Improvement of Business Performance through IT Governance Adoption in Online Stores

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***Abstract*—The gap of measurement results of maturity levels of IT governance reflects that adoption of IT governance has possessed no clarity on critical factors of success in assuring the availability of information services and improving the business performance of online stores. Business strategy should be reinforced. Also, alternatives of competitive strategy should be formulated. In this study context, the scopes were on variables of strategic alignment, IT leadership, and culture. This study put its goal of cognizing to what extent influences of IT governance adoption could support and ensure IT operation services improving the business performance of online stores in West Kalimantan. An explanatory survey method was applied to analysis units of organizations. The respondents were heads or managers with more than five-year experience. The survey was conducted through google form to 112 online stores. However, only 99 respondents submitted the filled forms. Data were processed through Likert Scales and SEM-PLS analysis. Based on the analysis of the path diagram, the whole coefficients showed positive, direct influences. Nevertheless, based on t-statistics, there were some insignificant influences. Adjusted R-squared value was 0.740, meaning that business performance was immensely influenced by all perspective variables, especially strategic alignment regardless of IT governance adoption in online stores in West Kalimantan**

Keywords—Business Performance, IT Governance Adoption, Online Stores

I. INTRODUCTION

Information Technology (IT) governance has become a basic consideration of managing every business, unexceptionally an online business. The increasing number of online stores becomes the reflection of the use of IT in supporting and ensuring the effectiveness of information services [1]. An essential implication of this incident for the management and stakeholders is that IT governance has become current and upcoming necessities [2]. This governance allows the increase of need values and expectations of information services for them [3]. Actualizing IT governance is inseparable from values contributed by IT and control of usage risks of managing online stores. The alignment of business management and IT in formulating, applying, and observing achievement results is needed [4].

A number of previous studies emphasize that structures, processes, and mechanisms in relation to IT governance are requisite to manage online businesses [5,6,7,8]. Nonetheless, the majority of online stores have not possessed and implemented fine IT governance. Several previous studies [9,10,11] affirm this in terms of measurement of IT governance maturity. Analysis results show that averages are at the second and the third levels. Only a few of them reach the fourth and the fifth levels [12,13]. Besides, more specifically, for some other studies conducted in certain areas, the indication is that averages of maturity levels are classified into the second and the third levels [14,15,16]. Measurement results show that business management of online stores has not provided optimal IT operation services for customers. This condition exists due to non-appearance of information integrity and processes for certainty of the use of IT assets. Factually, IT resources are solely and separately used to process data, policies, standards, and procedures. Specifically, planning and organizing, procurement and implementation, supports and deliveries of information services, as well as evaluation and monitoring of the use of IT assets are not based on procedures and standards referring to structures, processes, and relational mechanisms. In addition, IT service management is still partial and vulnerable to various kinds of incidents [17].

Previous findings reflect the truth that most online stores put no emphases on the importance of fine IT governance and ascertainment of IT operation services affecting business performance [18]. The performance can decrease since IT governance adoption has not been properly implemented. It is also realized that application portfolios of IT services are only used for the needs of work units and have no integration and conformity with organizational goals. Enhancing maturity values depends on IT governance adoption [19] crucially ensuring that information and online transaction can be accurately and reliably provided.

The gap of measurement results of maturity levels and expected condition reflects that IT governance adoption has not possessed clarity of critical factors of success in assuring the availability of information services improving the business performance of online stores. This study focuses on all online businesses in West Kalimantan with market growth potency and promising investment opportunities. The reason is that it borders Malaysia. The whole online stores can obviously market their typical, regional products globally, build personalized relationships with customers, and enhance competitiveness. Business performance requires accuracy and quality of information not only supporting business strategy, but also becoming recent alternatives of strategy formulation. This statement is supported by [20] that online stores with abilities to implement proper IT governance have chances of obtaining better returns on investment funds.

This study has novelty in terms of influences of IT governance adoption and the use of perspective variables where all dimensions are based on literature review of IT governance in relation to business performance. The scopes are strategic alignment, IT leadership, and culture [21]. They are initially engaged as exogenous constructs on the business

performance of online stores. The research problem is on the increasing performance influenced by the availability and integration of all exogenous constructs (independent variables) through IT governance adoption in online stores in West Kalimantan. The aim is to cognize to what extent influences of IT governance adoption can support and ensure IT operation services improving online business performance.

II. Literature Review

A. Perspective Variables

IT governance and business performance are based on five perspectives such as strategic alignment, IT leadership, IT skills, performance process, and the relationship between resources and culture [21]. However, this study only critically involves three of them such as strategic alignment, IT leadership, and culture. At first, strategic alignment aims to ensure the conformity of planning and IT goals from time to time [22]. Such the perspective is critical to build relationships of IT governance and business performance. Particularly, the construct has three principal indicators such as general alignment of IT and business, social dimensions, and the top management team [23]. Second, the perspective of IT leadership is the most essential element of maturity levels of IT governance and has effective roles in strategic decision making [24]. Indicators of such the perspective are technology leadership, characteristics, and roles of CIO, and strategic decision making of CIO [25]. Moreover, culture has a moderate effect on relationships of IT governance and business performance. It includes characteristics, leadership styles, employee management, organization unifiers, strategic emphases, and success criteria [26]. Organization culture has the strengths of creating communication relationships among individuals or groups when performing certain activities. Indicators of culture are organizational culture, culture types, and national culture [27].

B. IT Governance Adoption

IT governance has gained important attention as organization needs since the research was published by [28] and [29] and become an inherent part in organization governance [30]. It refers to dynamic process-oriented toward goals, adaptation, and relations to reach strategic alignment of IT, organizations, structures, and system, to minimize the risks, as well as to measure returns on investment [31]. Hence, every organization should conduct IT adoption to effectively and comprehensively manage businesses. In this case, business strategy and IT should be aligned. The success of IT governance adoption can be viewed from the implementation of Technology, Organization, and Environment (TOE) Framework.

TOE Framework is mostly used for needs of IT adoption including IT governance [32]. It is noted that such the framework has conformity with the diffusion theory of technology innovation in describing the prediction of IT service intensity [33]. Technology consists of perceived benefits, readiness of IT service applications, and perceived easiness of use. The organization, nevertheless, includes indicators of top management supports, organization readiness, and human resource experience in IT. Finally, the environment covers competitive pressure and external supports. IT governance adoption should be constantly conducted to enhance business performance [34].

C. Business Performance

Business performance refers to the production of organizations at certain periods based on determined standards [35]. The activity measurement of this performance is designed to predict to what extent activities and final results are achieved. In other words, business performance is the measurement size of organizations in achieving their goals. The measurement is on customer satisfaction, obtained benefits, and quicker improvement [36].

III. Research Method

This research comprised a definition of background, literature review, problem formulation, design, hypotheses, collection and analysis of data, description of results, and conclusion [37]. The respondents were heads or managers with more than five-year experience of managing online stores. Employee turnover rate was quite high in startup businesses. Primary data were obtained through questionnaires disseminated to 112 respondents. However, only 99 of them made a submission to researchers. In other words, the response rate was 88.39%. Questionnaires modified based on previous literature were in use. Before distributing them, examination of validity and reliability was conducted. Google form was applied and data were processed through Likert Scales with Score 6 (strongly agree) to Score 1 (strongly disagree). Ordinal scales ensure more accurate data because of the exclusion of a hesitation factor [38]. Furthermore, secondary data were obtained through internal reports of the business performance of each online store.

High validity and reliability of measurement reflect that instruments used can better show what is to be measured and how fine the consistency is in giving more accurate results at a different time [39].

After the whole data were collected, analysis and interpretation through Structural Equation Modeling (SEM) Method and Partial Least Square (PLS) Approach were performed [40]. SEM-PLS Model is the combination of simultaneous equations among latent constructs. The common model of structural equations consists of two primary parts. An initial one is measurement relating observed variables (indicators) and latent variables (the ones that cannot be directly observed) through confirmatory factors. The latter one, contrarily, refers to structural parts relating latent constructs through simultaneous equation system [40]. Next, SEM-PLS was examined through the design of a conceptual model, computation was conducted through analysis methods of algorithm and bootstrapping, path diagram model was produced, the model was evaluated through SmartPLS ver 3.2.7 [41], and conclusion and suggestions were given. This study emphasized an exploration need and influences of antecedent factors mediated by the construct of IT governance adoption on business performance (see Figure 1).

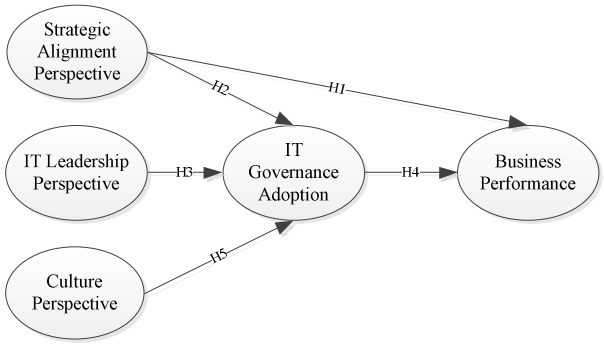

Fig. 1. Research Model

Hypotheses in this research model consisted of H1: strategic alignment had positive, direct influences on business performance; H2: strategic alignment had positive, direct influences on IT governance adoption; H3: IT leadership had positive, direct influences on IT governance adoption, H4: IT governance adoption had positive, direct influences on business performance; and H5: culture had positive, direct influences on IT governance adoption. Only the scope of IT was emphasized. The management side was not concerned. Accordingly, influences of the culture on business performance were excluded in this study.

IV. Result and Discussion

Analysis of measurement model (an outer model) was conducted by using the application of SmartPLS ver 3.2.7. A number of stages involved were path analysis of the research model, computation of estimation through PLS Algorithm producing bootstrapping outputs, and bootstrapping using an algorithm method named resampling with replacement to determine subsample (resample). Understandably, every resample included rows selected and, if necessary, reselected at random from groups of original data [42]. Regarding SEM-PLS Model, this research was designed based on exogenous, latent variables comprising strategic alignment, IT leadership, culture, IT governance adoption, and business performance. An endogenous, latent variable, meanwhile, referred to business performance mediated by IT governance adoption. Each construct further described was: strategic alignment (SA) with indicators of general alignment of IT and business (SA1), alignment of social dimensions (SA2), and alignment of the top management team (SA3); IT leadership (ITL) with indicators of technology leadership (ITL1), characteristics and roles of CIO (ITL2), and strategic decision making of CIO (ITL3); culture (CP) with indicators of organization culture (CP1), types of organization culture (CP2), and national culture (CP3); IT governance adoption (ITGA) with indicators of perceived benefits (ITGA1), readiness of IT service applications (ITGA2), perceived easiness of use (ITGA3), top management supports (ITGA4), organization readiness (ITGA5), human resource experience in IT (ITGA6), competitive pressure (ITGA7), and external supports (ITGA8); and business performance (BP) with indicators of customer satisfaction (BP1), obtained benefits (BP2), and quicker improvement (BP3).

In the analysis stage, an examination of convergent validity and discriminant validity was performed. It referred to Average Variance Extracted (AVE) results. Figure 2 showed an outer model based on calculation results of the whole respondents' data successfully collected by using SmartPLS ver 3.2.7.

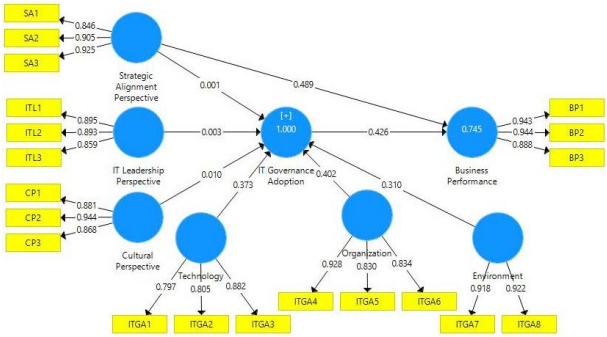

Fig. 2. Path Diagram of Research Model

Based on findings, outer loadings of all indicators were valid so that they could be used in this research directly. The validity coefficient was obtained through Fornell-Larcker Criterion Test. In addition, the discriminant validity coefficient of each construct referred to it that is by comparing square roots of AVE scores and construct correlation. The result of the discriminant validity of each construct was indicated in Table I. The whole AVE scores were considered valid as they were more than 0.50. Also, the square roots of AVE scores were greater than the correlation coefficient of other constructs. They were obtained by calculating latent variable correlation. Table II included discriminant validity. Table III, however, indicated Composite Reliability (CR) coefficients, Cronbach's Alpha, and AVE scores. It is noted that if CR coefficient and Cronbach's Alpha are respectively more than 0.80 and 0.70, the reliability is considered good [43].

TABLE I. Discriminant Validity

Fornell-Larcker Criterion	BP	CP	ENM	IT-GA	ITL	ORG	SA	TCH
Business Performance (BP)	0.925							
Culture (CP)	0.821	0.898						
Environment (ENM)	0.789	0.793	0.920					
IT Governance Adoption (ITGA)	0.807	0.811	0.872	0.789				
IT Leadership (ITL)	0.724	0.687	0.665	0.747	0.882			
Organization (ORG)	0.689	0.697	0.712	0.929	0.670	0.865		
Strategic Alignment (SA)	0.821	0.760	0.787	0.779	0.753	0.672	0.893	
Technology (TCH)	0.730	0.729	0.711	0.924	0.697	0.796	0.679	0.829

TABLE II. Latent Variable Correlation

Fornell-Larcker Criterion	BP	CP	ENM	IT-GA	ITL	ORG	SA	TCH
Business Performance (BP)	1.000	0.821	0.789	0.807	0.724	0.689	0.821	0.730
Culture (CP)	0.821	1.000	0.793	0.811	0.687	0.697	0.760	0.729
Environment (ENM)	0.789	0.793	1.000	0.872	0.665	0.712	0.787	0.711
IT Governance	0.807	0.811	0.872	1.000	0.747	0.929	0.779	0.924

Fornell-Larcker Criterion	BP	CP	ENM	IT-GA	ITL	ORG	SA	TCH
Adoption (ITGA)								
IT Leadership (ITL)	0.724	0.687	0.665	0.747	1.000	0.670	0.753	0.697
Organization (ORG)	0.689	0.697	0.712	0.929	0.670	1.000	0.672	0.796
Strategic Alignment (SA)	0.821	0.760	0.787	0.779	0.753	0.672	1.000	0.679
Technology (TCH)	0.730	0.729	0.711	0.924	0.697	0.796	0.679	1.000

TABLE III. CONSTRUCT RELIABILITY AND VALIDITY

Construct Reliability and Validity	Cron-bach's Alpha	rho_A	Composite Reliability	Average Variance Extracted
Business Performance	0.916	0.921	0.947	0.857
Culture	0.879	0.882	0.926	0.807
Environment	0.818	0.818	0.916	0.846
IT Governance Adoption	0.913	0.917	0.929	0.623
IT Leadership	0.858	0.867	0.913	0.778
Organization	0.831	0.837	0.899	0.749
Strategic Alignment	0.872	0.882	0.922	0.797
Technology	0.771	0.779	0.868	0.687

Next, an inner model was analyzed through bootstrapping. Such the process located its goal to test indicator significance of each construct to obtain t-value used to further test the relationship. An indicator is significant if t-statistics is greater than 1.96 (z-score of coefficient interval (CI) is 1.96) [43]. Figure 3 showed bootstrapping outputs of the path model.

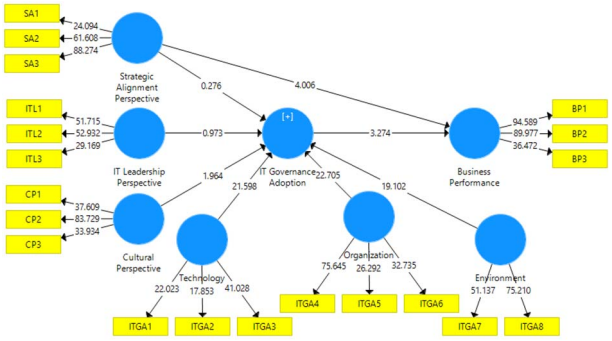

Fig. 3. Bootstrapping Outputs of Path Model

Following these, Table IV was provided to indicate results of significance test of each indicator. Evidently, original sample scores were positive despite the fact that some were excluded when predicting construct influences since they were less than 0.1. T-statistics test also showed that not all scores were more than 1.96 and were, thus, considered insignificant. They reflected construct influences of culture on IT governance adoption, IT leadership on IT governance adoption, and strategic alignment on IT governance adoption.

TABLE IV. PATH SIGNIFICANCE TEST

Fornell-Larcker Criterion	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T-Statistics (|O/STDEV)	P Values
Culture → IT Governance Adoption	0.010	0.010	0.005	1.892	0.059
Environment → IT Governance Adoption	0.310	0.309	0.016	19.634	0.000
IT Governance Adoption → Business Performance	0.426	0.431	0.133	3.208	0.001
IT Leadership → IT Governance Adoption	0.003	0.004	0.003	0.963	0.336
Organization → IT Governance Adoption	0.402	0.399	0.018	22.913	0.000
Strategic Alignment → Business Performance	0.489	0.486	0.126	3.872	0.000
Strategic Alignment → IT Governance Adoption	0.001	0.002	0.004	0.276	0.783
Technology → IT Governance Adoption	0.373	0.375	0.019	19.867	0.000

The adjusted R-squared value used to test the Goodness of Fit Model (an inner model) was additionally calculated. The finding was that the score of business performance was 0.740. It could be strongly interpreted that the success of business performance was extremely influenced by strategic alignment, IT leadership, and culture through IT governance adoption. However, the rest was influenced by other factors not becoming the influence model in this research (26%). Another finding was that there was 100% of the adjusted R-squared value of IT governance adoption. Comprehensibly, the success of such the adoption depended completely on influences of the three antecedent constructs, i.e. strategic alignment, IT leadership, and culture. Predictive relevance of R-squared additionally computed by using the formula: Q2 = 1 – (1 - R2 business performance) * (1 - R2 IT governance adoption) [43] indicated a very significant model for business performers of online stores due to its complete percentage found (100%).

Path analysis of the research model served evidence of the path coefficient of each construct. The highest one was possessed by influences of strategic alignment on business performance (0.489). Meaningfully, apart from IT governance adoption, capabilities to formulate and implement strategic alignment involving structures, processes, and mechanisms brought positive, direct influences and significantly enhanced the business performance of online stores in West Kalimantan. A number of important indicators (alignment of IT and business, social dimensions, and the top management team) determining the success of strategic alignment were linked. The loading factors were respectively 0.846, 0.905, and 0.925. These findings were different from a number of previous studies encouraging the capability to conduct IT governance adoption of online stores for improvement of business performance [44,45,46] due to research sites. This could become a reference for the development of science and future research with a similar field.

Positive, direct influences of strategic alignment (0.001), IT leadership (0.003), and culture (0.010) were other outputs. Nevertheless, they were insignificant and very weak for IT

governance adoption. Unlike this finding, such the adoption (0.426) positively, directly, and significantly performed a mediating role in enhancing the business performance of online stores. Here, technology (0.373), organization (0.402), and environment (0.310) became determiners. It could be seen that the organization should obtain the first priority of management through top management supports (0.928), organization readiness (0.830), and human resource experience in IT (0.834). The lowest loading factor was, conversely, possessed by technology in terms of perceived benefits pertaining to supports of IT service providers in application portfolios in online stores.

Based on analysis results, ways to improve the business performance of online stores in West Kalimantan constantly require readiness of IT governance adoption and the focus on business growth levels. This adoption further needs readiness of devices, effective IT configuration, perceived benefits of availability, access, and accuracy of the information, punctual deliveries, and stability of the internet connection. The reliability of IT infrastructure and the empowerment of application portfolios of IT services are, however, undivided when coping with an online transaction.

V. Conclusion and Future Research

To conclude, the business performance of online stores can be enhanced not only by relying on readiness and IT governance adoption, but also by properly formulating strategic alignment of online stores in West Kalimantan. Future research can include categories of business scales, products, and other provinces in particular. Behavior interest of each community segment can additionally be involved seeing that a number of groups have distrust of the guarantee of online business transactions.

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