











syntax in Phase 3 can be explained by the formed factors, and so on.

4) *Total Variance Explained*: The following Table V indicates the Total Variance Explained analysis results to determine the number of factors formed from the factor analysis.

TABLE V  
TOTAL VARIANCE EXPLAINED SCORE OF FACTOR ANALYSIS

Component	Total Variance Explained			Extraction Sums of Squared Loadings		
	Initial Eigenvalues			%		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	6.053	67.258	67.258	6.053	67.258	67.258
2	.966	10.737	77.996			
3	.707	7.859	85.855			
4	.537	5.971	91.826			
5	.365	4.061	95.887			
6	.186	2.070	97.957			
7	.151	1.680	99.637			
8	.024	.269	99.907			
9	.008	.093	100.000			

Extraction Method: Principal Component Analysis.

Based on Table 5, it can be explained that the factor that is formed is only 1 factor that has Eigenvalues > 1. In Table V above, the factors formed with eigenvalues 6.053, explaining the model by 67.25% whole.

5) *Scree Plot*: Based on Figure 3, the Scree Plot can explain the nine components (phases) tested. There was only one component that had an Eigenvalue number of more than 1.

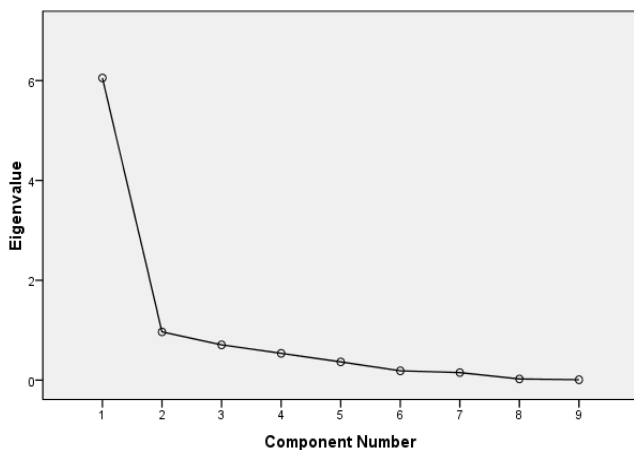


Fig. 3 Scree Plot 9 Phase of SEM

It was stated that the nine existing components had formed one factor. If it is related to the formation of phases in this learning model's trial, it can be concluded that the 9 phases tested have formed a complete unified model. Thus, the SEM entrepreneurship training model is valid based on factor analysis. One phase is formed from phases that have a unified form in the eigenvalue data.

6) *Component Matrix*: Based on the formation of factors in the Total Variance Explained, it is obvious that a learning model consisting of nine phases has been formed. Thus, there is no factor rotation because there is only 1 component of the formation. This can be seen in the following Table VI:

TABLE VI  
TOTAL COMPONENT MATRIX

Component Matrix	
	Component 1
Phase1	.757
Phase2	.833
Phase3	.774
Phase4	.863
Phase5	.900
Phase6	.852
Phase7	.616
Phase8	.900
Phase9	.847

Extraction Method: Principal Component Analysis.

Table VI presents the figures indicating the loading factors or the correlation between indicators with only one component. As no indicator has a significant difference from the other indicators and there is no correlation < 0.5, the indicator can be included into a factor or component depending on the degree of its correlation. Based on the result of this analysis, only one component formed from the phases; thus, factor rotation was not needed.

7) *Rotated Component Matrix*: From the results of the Component Matrix described above, it is obvious that there are no components that can be rotated because only one factor is formed. The following statistical analysis result confirms that the rotation data does not have a component to rotate.

**Rotated Component Matrix<sup>a</sup>**

a. Only one component was extracted. The solution cannot be rotated.

Rotated Component Matrix is the result of the rotation of matrix components. This aims to show a clearer and more significant distribution of components than if no rotation was performed, with a limiting number of more than 0.5. Because of that, there was no component to be rotated because there was only one component was formed.

8) *Component Transformation Matrix*: The data of the component transformation matrix serves to show whether the factors formed are no longer correlated with each other. Because the data formed had no more than one component, the data could not be read diagonally. It means that the phases proposed in the trial are valid into one component of the formation. The rotation varimax method was used at the matrix transformation component to minimize the number of variables with high loading in one factor or component. This makes interpretation easier because the variable in the factor can be seen clearly. Only one component was formed in the matrix transformation component so that the nine phases were correlated with the component. This suggests that the nine phases proposed as the steps to apply the SEM training model

are valid and cannot be separated from each other, as shown in Table VII.

TABLE VII  
COMPONENT TRANSFORMATION MATRIX

Component Score Coefficient Matrix	
	Component
	1
Phase1	.125
Phase2	.138
Phase3	.128
Phase4	.143
Phase5	.149
Phase6	.141
Phase7	.102
Phase8	.149
Phase9	.140

Extraction Method: Principal Component Analysis.  
Rotation Method: Varimax with Kaiser Normalization.

Based on the analysis previously described, the results of this factor analysis are valid because of the 9 phases tested. There is only one component that has an Eigenvalue number of more than 1. Thus, it can be stated that the 9 phases have formed one factor. In terms of the formation of phases in this learning model's trial, it can be concluded that the 9 phases tested have formed a complete unified model. The SEM entrepreneurship training model is valid based on the Exploratory Factor Analysis. One phase is formed from phases that have a unified form in the eigenvalue data. These results used EFA- exploring empirical data to detect characteristics and relationships between variables without determining the model on the data [10, 14]. In short, the SEM model helps shape students' entrepreneurial character and competence in entrepreneurship. In line with this, this entrepreneurial training and learning model and learning activities produce products that have commercial potential in higher education [33-37].

Furthermore, this training model, similar to a Learning Model, aims to improve students' ability to carry out entrepreneurial activities [17, 38, 39]. The training and learning model is also expected to positively impact students' entrepreneurial interest, entrepreneurial character, and entrepreneurial readiness [40-42]. The development of this SEM training model is deemed necessary to facilitate the training process for students of Universitas Negeri Padang. They are members of the Entrepreneurial Student Program (ESP) established by the Directorate General of Engineering Education to address the unsuccessful ESP activities at the UNP student level.

#### IV. CONCLUSION

This research reveals that the development of the SEM training model has the phases that have been attested valid. Training can be run in nine phases. Smart Entrepreneur Model is worth using as a guideline by a university that sets up a program to produce graduates who can develop themselves to be independent entrepreneurs in the advancement of technology and globalization according to their psychometric

index. The model can be adjusted to the mentor selection, the needs of the training participants- which is a flexible feature of this model. In short, through Exploratory Factor analysis, it can be argued that the entrepreneurial training model is suitable for university students in Indonesia to support the PMW program by the Indonesian government.

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#### REFERENCES

- [1] I. Darmawan, B. E. Soetjipto, E. T. Djatmika, and H. Wahyono, "The development of the entrepreneurship learning design based on caring economics to enhance spirit of entrepreneurship and entrepreneurial intentions," (in English), *Humanities Soc. Sci. Lett.*, Article vol. 9, no. 1, pp. 1-13, 2021, doi: 10.18488/JOURNAL.73.2021.91.1.13.
- [2] J. Peranginangin and U. A. Bakar, "Antecedents of developing entrepreneurial orientation among college students in Indonesia," (in English), *International Journal of Scientific and Technology Research*, Article vol. 9, no. 2, pp. 3230-3237, 2020. [Online]. Available: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85079644191&partnerID=40&md5=267ce28863554c1eeeb34a547d78c27f>.
- [3] R. P. Pradhan, M. B. Arvin, M. Nair, and S. E. Bennett, "The dynamics among entrepreneurship, innovation, and economic growth in the Eurozone countries," *Journal of Policy Modeling*, Article vol. 42, no. 5, pp. 1106-1122, 2020, doi: 10.1016/j.jpolmod.2020.01.004.
- [4] L. Klapper and I. Love, "The impact of the financial crisis on new firm registration," *Economics Letters*, vol. 113, no. 1, pp. 1-4, 2011.
- [5] F. Crecente, M. Sarabia, and M. T. del Val, "Climate change policy and entrepreneurial opportunities," *Technological Forecasting and Social Change*, vol. 163, p. 120446, 2021.
- [6] R. Ibrahim, A. Boerhannoeddin, and K. K. Bakare, "The effect of soft skills and training methodology on employee performance," *European Journal of Training and Development*, 2017.
- [7] G. A. Cadenas, E. A. Cantú, T. Spence, and A. Ruth, "Integrating critical consciousness and technology in entrepreneurship career development with diverse community college students," *Journal of Career Development*, vol. 47, no. 2, pp. 162-176, 2020.
- [8] E. Hehman, J. Calanchini, J. K. Flake, and J. B. Leitner, "Establishing construct validity evidence for regional measures of explicit and implicit racial bias," *Journal of Experimental Psychology: General*, vol. 148, no. 6, p. 1022, 2019.
- [9] M. M. Córcoles-Muñoz, G. Parra-Requena, M. J. Ruiz-Ortega, P. M. García-Villaverde, and F. J. Ramírez-Fernández, "Psychological and Biographical Determinants of Entrepreneurial Intention: Does the Learning Environment Act as a Mediator?," *Administrative Sciences*, vol. 9, no. 2, p. 33, 2019.
- [10] K. Esfandiari, M. Sharifi-Tehrani, S. Pratt, and L. Altinay, "Understanding entrepreneurial intentions: A developed integrated structural model approach," *Journal of Business Research*, vol. 94, pp. 172-182, 2019.
- [11] S. Hutasuhut, B. Irwansyah, A. Rahmadsyah, and R. Aditia, "Impact of business models canvas learning on improving learning achievement and entrepreneurial intention," *Cakrawala Pendidikan*, vol. 39, no. 1, pp. 168-182, 2020.
- [12] T. Turner and P. Gianiodis, "Entrepreneurship unleashed: Understanding entrepreneurial education outside of the business school," *Journal of Small Business Management*, vol. 56, no. 1, pp. 131-149, 2018.
- [13] J. Halberstadt, J.-M. Timm, S. Kraus, and K. Gundolf, "Skills and knowledge management in higher education: how service learning can contribute to social entrepreneurial competence development," *Journal of Knowledge Management*, 2019.
- [14] H. Sofyan, E. Anggereini, and J. Saadiah, "Development of E-Modules Based on Local Wisdom in Central Learning Model at Kindergartens in Jambi City," *European J Educ. Res.*, vol. 8, no. 4, pp. 1137-1143, 2019.

- [15] A. Yulastri, H. Hidayat, Ganefri, S. Yondri, and I. Ifdil, "Contribution of production-based learning, student engagement, and locus of control towards entrepreneurship learning outcomes in engineering education," *International Journal on Advanced Science, Engineering and Information Technology*, Article vol. 10, no. 2, pp. 585-592, 2020, Art no. 9365, doi: 10.18517/ijaseit.10.2.9365.
- [16] H. Hidayat, Z. Ardi, S. Herawati, and Z. Amrina, "The contribution of internal locus of control and self-concept to career maturity in vocational higher education," *Kne Social Sciences*, pp. 234-248, 2019.
- [17] H. Hidayat, S. Herawati, E. Syahmaidi, A. Hidayati, and Z. Ardi, "Designing of technopreneurship scientific learning framework in vocational-based higher education in Indonesia," *International Journal of Engineering and Technology (UAE)*, Article vol. 7, no. 4, pp. 123-127, 2018, doi: 10.14419/ijet.v7i4.9.20632.
- [18] A. A. Lux, F. R. Macau, and K. A. Brown, "Putting the entrepreneur back into entrepreneurial ecosystems," *International Journal of Entrepreneurial Behaviour and Research*, Article vol. 26, no. 5, pp. 1011-1041, 2020, doi: 10.1108/IJEBR-01-2020-0031.
- [19] W. Ragmoun and A. M. Alwehabe, "Sustainable human resource management (SHRM) and corporate social responsibility (CSR): An Integrated Mediated Moderation Model of dynamic capabilities (DC) on family business industry," *Management Science Letters*, Article vol. 10, no. 10, pp. 2259-2268, 2020, doi: 10.5267/j.msl.2020.3.009.
- [20] X. Huang *et al.*, "Interactive Visual Study of Multiple Attributes Learning Model of X-Ray Scattering Images," *IEEE Transactions on Visualization and Computer Graphics*, Article vol. 27, no. 2, pp. 1312-1321, 2021, Art no. 9240062, doi: 10.1109/TVCG.2020.3030384.
- [21] D. Wang, M. Zhang, Y. Xu, W. Lu, J. Yang, and T. Zhang, "Metric-based meta-learning model for few-shot fault diagnosis under multiple limited data conditions," *Mechanical Systems and Signal Processing*, Article vol. 155, 2021, Art no. 107510, doi: 10.1016/j.ymsp.2020.107510.
- [22] W. Nowiński, M. Y. Haddoud, K. Wach, and R. Schaefer, "Perceived public support and entrepreneurship attitudes: A little reciprocity can go a long way!" *Journal of Vocational Behavior*, Article vol. 121, 2020, Art no. 103474, doi: 10.1016/j.jvb.2020.103474.
- [23] H. Hidayat, B. Y. Tamin, S. Herawati, Z. Ardi, and A. P. Muji, "The Contribution of Internal Locus of Control and Self-Concept to Career Maturity in Engineering Education," *International Journal on Advanced Science, Engineering and Information Technology*, Article vol. 10, no. 6, pp. 2282-2289, 2020, doi: 10.18517/ijaseit.10.6.11698.
- [24] Z. Ardi, Neviyarni, and Daharnis, "Konselo app: The future of distance counseling and therapy applications based on android technology," (in English), *International Journal of Innovation, Creativity and Change*, Article vol. 5, no. 6, pp. 231-244, 2019.
- [25] Z. Ardi, I. Sukmawati, I. Ifdil, A. Afdal, I. Rangka, and K. Suranata, "Exploring the acceptability of internet-based mental health mobile app services using network psychometrics analysis," in *Journal of Physics: Conference Series*, 2018, vol. 1114, no. 1: IOP Publishing, p. 012106.
- [26] Z. Ardi, R. D. Febriani, I. Ifdil, and A. Afdal, "Android "karirKu" Software Development for Exploration of Career Trends based on Personality Types," in *Journal of Physics: Conference Series*, 2019, vol. 1339, 1 ed., doi: 10.1088/1742-6596/1339/1/012123.
- [27] P. Mair, *Modern psychometrics with R*. Springer, 2018.
- [28] F. Fathollahi-Dehkordi, Z. Farajzadegan, S. Hematti, and N. Motamedi, "Iranian Version of the Quality of Life in Adult Cancer Survivors (QLACS) Questionnaire: Examining Face and Content Validity, Exploratory Factor Analysis and Reliability," *Shiraz E-Medical Journal*, vol. 22, no. 2, 2021.
- [29] M. W. Watkins, "Exploratory factor analysis: A guide to best practice," *Journal of Black Psychology*, vol. 44, no. 3, pp. 219-246, 2018.
- [30] R. Maskey, J. Fei, and H.-O. Nguyen, "Use of exploratory factor analysis in maritime research," *The Asian journal of shipping and logistics*, vol. 34, no. 2, pp. 91-111, 2018.
- [31] E. d. A. Moretti, R. Anholon, I. S. Rampasso, D. Silva, L. A. Santa-Eulalia, and P. S. d. A. Ignácio, "Main difficulties during RFID implementation: An exploratory factor analysis approach," *Technology Analysis & Strategic Management*, vol. 31, no. 8, pp. 943-956, 2019.
- [32] D. Goretzko, T. T. H. Pham, and M. Böhner, "Exploratory factor analysis: Current use, methodological developments and recommendations for good practice," *Current Psychology*, pp. 1-12, 2019.
- [33] Ganefri, H. Hidayat, A. Yulastri, and S. Yondri, "Design of production-based entrepreneurship technology training model to improve the skills of engineering students," *International Journal of Innovative Technology and Exploring Engineering*, Article vol. 8, no. 11, pp. 2042-2047, 2019, doi: 10.35940/ijitee.K1930.0981119.
- [34] A. Bauman and C. Lucy, "Enhancing entrepreneurial education: Developing competencies for success," *The International Journal of Management Education*, p. 100293, 2019.
- [35] Ganefri, H. Hidayat, I. Kusumaningrum, and A. Mardin, "Needs analysis of entrepreneurship pedagogy of technology and vocational education with production base learning approach in higher education," *International Journal on Advanced Science, Engineering and Information Technology*, Article vol. 7, no. 5, pp. 1701-1707, 2017, doi: 10.18517/ijaseit.7.5.1510.
- [36] A. P. Muji *et al.*, "The effectiveness of the implementation of lesson plans based on entrepreneurial values in the kindergarten," *International Journal of Scientific and Technology Research*, Article vol. 8, no. 12, pp. 121-128, 2019.
- [37] E. Syahmaidi, H. Hidayat, S. Hartanto, and A. F. Rahmadani, "Designing E-Training Computer Assisted Instruction Used to Pedagogic Competency in Vocational Education," 2021 2019, vol. 1779: IOP Publishing, 1 ed., p. 012038.
- [38] H. Hidayat, "How to Implement Technology Science for Entrepreneurship by Using Product-Based Learning Approach and Participatory Action Learning System in Higher Education?" *Advanced Science Letters*, vol. 23, no. 11, pp. 10918-10921, 2017.
- [39] H. Hidayat and Yuliana, "The influence of entrepreneurship education and family background on students' entrepreneurial interest in nutritious traditional food startups in Indonesia," *International Journal of Engineering and Technology (UAE)*, Article vol. 7, no. 4, pp. 118-122, 2018, doi: 10.14419/ijet.v7i4.9.20631.
- [40] H. Hidayat, Z. Ardi, Yuliana, and S. Herawati, "Exploration of the need analysis for technopreneurship scientific learning models in higher vocational education," *International Journal of Economics and Business Research*, vol. 18, no. 3, pp. 356-368, 2019.
- [41] A. Yulastri, N. A. Buang, Ernawati, and Ganefri, "The relationship between entrepreneurship knowledge, career personality interest and entrepreneurial career interest," *International Journal of Innovative Technology and Exploring Engineering*, Article vol. 8, no. 7, pp. 405-410, 2019.
- [42] A. Yulastri, H. Hidayat, Ganefri, R. Ayu, and Z. Ardi, "An empirical study on the effects of pedagogy learning tools entrepreneurship with product-based learning approach, learning readiness, and locus of control: A case from engineering education in Indonesia," *International Journal of Scientific and Technology Research*, Article vol. 8, no. 9, pp. 1717-1721, 2019.