Tech -Startup Digital Business Strategy Utilizing Structural Equation Modeling (SEM)

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Abstract

Tech startup companies have been experiencing significant developments in the digital era, requiring competitive strategy, capital, and innovative business model. This research study aims to provide strategic recommendation to achieve IPO success of tech startup companies through the Partial Least Square of SEM method with the initial hypothesis from the research model that IPO project success is potential to be achieved through Technical, Financial, Social, Political, and other variables that represent the company image, prospectus and business performance. In addition, PLS-SEM method aims to predict correlations and interrelationships among variables, through the expert validation stage, involving pilot testing of 131 respondents, and a final questionnaire of 300 people. The calculation results indicate that the success of IPO is related to other variables (0.257), Financial (0.255), Technical (0.198), Social (0.168), and Political (0.144) with a predictive coefficient of Project Feasibility (0.98), which indicates that the initial hypothesis was accepted and proven by statistical parameters. Hence, the results of this research provide recommendations for standardization of work, structured business strategies, and innovation of the company's Business Model Canvas (BMC) to successfully conduct an IPO and attract investors.

Keywords
Initial Public Offering, Tech Startup, PLS-SEM, Business Strategy, Business Model Canvas

1. Introduction
Tech Startup existed as a company that provides digital business-based platforms offering sales strategy services and education related to user business strategies (referred to as resellers) for products offered on the application platform (Ioniţă, 2017; Thomas et al., 2010). Several educational services are provided in the form of WhatsApp group discussion, webinars from experts in digital business industries, and workshop to support the community business activities (Hooi et al., 2018; Kumar et al., 2021) in order to maximize the business impact while encountering digital business competition in Indonesian market (Das et al., 2016). Delivering the company value proposition through additional services to user has been regarded to positively impact the user trust (Bugshan & Attar, 2020), thereby enhancing the business sustainability (Kitsios et al., 2020). Business strategy in tech startup has been complex, due to the demand in sustaining the business sector with rapid growth of stakeholder trust (Kim & Kim, 2018; Muramalla & Al-Hazza, 2019; Okrah et al., 2018) from broad and diverse consumer around the world (Chang & Li, 2019).

Regarding the IPO plan for tech startup company's need, business strategy feasibility research plays an instrumental role to create more precise strategy, while additionally considering the resources and company capability. The process itself includes company's performance review to identify the internal factor and stakeholder perspective from consumer and potential investor to identify the external factor of business strategy (Chhabra & Kiran, 2020; Foucault & Frésard, 2019).

1.1 Objectives
This research study aims to provide strategic recommendations based on the evaluation results from the calculation of the SEM methodology to maintain company value, by providing optimal benefits for relevant stakeholders, especially those involved in projects leading up to the IPO as well as investors.

2. Theoretical Review

Digital Business in General
Digital business refers to a form of business created by an organization or company, engaging the technology as an improvement and creation of new and different business value previously practiced by traditional business (Bharadwaj et al., 2013). However, the real meaning of digital business depends on the point of view of the users in their respective fields and industries (Wall et al., 2007). Thus, it is imperative to note that the meaning of the technology existence defines digital business as a revolution in modernizing the form of business, achieved by implementing information technology in purchasing, selling activities along with the offered services as well as network-based information systems (Nguyen, 2020).

Digital Business Classification Based on Implementation Scope
Digital business, if studied based on the scope of implementation, is distinguished from the industry from engaged the company (Jocevski et al., 2020; Wall et al., 2007). This notion briefly explains as it is a flexible form of technology depending on the demands and functions of the user (Jocevski et al., 2020). The example for the digital business in supply chain sector is different from one company to another within similar industries, but in general it feasibly include the optimization business tools, related to supply chain management such as utilizing internet as bases along with implementing IoT system (Wall et al., 2007).

Referring to previous research related to digital business in supply chain, several management aspects such as CRM and entities are involved in the form of technological facilities. This realm illustrates that technology is not solely interpreted as custom features in industry depending on needs but could serve as custom depending on cross-division-based business systems of the company or organization. This classifications range from management of supply chain, customer-related relationship management, EA (Enterprise Application) to BI (Business Intelligence) (Rappa, 2003).

Digital Business Classification Based on Business Model
Digital business in the aspect of the business model is divided into several classifications depending on the form of digital business formed, particularly regarding the value proposition, revenue, and cost structure aspects of the company's business model (Olsen & Solvoll, 2018), categorized into several types of business model. These models consist of brokerage model with its broker or business pioneer, advertising model with ads management, infomediary model with database utilization, merchant model with retailer and wholesaler management, manufacturer (direct) model with the distribution channel compression and direct buyer shipment, affiliate model with partner affiliation strategy, community model with customer-centric based solution, subscription model with premium service offered per purchase, and utility model with measured subscription (Nielsen & Lund, 2018).

Based on these classifications, it is apparent that digital businesses are classified based on the company business model entities, confirming that the valuation created by the presence of technology in the business sector could vary depending on the vision-mission and value brought by the company to customers (AlDhaheri et al., 2020). This foundation further breeds into several needs in the form of tools, created through the integration of technology and customized in such a way as to achieve the aforementioned goals.

Digital Business Classification Based on Service Type
Digital business, perceived from the perspective of the technical aspect is divided into 2, which includes: e-commerce and social commerce (Sun et al., 2019). This determinant is classified based on the digital business pattern, initially established from the activity of searching for the intended product, to purchasing and selling transactions that occur between sellers and buyers based on applications, websites, and social media (Bertels, 2019; van Eck et al., 2020) .

The difference in the service system is generally based on the differentiation from the company or the seller to the customer as the buyer. The difference in digital business in terms of service is explicitly marked from the composition of priorities, formed in the business system. In brief, this difference denotes that in social commerce, service and assistance for customers is prioritized and the interactions between sellers and buyers are designed to socialize, emphasizing on customer-centric principles (Kim & Kim, 2018). Meanwhile, in e-commerce, the interaction form has been solely limited to fulfilling the seller's obligation to address customer needs, without considering the detail about special services per customer unit alike in social commerce (Ioniţă, 2017).

Digital Business Classification Based on Companies type

Based on the business sector, which is the digital business sector, companies are generally divided into 2 classifications, of: companies transforming into digital businesses, or startup companies with digital business lines, or acknowledged as new technology-based companies or tech-startups (Ritter & Pedersen, 2020). The differences between on the two lies in the company business plan to execute the digital business activities of their company. The business transformation company tend to have a non-digital business activity, but at a certain time they decide to do a transformation from traditional to digital-based business system as an effort to support their business and ensure the company sustainability (Cheyunski & Millard, 1999; Kohtamäki et al., 2019). Meanwhile, the tech startup is directly focused on digital business from their initiation, planning to transaction execution (Choi et al., 2020; Krishna, 2018).

Corporate Business Strategy

In the business world, to maintain business competition in the market, it is pivotal not only to fulfill the needs of prospective customers or the specified target market, but also to examine the planned strategies by the company to overcome problems and competitions emerging in the market. The existence of a strategy in the business world is hence crucial because the important role is attentively related to the company's decision to follow up on an aspect of the business in the form of problems, to the continuous fulfillment of customer needs to ensure customer retention.

Additionally, the company's business strategies vary, when navigated from the industrial sector, company scale, and business target market, thereby indicating that the true strategy can be customized (Thomas, 1978), based on the needs and capabilities of the company in conducting each of its business activities to achieve a certain target point based on predetermined KPIs (Morris, 2000; Winzar, 1992). This difference is typically based on the fact that to achieve different final targets with different company capabilities, the forms of planning are also diverse (Adiputra et al., 2020; Fielt, 2013; Lambert, 2015), highlighting the differences among cross-industry, cross-business lines, and even cross-business models regarding the implementation of strategies.

Definitively, it is stated that strategy contains a form of planning to achieve a final goal after analyzing a certain condition (Iruthayasamy, 2021; Ulwick, 1999). The withdrawal of the timeline for using the strategy is also dynamic as the evaluation efforts are performed on past, present conditions, or future conditions (Athapaththu, 2016; Widiarto et al., 2019). The form of strategy inevitably serves as an integral part of organizational-scale decision making, because the scope of this strategy is relatively broad from the initial planning to the end, which directly or indirectly presents an impact on the existence of the organization or the context of the intended strategy.

Review & Types of SEM

This method is an advanced statistical multivariate technique that combined a multi-regression & factor analysis, which allows the observers to continuously examine an interrelated series with dependence relationship between measured entities through indicators and variable in the construct model, between several latent variable constructs and errors that occur in direct measurements on several independent and dependent variables of a model (Joseph F. Hair, 2016) and the latent variable either a continuous or discrete type of data (Joe F. Hair et al., 2011; Sarstedt et al., 2020).

Different from other statistical multivariate techniques, this method examines numerous relationships at a time, testing a series of hypotheses and considering relevant information based on research model (Joseph F Hair et al., 2014). SEM has three features, which include: (1) Multiple dependent estimation and interrelated relationships from the given construct model, (2) Description on unobserved concepts between the relationships and measurement account errors in estimation process, and (3) Determination of a research model to explain the whole set of relationships. There are two main component in SEM model, including: the measurement model type and its structural (De Oña et al., 2015).

In addition, this model combines the two type of approaches, which are: the confirmatory factor analysis and path analysis (Schumacker et al., 2010), aiming to test the theoretical research models using the quantified-scientific method, by performing a hypothesis testing to understand the complex interrelated correlation between each entity in the model construction. With the ability of SEM to test types of relationships, including: direct and indirect, mediating and moderating effects, SEM is therefore considered as a comprehensive analytical technique to test hypotheses regarding the type and relationship behavior between latent and observed variables (Zuraidah, 2016). Since the initiation of the SEM method by Karl Joreskog in 1969, its utilization had been widely expanded in 1994 (Joe F. Hair et al., 2011). The number of SEM research journals has therefore increased and has become a popular choice among other multivariate techniques.

3. Methods

The methodology used for this research is PLS-SEM, in which this type of PLS-SEM suits better with this research due to its goal to predict the goal factors (J. Hair et al., 2017) that related to the IPO success factors, to explore the research model with capital market condition (Thomas et al., 2010) in Indonesia for tech startup IPO plan, rather than utilizing CB-SEM with a covariance based approach and unmatched conditions with this research (Dachyar et al., 2015); the detailed information is illustrated in Table 1.

Table 1. Differentiation Between CB-SEM & PLS-SEM

Criteria	Covariance Based (CB-SEM)	Partial Least Square (PLS-SEM)
Destination	Test and confirm a solid theory. (explanation)	Develop a theory or build a new theory. (prediction, exploratory, explanation)
Approach	Covariance-based	Variance-based partial least square
Structural Model	Models with low to medium complexity with recursive and non-recursive relationships.	A high-complexity model with a recursive relationship.
Model Evaluation	Must reach the goodness of fit (GoF) index criteria before estimating the parameters.	Parameter estimation without reaching the GoF (goodness of fit) index criteria.
Data Characteristics	The data is normally distributed with a relatively large sample (N=>100).	The data does not have to be normally distributed with a smaller data sample (N=<100).

Source: (Dachyar & Hananto, 2014; Mohamad et al., 2019; Rigdon et al., 2017; Šiška, 2017)

This research initiated by conducting a field observation to the Indonesian tech startup company, working for digital business sector, exactly on both social commerce and e-commerce industries to actualize a real business case from top management and subordinates in their office. Then, it was continued by conducting an in-depth interview with expert that already have WPEE (underwriter) certifications to validate the questionnaire. Then, it was continued by performing a pilot testing, involving the 131 respondents and final questionnaire with 300 respondents, resulting in no elimination in latent variable and indicator for the research model.

4. Data Collection

Data collected from this research are conducted in Indonesia from different session and data are received to support the entire research, in accordance with data gathering activities, with the detailed activities are illustrated in Table 2 as follows:

Table 2. Data Gathering Activities

Activities	Data Collection
Interview	Voice of Customer, data received based on questionnaire about companies BMC business blocks and list of problem faced by company both internal and external aspect perspectives.
Experts Validation	Validation review feedback from expert in capital market regarding the validation of the questionnaire from 4 experts in capital market sector.
Pilot-Testing	Testing for validity and reliability of the questionnaire after being validated by expert by using PLS-SEM statistical parametric from 131 respondents. An ordinal and even Likert scale, from 1 until 6 for each indicator.
Final Questionnaire	Final questionnaire from 300 respondents, an ordinal and even Likert scale from 1 to 6 for each indicator.

5. Results and Discussion

After completing the data gathering activities and processing the data through SmartPLS software, this paper concluded the results to be analyzed and to formulated the alternative solutions to solve the company problems. The conceptual model used in this research is from Hong Kong research-based journal, measuring 7 latent variables and 49 indicators for PPP (Public-private partnership) success factors in Hong Kong (Thomas et al., 2010) as illustrated in Figure 1. Hence, this model indicates several variables that contribute to PPP project success with output variable

represent the customer overview through stakeholder satisfactions variable. The conceptual research model is visualized in Figure 1.

Figure 1. Conceptual Research Model (Thomas et al., 2010)

5.1 Numerical Results

This section indicates the calculation result based on PLS-SEM validation with the 3 stages that consist of model specifications, outer model testing, and inner model testing (Dachyar & Noviannei, 2012). As an initial step, the results was obtained after running a PLS-algorithm simulation on SmartPLS software, generating the calculation, as illustrated in Figure 2 with a loading factor on the path correlation between indicators into the latent variable, and latent variable into another latent variable of the construct.

Model specification

This research utilized a conceptual model from Figure 1 with 7 latent variables, presented in Table 3.

Table 3. Model Specification

Latent Variable	ID
Technical	T
Financial	F
Social	S
Political	P
Others	O
Project Feasibility	PF
Stakeholder Satisfaction	SS

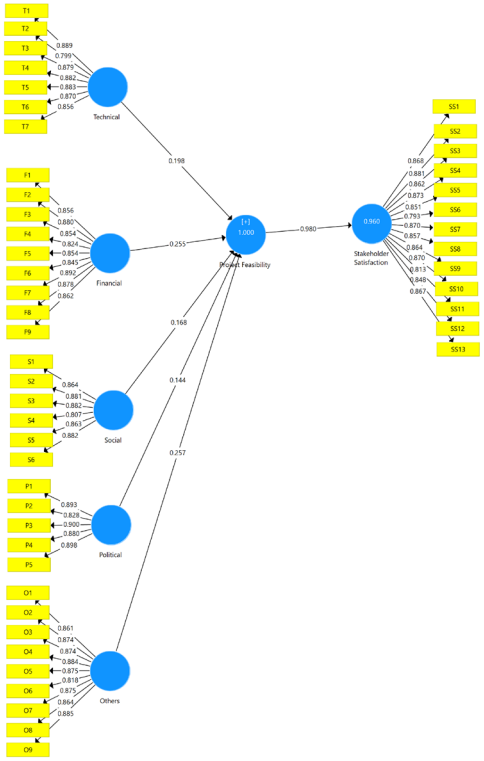

Figure 2. Simulation of Conceptual Model

Outer model testing

Outer model testing conducting a reliability and validity test through PLS-SEM calculation approach. The testing diversifies based on the statistical parametric used for each testing, that indicate whether the collected data and model correlation between indicators and latent variables are valid and reliable. Both of the test consist of convergent validity that represented through loading factors between indicators and latent variable, with critical values should be more than 0.7; AVE (Average Variance Extracted) to indicate validity of data convergency with critical values should exceed 0.5; and CR (Composite Reliability) to test the reliability of the model with critical values should exceed 0.7 (Dachyar & Banjarnahor, 2017; Sarstedt et al., 2020), illustrated in Table 4 as follows.

Inner model testing

Inner model testing is performed through the statistical testing to indicate the model conformity through coefficient determination, predictive relevancy, and goodness of fit. The coefficient determination (R^2) indicates the relation between the goals latent variable to demonstrate whether the research model has a strong substantial predictive power or not with critical values of $R^2 \geq 0.75$, while predictive relevancy (Q^2)to indicate the criteria evaluation from cross-validated relevancy of PLS model path through blindfolding with strong predictive power values of $Q^2 \geq 0.35$, and Goodness of Fit index to indicate the model conformity with the observed distribution sample, also with high model conformity which should exceed GoF Index of ≥ 0.36, presented in Table 5 as follows.

Table 4. Outer Model Calculation Results

Variables	Loading Factors			AVE	Composite Reliability	Results
Technical	T	1	0.889	0.75	0.854	**Valid & Reliable,** no need indicator eliminations
		2	0.799			
		3	0.879			
		4	0.882			
		5	0.883			
		6	0.87			
		7	0.856			
Financial	F	1	0.856	0.741	0.863	
		2	0.88			
		3	0.854			
		4	0.824			
		5	0.854			
		6	0.845			
		7	0.892			
		8	0.878			
		9	0.862			
Social	S	1	0.864	0.746	0.846	
		2	0.881			
		3	0.882			
		4	0.807			
		5	0.863			
		6	0.882			
Politics	P	1	0.893	0.775	0.845	
		2	0.828			
		3	0.9			
		4	0.88			
		5	0.898			
Others	O	1	0.861	0.753	0.865	
		2	0.874			
		3	0.874			
		4	0.884			
		5	0.875			
		6	0.818			
		7	0.875			
		8	0.864			
		9	0.885			
Project Feasibility	PF			0.719	0.889	
Stakeholder Satisfaction	SS	1	0.868	0.732	0.873	
		2	0.881			
		3	0.862			
		4	0.873			
		5	0.851			
		6	0.793			
		7	0.87			
		8	0.857			
		9	0.864			
		10	0.87			
		11	0.813			
		12	0.848			
		13	0.867			

Table 5. Inner Model Testing Results

Variables	R^2	Q^2		Goodness of Fit (GoF)
		Consolidated	Redundancy	
Technical		0.664		
Financial		0.668		
Social		0.639		$Gof = \sqrt{Average\ AVE\ x\ Average\ R^2}$
Political		0.654		$= \sqrt{0{,}745\ x\ 0{,}98} = \sqrt{0.73}$
Others		0.683		$= 0{,}85$
Project Feasibility	1.00	0.699	0.714	
Stakeholder Satisfaction	0.96	0.681	0.698	

5.2 Analysis of Result

Upon the completion of the statistical calculation output of PLS-SEM through SmartPLS 3.0 software from 300 respondents, it was discovered that the formulation of the model equation to achieve the final goal, which is the success of the IPO project on stakeholder satisfaction obtained as follows:

a. $\mathbf{Project\ Feasibility} = 0.257\ Others + 0.255\ Financial + 0.198\ Technical + 0.168\ Social + 0.144\ Political$
b. $\mathbf{Stakeholder\ Satisfaction} = 0.98\ Project\ Feasibility$

From the loading factors presented in Table 5, it is apparent that the highest contribution latent variable to the project success IPO (the project feasibility variable) based on PLS-SEM calculation is the "Others" and followed by another variable with the lowest coefficient score which is the "Political" factor. This result represents each variable contribution and its dominance to the goal variable. Further, based on this result, the author of this study constructs the business strategy formulation with decentralization approach to fulfilling the company needs, while also considering the problems faced, in accordance with PLS-SEM result as a quantitative basis to rank the order for the business framework formulation as a proposed improvement model in a form of business strategy formulation for tech startup.

The result of this research also concludes that there are differences between this research and journal used as references for the research model, due to different research execution as illustrated in Table 6.

Table 6. Results Comparation with Reference Journal

Aspect	Reference Journal	This Research
Location, year	Hong Kong, 2010	Indonesia, 2021
Respondent	181	300
Likert scale	7	6
Validation	Confirmed & validated model	
Validator	*Expert,* random sampling	Expert, pilot-test
Early models	7 latent variables & 49 indicators	
Final model	7 latent variables 21 indicators	7 latent variables 49 indicators

5.3 Proposed Recommendations

The results conducted through PLS-SEM, indicates calculation method, formulated and converted into business strategy recommendation that consists of strategy formulation framework in Figure 3 and the proposed BMC in Figure 4, constructed by using PLS-SEM loading factors results as bases for order formulation procedure in constructing a business strategy based on decentralization business strategy concepts. Decentralization business strategy contains the delegating of the workload or trust from the top management into the selected project manager; the project manager would select another stakeholder in projects to receive more specific delegated work. This method is commonly utilized in governmental decision making, but in a business overview, this concept is deemed accommodating to guide the workflow based on loading factors priority from PLS-SEM calculation results.

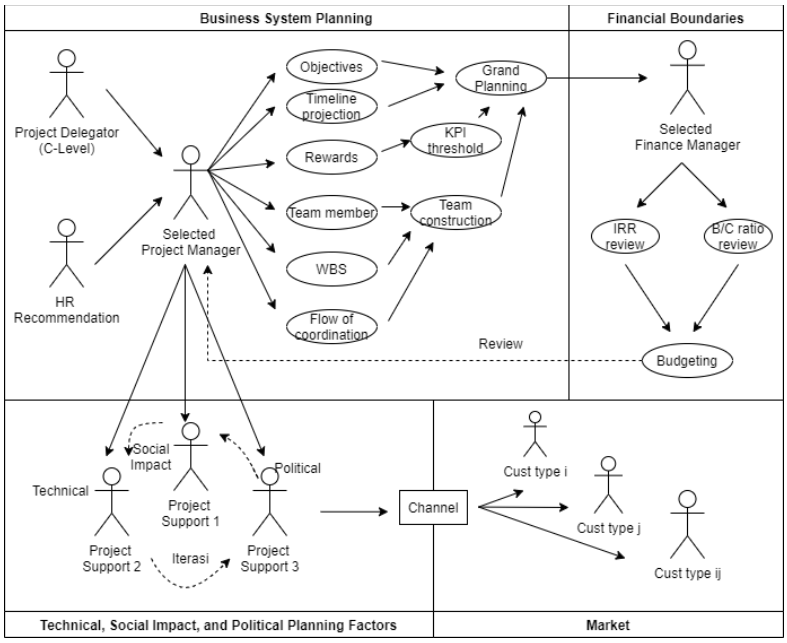

Figure 3. Recommended Strategy Formulation

The recommended BMC is constructed by consolidating all of the interview results from top management, and aggregated it with PLS-SEM result to conform the needs for tech startup IPO project by highlighting the company value propositions, thereby involving the Audit & KPI controlling in key activities and enhancing all of the business activities with standard operating procedure (SOP). This effort is intended to ensure that each entity is aligned with the system and to ensure public trust through brand image by potential investors in capital market society, as observed in Figure 4.

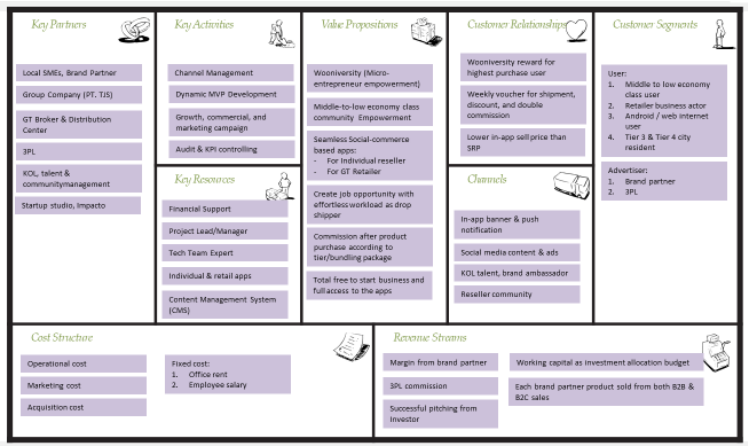

Figure 4. Recommended BMC

6. Conclusion

Upon the completion of all of the research procedure, it is navigated that the recommendation for company is to implement a framework recommendation based on the results of SEM calculations, by adopting an integrated and decentralized type of business strategy by adding new value proposition and entities in the company BMC in order to achieve success in undertaking IPO process.

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