commercialization activities in science and technology. Science Techno Park has a goal to manage the knowledge and technology owned by the university and facilitate the growth of innovation-based business companies (Ministry of National Development Planning: Bappenas, 2015).

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One of the National Research and Innovation Agency institutions, namely Science Techno Park located at Andalas University.

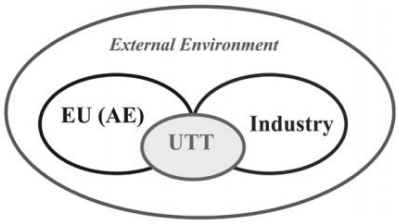
Andalas University (Unand) is one of the public universities that encourages its lecturers to produce innovative products. In 2018, Andalas University was ranked 11th for innovation performance by our ministry. In 2019, Unand was ranked 7th for innovation performance. This innovation performance is obtained based on inputs, one of which is the number of lecturers' innovation products.

To achieve this target, Andalas University has an Institution that handles the problem, namely research and community service through the Science Techno Park (STP). One of the responsibilities of STP Unand is about the performance of college innovation. STP Unand will be a medium for unand inventor lecturers who produce innovative products to be commercialized.Many unand innovation products are still not commercialized. Unand's innovation products are currently recorded; there are 214 of the research results and 67 of the results of student entrepreneurship. Of Unand's 261 innovation products, only 50 have been commercialized. It means that only 19.5% of Unand's research products can be commercialized. Based on the Data Innovation Performance, the percentage of lecturers who can produce research-based innovation products is 15.49%. However, not all innovation products resulting from the lecturer's research are able to reach the commercialization stage and can be applied by industry. It indicates a problem with the commercialization of Unand's innovative products. The problem with inventory is usually the difficulty of knowing how to commercialize the product and whether the product has innovation or not. Because the inventor's job is only to produce innovative products, the university's internal factors can also cause the above problems.

The commercialization of these innovative products should be supported by academic entrepreneurship. Academic entrepreneurship is one of the gaps in meeting the research and development process's needs until commercialization. In this study, entrepreneurial academics were articulated to create economic value through organizational creation, renewal, or innovation that occurred inside or outside the university resulting in the commercialization of research and technology transfer [6].

Academic entrepreneurship is a process that occurs within universities and encourages universities to transfer technology to industry. Academic entrepreneurship is expected to result in more technology transfers between universities and industry. This entrepreneurial activity is inseparable from the factors that affect academic entrepreneurship. This research focuses on identifying the internal factors of the university environment against activities that support academic entrepreneurship.

University academic entrepreneurship is an activity that refers to researchers at universities who commercialize the university's research through business activities [7]. Academic entrepreneurship can also be interpreted as creating economic value through the creation, renewal, and organizational innovation that occurs inside and outside the university, which results in the commercialization of research and technology transfer [6]. The importance of academic entrepreneurship at the university level, according to Raharja (2018) [8], namely, Entrepreneurship at the Higher Education level, is directed to change the traditional view to a new view that sees Higher Education as an educational institution that can generate financial resources to cover operational costs. According to Guerrero and Urbano's (2010) research, universities are currently being asked to contribute more in commercialization, generating new ideas, and playing a role in economic development [9].



EU - Entrepreneurship University
AE - Academic Entrepreneurship
UTT - Transfer Technology University

Figure 1. Framework Relationship between University Level Entrepreneurship, Industry and External Environment (Source: M. Yusof and K. K. Jain [16])

This study's literature review was conducted extensively, covering the exploration of entrepreneurship, organizational entrepreneurship, and academic entrepreneurship. Literature is directed to describe internal factors that might affect academic entrepreneurship in a university environment and identify the dimensions and elements of academic entrepreneurship.

Research on entrepreneurship has varied that already exists, such as companies, family businesses, franchises, and international entrepreneurial activities. Due to this development, concerns arose about how businesses acted and how the entrepreneur's managerial behavior [2]–[7].

The study identified three entrepreneurial research categories at the university level: university entrepreneurship, academic entrepreneurship, and university technology transfer. Previous research and studies on university entrepreneurship, academic entrepreneurship, and university technology transfer are concerned and focused on institutional policy, the organizational and institutional environment itself, or internal academic/university factors. The research contributes to the literature by describing the limits of university-level entrepreneurship and developing a framework for describing the relationship between research categories, as shown in Figure 1 [16]. This research focuses on the relationship between internal academic/university factors to academic entrepreneurship from the above literature.

There has been research on the influence of internal academic factors on Academic Entrepreneurship in Malaysia with case studies at several universities in Malaysia [5], [6], so researchers are also trying to study at Andalas University, which is one of the universities in Indonesia located in West Sumatra. The conceptual model used adopts from [6]. Figure 2 is the Conceptual Model of this study.

Based on the conceptual model in the previous research, the purpose of this study is to analyze the university's internal factors such as Control System, Organizational Culture, Human Resource Management System, Organizational Structure, and Academic Leadership Behavior on academic entrepreneurship at Andalas University.

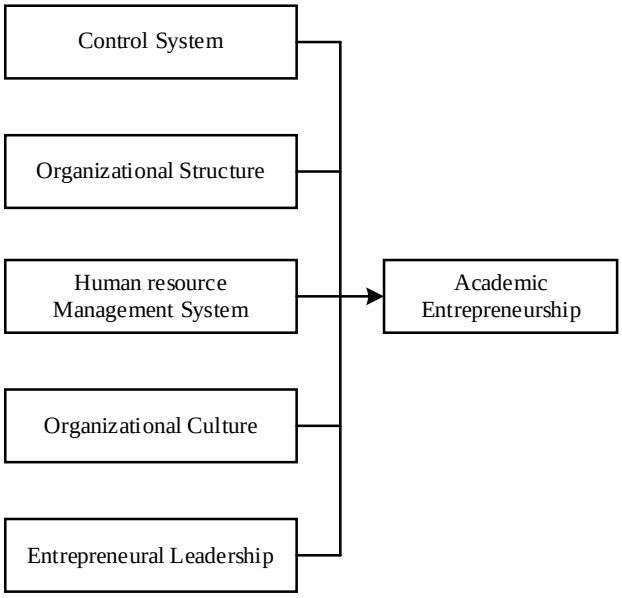


Figure 2. Conceptual Model Research

METHOD

The method used to solve the problem in this research is Structural Equation Modeling (SEM) using SmartPLS Software. The choice of the Structural Equation Modeling method is because this method complements the previous statistical methods, namely the linear regression method and path analysis (Hussein, 2015). Then, the SEM method can manage multicollinearity problems between independent variables and can be used on reflective and formative constructs (Hamid and Anwar, 2019). Variable Dependent on this research is (academic entrepreneurship.). The independent variables in this study are the control system, organizational structure, human resources, entrepreneurial behavior, and organizational culture. This variable was obtained based on the adoption and modification of Zahra's model of the [17] The Entrepreneurial Dimension of Academia, as shown in Table 1.

The internal work environment can significantly influence the tendency of innovative behaviors in academic entrepreneurs. However, this aspect was not given sufficient attention in previous studies [23]. Furthermore, the design of university organizations has been identified in some studies[14], [20], [24]. The organization's climate or work can be determined by a series of elements, including control system, level of structure, nature of appreciation, consideration [27].

This study's independent variables are the university's internal academic factors, namely control system, organizational structure, organizational culture, and human resources system. These factors were adopted from Ireland's research et.al on the company's entrepreneurial model [20], [21] [28], [29]. For behavioral factors, academic leadership was adopted from Kuratko and Hornsby [30], [31]. Each variable has nine indicators (each indicator can be seen in the Appendix). The study used a Likert Scale of 1 to 5 (1 – strongly disagree and 5 = strongly agree).

The sampling method used is the stratified random sampling method, where the respondent is all lecturers at Andalas University. This study uses a questionnaire that has been adopted from Yusof et al. [6]. Questionnaires are distributed using Google Forms. Respondents who have filled out the google form are 91 lecturers of Andalas University.

The hypotheses in this study are:

H1: Internal academic factors of the university (control system) towards academic (academic entrepreneurship).

H2: Internal academic factors of the university (organizational structure) towards academic (academic entrepreneurship).

H3: Internal academic factors of universities (human resource management system) towards academic (academic entrepreneurship).

H4: Internal university academic factor (Organizational Culture) towards academic (academic entrepreneurship.).

H5: Internal university academic factors (Entrepreneurial Leadership Behavior) towards (academic entrepreneurship).

RESULT AND DISCUSSION

The data collected in this study were primary data obtained through research questionnaires. The questionnaire used was in the form of a google form which was distributed to respondents online.

Table 1. Dimension Academic Entrepreneurship

Academic Entrepreneurship	Description	Source
Organizational formation	Lure creations by expanding operations in existing or new markets through university start-ups, companies, spin-offs or spin-outs, and strategic alliances,	[17]–[23]
Organizational innovation	The university's commitment to pursuing research and development in creating and introducing scientific breakthroughs, discoveries, and new products; introducing new ways of doing things in terms of production processes and organizational systems within universities; and transfer and commercialize new knowledge and technologies for economic and social development	[15], [17]–[19], [24]–[26]
Organization updates	The transformation of existing academic organizations through the renewal or reshaping of the ideas in which they are built; by building or acquiring new capabilities and then creatively leveraging them to add value to stakeholders; and through the revitalization of the organization's operations by changing the scope of its business, its competitive approach or	[10], [15], [17], [20], [23], [26]

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Table 2. Demographic Characteristics and Frequency Distributions of Sample

Demographic	Frequency (N=106)	% Valid	Demographic	Frequency (N=106)	% Valid
Gender			**Faculty (cont.)**		
Male	46	43.4	Math and Science	5	4.72
Female	60	56.6	Agriculture	7	6.60
Age			Husbandary	10	9.43
35 or below	15	14.2	Engineering	37	34.91
36 to 40	28	26.4	Information Technology	4	3.77
41 to 45	19	17.9	Agricultural Technology	2	1.89
46 to 50	20	18.9	**Academic Qualification**		
50 or above	24	22.6	PhD	51	48.10
Faculty			Master	53	50.00
Economic	21	19.81	Other	2	1.80
Pharmacy	5	4.72	**Academic Designation**		
Law	3	2.83	Professor	10	9.40
Cultural Science	3	2.83	Associate Professor	27	25.50
Political and Social Science	2	1.89	Senior Lecturer	42	39.60
Medicine	5	4.72	Lecturer	24	22.6
Dentistry	1	0.94	Other	3	2.80
Public Health	1	0.94			

Demographic Profile of the Respondents

Respondents of this research were Andalas University lecturers with a minimum number of 100 respondents. Meanwhile, in this study, 106 respondents filled out the questionnaire. The characteristics of respondents are distinguished by age, gender, faculty, academic qualifications, and academic designations. Table 2 shows that the percentage of respondents in this study were lecturers with an age range of 36-40 years, with 26.4%. Then, there are also many respondents from lecturers who are over 50 years old. Based on the respondent's age data, an analysis can be done to see the correlation with academic entrepreneurship at Andalas University. The following correlation analysis of respondents' age data can be seen in Table 3.

Based on Table 3, it can be seen that the calculated chi-square value is 17.444 while the chi-square table value with df equal to 8 is 15.507. Therefore, it can be concluded that there is a relationship between academic age and academic entrepreneurship at Andalas University due to the large chi-square count obtained from the chi-square table.

Table 2 shows that this study has a total of female respondents with a percentage of 56.6%. At the same time, the total male respondents have a percentage of 43.4%. The data on the sex of academics can be analyzed for correlation with academic entrepreneurship at Andalas University. The following correlation analysis using the chi-square test can be seen in Table 4.

Based on the chi-square test, it is known that the calculated chi-square value is 3.021. The chi-square value is smaller than the chi-square table, which is 5,991. Therefore it can be concluded that gender is not correlated with academic entrepreneurship conducted at universities. This shows that the knowledge possessed by female and male lecturers regarding academic entrepreneurship is the same. Based on Table 4, it can be seen that respondents from the Faculty of Engineering have the most number, namely 37 people. Faculty data from respondents can be analyzed for correlation with academic entrepreneurship conducted at Andalas University. The following analysis of the correlation between faculty and academic entrepreneurship activities can be seen in Table 5.

Table 5 shows the value of the chi-square test to see the correlation between the faculties of the respondent's origin and

Table 3. Correlation Analysis of Respondents's Age

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	17.444[a]	8	.026
Likelihood Ratio	20.567	8	.008
Linear-by-Linear Association	.377	1	.539
N of Valid Cases	106		

[a.] 6 cells (40,0%) have expected count less than 5. The minimum expected count is 2,69.

Table 4. Data Correlation Analysis of Respondents' Gender

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.021[a]	2	.221
Likelihood Ratio	3.121	2	.210
Linear-by-Linear Association	2.805	1	.094
N of Valid Cases	106		

[a.] 0 cells (,0%) have expected count less than 5. The minimum expected count is 8,07.

Table 5. Correlation Analysis of Respondent's Faculty

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	24.397[a]	26	.553
Likelihood Ratio	26.381	26	.442
Linear-by-Linear Association	1.357	1	.244
N of Valid Cases	106		

[a.] 36 cells (85,7%) have expected count less than 5. The minimum expected count is ,18.

Table 6. Correlation Analysis of Respondents' Education

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5.512[a]	6	.480
Likelihood Ratio	5.725	6	.455
Linear-by-Linear Association	1.442	1	.230
N of Valid Cases	106		

[a.] 6 cells (50,0%) have expected count less than 5. The minimum expected count is ,18.

Table 7. Correlation Analysis of Respondents's Academic Designation

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	7.879[a]	8	.445
Likelihood Ratio	8.352	8	.400
Linear-by-Linear Association	.006	1	.941
N of Valid Cases	106		

[a.] 6 cells (40,0%) have expected count less than 5. The minimum expected count is ,54.

academic entrepreneurship at Andalas University. Based on these calculations, the calculated chi-square value is 24,397. This value is smaller than the value of the chi-square table, which is worth 38.885. Therefore, it can be concluded that the faculty of lecturers is not related to academic entrepreneurship. This is due to the common understanding of lecturers regarding academic entrepreneurship in every faculty at Andalas University. Then, the characteristics of respondents can be categorized based on educational qualifications, as can be seen in Table 2.

Based on Table 2, it is known that the educational qualifications of the respondents have the largest percentage, namely in S-3 education with a percentage of 50.0%. The education data of the respondents can be known whether or not there is a correlation to academic entrepreneurship at Andalas University using the chi-square test. The following results of the correlation analysis of educational data on academic entrepreneurship can be seen in Table 6.

Based on Table 6, it is known that the calculated chi-square value obtained is 5.512. This value is below the chi-square value of 12,592. Thus, it can be said that the education undertaken by academics does not correlate with the academic entrepreneurship that is carried out. That is, lecturers with the education of S-2, S-3, and others understand academic entrepreneurship. Furthermore, the characteristics of respondents can be grouped by functional position, as shown in Table 2.

Based on Table 2, it can be seen that the respondents in this study had the most academic designation, namely the position of lecturer, with a percentage of 39.6%. The following data can be analyzed for its correlation to academic entrepreneurship at Andalas University, as shown in Table 7.

Based on Table 7, it can be seen that the calculated chi-square value obtained is 7.879. This value is small compared to the value of the chi-square table, which has a value of 15.507. Thus, the functional positions of the following academics do not correlate with academic entrepreneurship at universities. Every lecturer

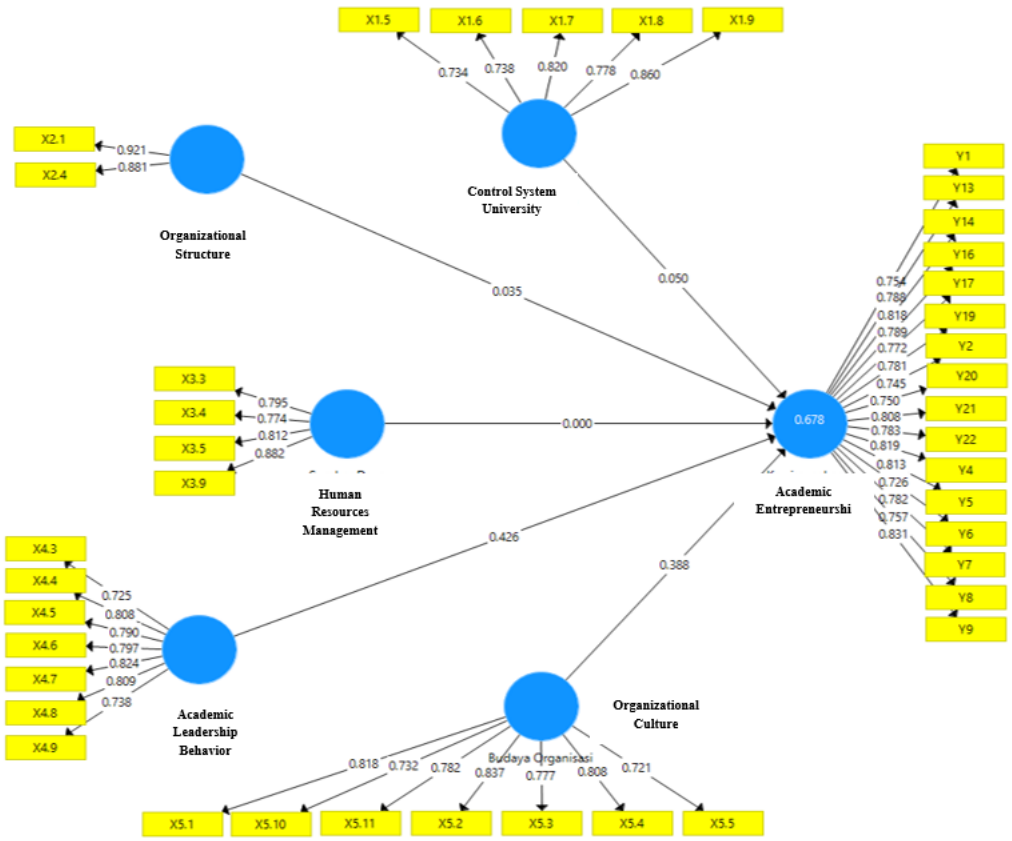

Figure 3. Model Between Variables After Reestimate

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Table 8. Average Variance Extracted (AVE) Values

Construct	AVE Score
Control System University	0.620
Organizational Structure	0.812
Human Resource Management	0.667
Academic Leadership Behavior	0.617
Organizational Culture	0.613
Academic Entrepreneurship	0.613

with an academic designation as in this study has the same knowledge about academic entrepreneurship.

Validity Test

The validity test in this study was conducted to test whether or not the statement items contained in the research questionnaire were valid. The validity test can be determined in two ways, namely convergent validity, and discriminant validity. The validity test with convergent validity can be seen based on the outer loading value and the Average Variance Extracted (AVE) value. At the same time, the validity test with discriminant validity can be seen based on the Fornell and Lacker criterion and cross-loading values.

Convergent Validity

In convergent testing validity, a statement item on the questionnaire can be classified as valid if the outer loading value is greater than 0.7. If the outer loading value is smaller than 0.7, the calculation will be repeated (reestimate). After recalculation, it is known that the outer loading value of each construct, the outer loading value of each statement item, is greater than 0.7. So it can be concluded that all the outer loading values of each statement item are valid. The relationship model between variables after recalculation (reestimate) can be seen in Figure 3.

Another method to determine the value of convergent validity is through the calculation of the Average Variance Extracted (AVE) value. The AVE value can be classified as valid if the obtained value is greater than 0.5. The AVE value to test the validity of the questionnaire can be seen in Table 8.

Based on Table 8, it can be seen that the AVE value of each research variable has a value greater than 0.5. So it can be concluded that the AVE value obtained for each construct is valid. The AVE value generated for each construct describes the ability of the indicator to measure the latent variables of the study.

Discriminant Validity

The validity test with discriminant validity aims to see the uniqueness of the value of each item and prove that the statement items in each variable are only related to that variable. Discriminant validity testing can be done by calculating the Fornell and Lacker criterion and cross-loading in the PLS software. In the Fornell and Lacker criterion test, the questionnaire can be valid if a construct has the highest score on that construct compared to other constructs. The following values for the Fornell and larcker criterion can be seen in Table 9.

Based on Table 9, it can be seen that each construct has a higher Fornell and Larcker criterion value when compared to other constructs so that the test can be said to be valid. In addition to conducting the Fornell and Lacker criterion test, the validity test can be determined based on the cross-loading value obtained between the latent variable and the manifest variable, which aims to see how well the latent variable is able to predict its manifest variable. The latent variable can predict the manifest variable well if the results of the cross-loading of a statement item are greater than the other statement items [32]. Each latent variable and its block manifest variable has a higher cross-loading value when compared to the cross-loading value of other block manifest variables. Each statement item is related to its respective latent variables and is not related to other latent variables. Thus, it can be concluded that the latent variables in the study were able to predict the size of the manifest variables well.

Reliability Test

The reliability test was carried out to see the reliability and consistency of the statement items in the questionnaire in taking measurements and measuring the same symptoms in respondents [33]. The reliability test can be seen from composite reliability and Cronbach's alpha.

Composite Reliability

One of the reliability tests can be seen based on the composite reliability value. The test uses composite reliability to measure the internal consistency of each construct contained in the questionnaire. A construct can have a good composite reliability value if a large value is obtained from 0.7. Data processing for

Table 9. Fornell and Larcker Criterion

Variables	Organizational Culture	Academic Entrepreneurship	Academic Leadership Behavior	Control System University	Organizational Structure	Human Resource Management
Organizational Culture	0.783					
Academic Entrepreneurship	0.765	0.783				
Academic Leadership Behavior	0.760	0.775	0.785			
Control System University	0.634	0.581	0.609	0.788		
Organizational Structure	0.635	0.611	0.688	0.728	0.901	
Human Resource Management	0.748	0.667	0.763	0.613	0.604	0.817

Table 10. Composite Reliability

Variables	*Composite Reliability*
Control System University	0.891
Organizational Structure	0.896
Human Resource Management	0.889
Academic Leadership Behavior	0.918
Organizational Culture	0.917
Academic Entrepreneurship	0.962

Table 11. Cronbach's Alpha

Variables	*Cronbach's Alpha*
Control System University	0.847
Organizational Structure	0.771
Human Resource Management	0.833
Academic Leadership Behavior	0.896
Organizational Culture	0.894
Academic Entrepreneurship	0.958

Table 12. Path Coefficient

Path	Original Sample
Control System University -> Academic Entrepreneurship	0.050
Organizational Structure-> Academic Entrepreneurship	0.035
Human Resources Management-> Academic Entrepreneurship	0.000
Academic Leadership Behavior -> Academic Entrepreneurship	0.426
Organizational Culture-> Academic Entrepreneurship	0.388

reliability testing using composite reliability can be seen in Table 10.

Based on Table 10, it is known that each construct has a composite reliability value greater than 0.7. Each construct also has a composite reliability value that is close to 1; this means that the indicators used in the study are reliable. In other words, the answers to the questionnaire given by the respondent are stable so that the questionnaire can be used as a measuring tool.

Cronbach Alpha

The next reliability test can be known based on the value of Cronbach's alpha on SmartPLS. A latent variable can have a good reliability value if the value of Cronbach's alpha on the latent variable is greater than 0.6. Based on the Cronbach's alpha value presented in Table 11, it can be seen that each construct or latent variable has a Cronbach's alpha value greater than 0.6. So it can be said that each of these constructs has good reliability.

The inner model test in this study aims to determine the relationship between university control system variables, organizational structure, human resources, entrepreneurial behavior, and organizational culture on academic entrepreneurship. One test of the inner model can be seen based on the value of R-Square.

The R-Square values obtained based on the results of data processing using SmartPLS 3.0. It can be seen in the table, the R Square value obtained is 0.678. This value shows that academic entrepreneurship at Andalas University is influenced by the variables of the university's control system, organizational structure, human resources, entrepreneurial behavior, and organizational culture by 67.8%. The rest is influenced by other factors not discussed in this study. Furthermore, the inner model test can be analyzed through the path coefficient value, as shown in Table 12.

The path coefficient value in Table 12 shows how the relationship between the variables of the university's control system, organizational structure, human resources, entrepreneurial behavior, and organizational culture on academic entrepreneurship. As can be seen in the table, the value of each relationship between variables is positive, so it can be concluded that the variables of the control system, organizational structure, human resources, entrepreneurial behavior, and organizational culture positively affect academic entrepreneurship. In Table 12, it is known that the original sample value of the entrepreneurial behavior variable has the highest value of 0.426 and then followed by the organizational culture variable, which has a value of 0.388. This shows that entrepreneurial behavior and organizational culture affect academic entrepreneurship the most compared to other variables.

The next stage after testing the outer model and testing the inner model is hypothesis testing. Hypothesis testing can be determined based on the t-statistic and P-value on the output of the SmartPLS bootstrapping. A hypothesis can be accepted if a large t-statistic value is obtained from the t-table value and a small p-value from the alpha value. The following values of t-statistics in hypothesis testing can be seen in Table 13.

Hypothesis 1 (H1) states that the university control system significantly affects academic entrepreneurship at Andalas University. In calculating the path coefficient, it is known that the university control system has a positive effect on academic entrepreneurship at Andalas University. However, based on data processing, it was found that the t-statistic value of the university control system variable was 0.527. The t-statistic value is smaller than the t-table value, which has a value of 1.96. It states that the hypothesis is rejected and gives the result that there is no significant effect. Therefore, it can be concluded that the university control system has no significant positive effect on academic entrepreneurship at Andalas University.

Table 13. T-Statistic Value

Variables	T Statistic (|O/STDEV|)	P-Value	Results
Control System University -> Academic Entrepreneurship	0.527	0.598	Not supported
Organizational Structure-> Academic Entrepreneurship	0.417	0.677	Not supported
Human Resources Management-> Academic Entrepreneurship	0.002	0.999	Not supported
Academic Leadership Behavior -> Academic Entrepreneurship	4.201	0.000	Supported
Organizational Culture-> Academic Entrepreneurship	4.529	0.000	Supported

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Hypothesis 2 (H2) in this study is that organizational structure significantly affects academic entrepreneurship at Andalas University. Based on the calculation of the path coefficient, it is known that the organizational structure has a positive effect on academic entrepreneurship at Andalas University. However, at the stage of testing the hypothesis, it was found that the organizational structure did not significantly affect academic entrepreneurship at Andalas University. This is caused by the t-statistic value obtained is 0.417. The t-statistic value is smaller than the t-table value, which has a value of 1.96. Thus, it can be said that the organizational structure has no significant positive effect on academic entrepreneurship at Andalas University.

Hypothesis 3 (H3) states that human resources significantly affect academic entrepreneurship at Andalas University. Based on the calculation of the path coefficient, the results obtained that human resources positively affect academic entrepreneurship. However, based on data processing, it was found that human resources had no significant effect on academic entrepreneurship at Andalas University. Based on the value of the hypothesis test, the t-statistic results for the human resources variable have the lowest value, which is 0.002. This value is much smaller than the t-table value, which is 1.96. Thus, it can be concluded that human resources have no significant positive effect on academic entrepreneurship at Andalas University.

Hypothesis 4 (H4) states that entrepreneurial behavior applied at universities can significantly affect academic entrepreneurship at Andalas University. This is by the results of the study, which obtained a t-statistic value of 4.201. This value is higher than the t-table value, which is 1.96. Then, based on the inner model data processing using the path coefficient, the results show that entrepreneurial behavior positively affects academic entrepreneurship. Therefore, it can be concluded that entrepreneurial behavior has a significant positive effect on academic entrepreneurship at Andalas University. The condition of entrepreneurial behavior at Andalas University is based on research results; namely, the leadership at Andalas University has a confident attitude, is open to suggestions, is quick to take action when obstacles occur, and promotes an environment an incentive to take risks. These conditions can support entrepreneurial activities at Andalas University due to academic leaders who apply entrepreneurial values in the university environment.

Hypothesis 5 (H5) states that organizational culture in universities can significantly influence academic entrepreneurial activities at Andalas University. This is by the results of the study, which obtained a t-statistic result of 4.529. This value is higher than the t-table value, which is 1.96. Thus, the organizational culture variable can be said to have a significant effect on academic entrepreneurship. Then, based on path coefficient testing, the results show that organizational culture positively affects academic entrepreneurship. Thus, it can be concluded that university organizational culture has a significant positive effect on academic entrepreneurship at Andalas University.

CONCLUSION

Based on the research, it was found that the university's internal factors, such as the university control system, had no significant positive effect on academic entrepreneurship at Andalas University because the t-statistic value was 0.527 and the p-value was 0.598. In addition, it can be caused by the absence of a control focus on academic entrepreneurship because LPPM Andalas University controls it and also Science Techno Park. Then, the organizational structure has no significant positive effect because the t-statistic value is 0.417 and the p-value is 0.677. The organizational structure at Andalas University has many levels of management, is not flexible, and there are no bureaucratic problems. The human resource factor has no significant positive effect on academic entrepreneurship at Andalas University, and it is known that the t-statistic value is 0.002 and the p-value is 0.999. The condition of human resources at Andalas University is the support for career development and potential and provides incentives for innovation.

Entrepreneurial behavior and organizational culture have a significant positive effect on academic entrepreneurship at Andalas University. At Andalas University, some behaviors can support academic entrepreneurship, such as being open to suggestions, confident, and quick to act. Then Andalas University has a culture that values tested ideas and emphasizes innovation. In other words, increasing and improving entrepreneurial behavior and organizational culture at the university level will significantly impact academic entrepreneurship at Andalas University.

Recommendations for improving academic entrepreneurship at Andalas University can be determined based on the university's control system, such as transparency in funds management for research and service, conducting socialization to academics related to research procedures, and granting funds. Then in terms of organizational structure, such as maximizing the performance of the entrepreneurial organizational structure of Andalas University and synergizing it with other parties related to entrepreneurship such as Science Techno Park. Furthermore, in terms of university human resources, such as providing a balance of incentives for academics who conduct research independently or in groups—encouraging academics to take every opportunity and opportunity in entrepreneurship. Furthermore, for entrepreneurial behavior, improvements can be made by applying an orientation to entrepreneurship and innovation in research. Then, from the organizational culture, recommendations can be given, such as conducting training and contracts for academics to develop themselves, provide socialization to academics to conduct innovative research, and provide support for university start-up companies. Further research should be analyzed for all universities with innovative products and are ready for commercialization throughout Indonesia. This research is still a case study and needs to be developed.

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APPENDIX - INDICATORS DEFINITION

Control System

Elements	Description of Scale
CT1	My university has strict budget controls
CT2	At my university, for the provision of fees in researching a rigorous control process
CT3	University say if once budgets for R&D are received, they are challenging to revise
Ct4	My university has a lot of wisdom for academics in doing their job
CT5	academics at my university feel trusted by management in terms of the use of organizational resources
CT6	My university has a clear command line in allocating authority to each faculty and major
CT7	My university provides several options for individuals to get financial support for innovation projects
CT8	My university is instrumental in avoiding waste
CT9	My university is open with others on how to improve the quality of work

Organizational Structure

Elements	Description of Scale
ST1	My university has an organizational structure that facilitates the flow of open communication
ST2	My university has a bureaucratic structure that eliminates our ability to be entrepreneurial
ST3	My university encourages me to manage my research projects independently
ST4	My university has many levels of management
ST5	organizational structure at my university is flexible
ST6	rigid chain of command limits our ability to experiment with new ideas
ST7	bureaucracy is a problem
ST8	administrators believe in delegating decision-making responsibilities
ST9	The organizational structure of my university is clearly defined

Human Resources Management System

Elements	Description of Scale
HR1	My university provides high incentives for innovation
HR2	risk-taking academics (who have innovation) are rewarded with
HR3	work tends to be broadly defined with considerable discretion about how tasks are performed
HR4	My university encourages academics to pursue various career paths.

Human Resources.. (continued)

Elements	Description of Scale
HR5	My university develops the creative potential of academics
HR6	At my university, annual performance assessments include employee innovation evaluations.
HR7	My university has more attention to process than performance.
HR8	there is a balance between incentives for individual initiatives and incentives for team collaboration.
HR9	If you don't innovate in work, you can't move forward.

Organizational Culture

Elements	Description of Scale
CU1	an academic with a good idea is given free time to develop the idea.
CU2 (CU2)	academics have a lot of opinions on how to do things.
CU3 (CU3)	our culture is a culture that values the ideas that have been tested.
CU4	we celebrate innovative achievements.
CU5	we have a culture that prevents
CU6	there is a sense of urgency about the importance of innovation.
CU7	risk-taking is a core value.
CU8	New ideas tend to accept quick decisions/not taken from management.
CU9	My university has always supported some of them may ultimately fail.

Entrepreneurial Leadership Behavior

Elements	Description of Scale
LB1	In general, academic leaders at various universities' levels encourage rule-breaking when they hinder the achievement of strategic initiatives.
LB2	In general, academic leaders at different university levels get things done, even if it means around the system.
LB3	In general, academic leaders at different university levels are willing to move forward with promising new approaches when others may be holding back.
LB4	In general, academic leaders at various universities promote an environment where there is a risk-taking drive.
LB5	In general, academic leaders at different levels of the university encourage others to outwit the bureaucracy.
LB6	In general, academic leaders at various university levels overcome obstacles when the former does not succeed
LB7	In general, academic leaders at various university levels are actively fighting bureaucratic encroachment on universities.
LB8	In general, academic leaders at different university levels voluntarily listen to advice from others on how to do things differently.
LB9	In general, academic leaders at different university levels are supported, although some may ultimately fail

Organizational Innovation

Elements	Description of Scale
EI1	Over the past three years, our universities have spent a lot of money (compared to other universities) on R&D
EI2	For the past three years, our university has maintained national grade R&D facilities.
EI3	Over the past three years, our university has introduced many discoveries to the market.
EI4	Over the past three years, our university has obtained more patents than any other university.
EI5	Over the past three years, our university has pioneered groundbreaking scientific research for local economic development.
EI6	For the past three years, our universities have been working (avoidable with other universals) to commercialize findings.
EI7	Over the past three years, our universities have increased the number of knowledge transfers to the industry through R&D.

Organizational Formation

Elements	Description of Scale
EC1	Over the past three years, our universities have entered new industries through equity involvement in university start-up start-ups.
EC2	Over the past three years, our university has expanded its international operations through strategic alliances.
EC3	Over the past three years, our university has been developing through research contracts with industry.
EC4	For the past three years, our university has received sponsorship from the industry to establish an applied research center to promote new ventures.
EC5	For the past three years, our university has had an entrepreneurial company from an internal research group.
EC6	For the past three years, our university has established start-up companies through industrial relations.
EC7	Over the past three years, our university seems to be focusing on improving its operating performance rather than engaging in commercialization activities

Organization Updates

Elements	Description of Scale
ER1	Over the past three years, our university has retained several unfavorable faculties/majors due to the public interest
ER2	Over the past three years, our university has changed its competitive approach (strategy) for each faculty/significant.
ER3	Over the past three years, our university has initiated several programs to increase faculty/significant productivity.
ER4	Over the past three years, our university has reorganized operations to ensure increased coordination between faculties/majors.

Organization Updates (continued)

Elements	Description of Scale
ER5	Over the past three years, our universities have established technology transfer schemes to help researchers commercialize research.
ER6	For the past three years, our universities have established technology transfers for the discovery of market faculties.
ER7	Over the past three years, our university seems to have expanded its mission by incorporating enterprising economics in addition to teaching and research.

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