The Antecedent of Digital Business Improvement through IT Service Management

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***Abstract*—The majority of digital business companies incompletely believe and realize the importance of IT service management. Capability and reliability of IT service management become strategic assets sustaining the digital business by providing additional values through digital transactions. Nonetheless, a principle is that the cost and content of products determine this sustainability. The research goal was to ascertain the extent of required IT service management significantly influencing the digital business. A survey method with an explanatory design was implemented. There were 218 questionnaires filled by respondents and returned to researchers. The whole population included those running the digital business in West Kalimantan. The data was gathered and processed by using Likert Scales and an analysis tool named SEM-PLS. It was further distributed through bootstrapping based on the aspect of normality. Finally, feedback process lasted. Research findings indicate that despite weak, insignificant implications of IT service management for digital business continuity, readiness to accept and apply various kinds of digital innovation and digital capability is highly needed to achieve the success.**

Keywords—Digital Orientation, Digital Capability, Digital Innovation, IT Service Management, Digital Business.

I. INTRODUCTION

The digital disruption era brings uncertain, radical changes to organizations in the context of entire industries. The rapid, agile ones require sustainable information services in the digital business ecosystem. Therefore, they can always be flexible, adaptive, and responsive in realizing business opportunities [1]. Digital business capability requires empowerment and reliability of Information Technology (IT) resources. Superior IT capability has become a crucial foundation for the sustainability of digital business [2]. The speed of changes which is no longer linear, but is exponential, creates a number of challenges and requires exact solutions. The use of digital technology makes various activities much more efficient, transparent, and innovation-friendly, leading to variety of business models [3]. It is inseparable from mechanisms of conformity and acceleration of interaction in the digital business ecosystem. Efforts to make it happen require the readiness of digital tools in organizations.

The existence of digital business is in relation to the ability to adopt and make transformation creating values through IT empowerment, including social media, mobile and cloud technologies, internet of things, and big data analytics. Digital business makes it easy to establish personal relationships with consumers directly and integrates various online transaction platforms. It is in great demand due to the convenience and small operational cost investment [4]. Its growth is influenced by the price which is much cheaper. Here shopping can be done more practically and faster anywhere, product prices are easy to compare, products needed are easy to find, and various bonuses and discounts are available [5]. Furthermore, online payments consisting of Cash on Delivery (COD), ATM transfers, mobile banking, internet banking, payments via Indomaret and Alfamart, electronic money, and credit cards are other aspects of simplicity [6]. These pertain to digital technology innovation by industrial partners and the government in providing convenience for digital business transformation [7]. However, digital business also frequently experiences failure because of lack of management knowledge, mistakes in planning the right business model, less supportive financial funding, failure to meet customer demand, and at most uncertainties of IT service management [8,9].

The capability and reliability of effective IT service management become strategic assets used to enhance digital business sustainability through added values offered to online shoppers. Additionally, they have strategic roles inappropriately realizing developed digital business through supports and deliveries of information services [10]. In fact, failure occurs due to lack of focus and absence of procedures in anticipating the complexity of accessing all application content services [11]. There are uncertainties of products offered in terms of prices, delivery schedules, and cost mechanisms. The time limit of receiving the products which is irrelevant to the information submitted [12,13] often happens. No immediate improvement is conducted so that digital business is disrupted. The case explained is found in West Kalimantan. Digital business is mostly dominated by family companies and partially managed by professionals through prioritized services for customers.

Initial surveys indicate that digital business is still mostly managed separately based on the needs of each work unit without prioritizing IT service management [14]. Moreover, its integration with other work units are also absent, the provision of IT services is still centralized, access is limited, the management system is still oriented to the seniority factor and the position of the hierarchical structure of families, and IT investment tends to last in a short period and focuses on

operational, partial financing without the priority on added values in the form of information services [15]. Besides, the development of application portfolios of IT services has no reference to alignment, acceleration, and optimization [16]. Generally, only focusing on prices and content of products, a lot of companies fail. The neglect of IT service management can make buyers easily switch to other business and products [17,18]. This situation shows that limitation is still found and there is no emphasis on the essence of IT service management in the digital business for convenience of online purchases.

Some previous studies show that IT service management is a critical consideration for redesign of IT service processes. Low company capability can hamper the process of managing IT service management [19]. Such the management is an important element for all areas of digital business activities. It can be conducted with other IT processes [20]. Establishing the IT service levels can prevent failure to manage digital business [21] and mismatches among all these processes require data management mechanisms and IT services for all current and upcoming online products [22].

This research is interesting considering that most companies managing digital business incompletely believe and realize the importance of IT service management. They still firmly hold the principle that prices and content of products determine the sustainability of digital business. Also, comprehension of roles and mechanisms of IT service management is only limited to operational activities not improving the competitiveness. In addition, reinforced by a number of previous studies [23,24,25], explicit discussion on enhancement of digital business through IT service management is still rare or even absent.

Research problems formulated are linked to the allegation that IT service management has significant roles in improving digital business operated by most family companies in West Kalimantan based on influences of antecedent factors such as digital orientation, digital capability, and digital innovation [26]. The consideration is that such the business is still dominated by family companies. The prospect is extremely promising market shares with potential growth and investment opportunities due to the location bordering a neighboring country, i.e., Malaysia. The purpose of the research was to ascertain the extent of required IT service management positively and significantly influencing the digital business growth and a regional economy.

II. Related Work

Digital business is a kind of business performed virtually by utilizing IT. All transaction processes no longer require direct interaction between a seller and a buyer [27]. Another definition of digital business is all types of business covering online product sales with variants of innovation through social media applications. Digital business is the real one where all transaction processes utilize IT [28]. It further has much broader capability than e-business, e-marketplace, e-mall, and e-commerce [29]. Its growth has implications for management and reengineering of economic cycles through digital transformation in all business aspects. Through digital business, national and global target market shares can be increased and expanded.

Managing the digital business is committed to technology-oriented resources towards new digital technology trends as an important asset in managing the product business in an innovative way. Through digital orientation, companies become more open to adoption of digital technology in creating new digital products more innovatively [30]. This orientation refers to the company commitment in using digital technology to manage digital products. It includes four dimensions such as digital technology, digital capability, digital ecosystem coordination, and digital architecture configuration [31].

Digital capability means skills, talents or expertise in managing digital technology to develop new products. Digital transformation requires IT service management capability and IT infrastructure availability [32]. Referring to the strength and digital foundation of organizations, digital capability includes physical technology infrastructure and organizational aspects with the competence to create innovative values. It is an important requirement for realizing the innovation of processes and digital products, further leading to digital business growth [33]. Digital capability comprises digital technology empowerment, new digital opportunity identification, digital transformation responsiveness, digital skills, and innovation of digital products and services [34]. The higher this capability is, the better the IT service management is in providing the application portfolios of IT services in digital business.

Digital innovation becomes more crucial since digitization of products and services develops. It refers to the development of new products, services or solutions through the use of digital technology [35]. It creates more innovative IT solutions and added values for IT products and services. There are a number of criteria for the success of digital innovation related to superiority of digital solution features, uniqueness of advantageous application of digital solutions over competitors, and minor improvement of digital solutions of existing products [36]. A primary reason is that the company decision to pursue digital product innovation coming from technological and environmental dimensions exists.

III. Research Method

This research applied a mixed method, a convergent triangulation model, and explanatory design through follow-up description [37]. The research flow involved background, literature review, problem formulation, hypothesis design, collection and analysis of data, findings, and conclusion. Surveys of organizational analysis units were conducted. The study population was the whole family companies that have been operating digital business for more than five years in West Kalimantan. Survey data was collected from January until May 2021. All questionnaires were distributed to the management of digital business companies and 218 respondents answered and submitted the answers. The company categories consisted of small and medium companies marketing the apparel for all men and women (65%), food (25%), and accessories and jewelry (10%). Most companies engaged in digital business were in Pontianak (55%) and Singkawang (25%), while the remaining ones spread across a number of districts including Ketapang, Sintang, Melawi, Landak, and Putussibau (20%).

Data processing mechanisms utilized Likert Scales with an interval of strongly agree (Score 6) to strongly disagree (Score 1). Ordinal values can ensure more accurate data [38]. Questionnaires created referred to previous research through adjustment based on the conditions, time, and sites of the research. The validity and reliability were also tested. This study applied an analysis method named Structural Equation Modeling (SEM) and an approach called Partial Least Square (PLS). SEM-PLS stages include conceptual models, an algorithm analysis method, bootstrapping, path diagrams, model evaluation, conclusion, and suggestions [39]. Data was distributed through bootstrapping based on the aspect of normality. It was further validated again by referring to explanations given by five key informants previously determined. Finally, feedback process lasted based on inputs of key informants in operating the digital business.

This research focused on exploration to find out influences of constructs of latent variables: digital orientation, digital capability, and digital innovation in improving digital business mediated by IT service management. Hypotheses tested encompassed H1: digital orientation positively influenced digital business; H2: digital orientation positively influenced digital business mediated by IT service management; H3: digital capability positively influenced digital business; H4: digital capability positively influenced digital business mediated by IT service management; H5: digital innovation positively influenced digital business; H6: digital innovation positively influenced digital business mediated by IT service management; and H7: IT service management positively influenced digital business. Developing all of these hypotheses, a number of antecedent factors were included to determine the extent of roles of IT service management in enhancing digital business. So far, there has been no research involving IT service management as a mediating factor of various research constructs.

IV. Result and Discussion

The discussion of study results began with path analysis of research models and estimation through PLS algorithm and bootstrapping to obtain optimal values from the distributed data to meet the assumption of normality. Bootstrapping uses an algorithm creating the number of resamples through resampling with replacement method. Each resample contains rows chosen at random from original data sets. These rows can be reselected [39]. Referring to SEM-PLS, latent, exogenous and endogenous variables covered: (a) digital orientation including digital technology (DO1), digital capability (DO2), digital ecosystem coordination (DO3), and digital architecture configuration (DO4); (b) digital capability including digital technology empowerment (DC1), new digital opportunity identification (DC2), digital transformation responsiveness (DC3), digital skills (DC4), and innovation of digital products and services (DC5); (c) digital innovation including more superior digital solution innovation (DI1), more superior digital solution features (DI2), distinctive digital solution applications (DI3), digital solutions with more superior platforms (DI4), and digital solutions with minor improvement of existing products (DI5); (d) IT service management including adjustment of information needs (ITSM1), information availability (ITSM2), IT infrastructure configuration (ITSM3), continuous information (ITSM4), timely information (ITSM5), and smooth IT service operation (ITSM6); and (e) the digital business including content of products or services (DB1), customer experiences (DB2), and platforms (DB3).

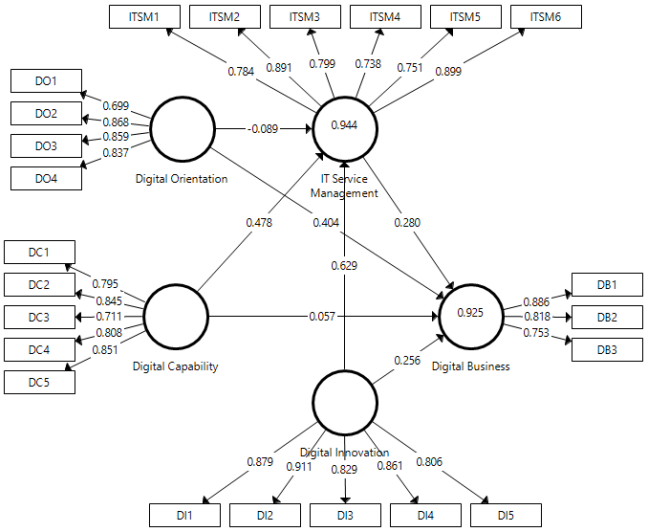

Fig. 1. Research Path Diagram

Analysis results of an outer model indicated the specification of relationships between latent variables and indicators. They were represented through the research path diagram (see Figure 1). However, the loading factor value of digital technology (DO1) was only 0.699. It should be excluded from the path diagram since it was smaller than a minimum limit, i.e., 0.70 [39]. Thus, the scope of digital technology could not be related to the measurement model. In addition, recalculation of PLS algorithm showed that all path coefficients changed significantly (see Figure 2).

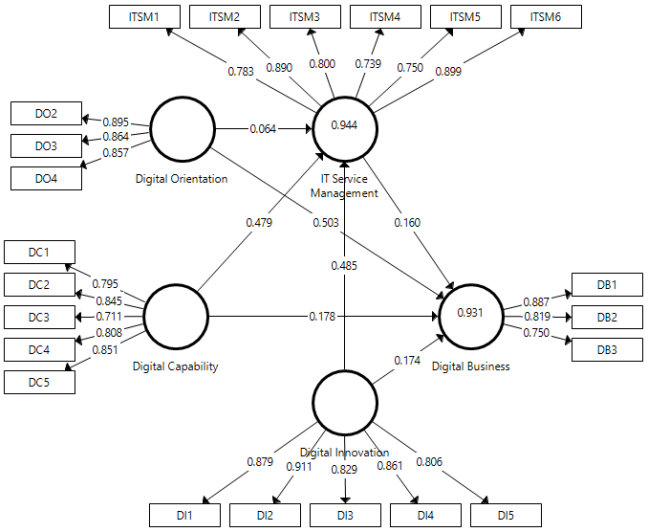

Fig. 2. Valid Research Path Diagram

Following this, a validity test was applied to find out convergent and discriminant validity coeffcients through the result reference of Average Variance Extracted (AVE) and Fornell-Larcker criteria. AVE is used to measure the amount of variance that can be captured by each construct compared to the variance generated by measurement errors. Table I revealed all testing outcomes of discriminant validity of each

construct. Conversely, the ones of the reliability and validity based on computation of Composite Reliability (CR), Cronbach's Alpha (CA), and AVE were shown in Table II. The criteria to fulfill to assure good reliability and validity are that CR coefficient should be greater than 0.80. Meanwhile, CA and AVE should respectively be greater than 0.70 and 0.50 [39].

TABLE I. DISCRIMINANT VALIDITY

Fornell-Larcker Criterion	DB	DC	DI	DO	ITSM
Digital Business (DB)	0.821				
Digital Capability (DC)	0.829	0.804			
Digital Innovation (DI)	0.944	0.802	0.858		
Digital Orientation (DO)	0.937	0.728	0.951	0.872	
IT Service Management (ITSM)	0.923	0.914	0.929	0.873	0.813

TABLE II. RELIABILITY AND VALIDITY OF CONSTRUCTS

Fornell-Larcker Criterion	CA	rho_A	CR	AVE
Digital Business	0.756	0.770	0.860	0.674
Digital Capability	0.910	0.878	0.901	0.646
Digital Innovation	0.910	0.912	0.933	0.736
Digital Orientation	0.842	0.842	0.905	0.761
IT Service Management	0.896	0.900	0.921	0.660

Next, an inner model was analyzed through bootstrapping in SmartPLS v.3.2.8 application program. The bootstrapping process is carried out to test the significance of indicators of each construct and a computed t-value is used to test whether there is a relationship among constructs in a research model. An indicator is deemed significant if the t-statistic is greater than 1.96 (z-score in the 95% Confidence Interval (CI) = 1.96), and the probability value of the computed t-value should be less than 0.05 [39]. Based on test outcomes of the path coefficient, all of the original sample values were positive (see Table III). Unlike them, interpretation of t-statistic and p-values was that relationships between digital innovation and digital business, digital orientation and IT service management, as well as IT service management and digital business were insignificant because the t-statistic was only 1.743, 1.008, and 1.876 (less than 1.96), and p-values were 0.082, 0.314, and 0.061 (greater than 0.05).

TABLE III. PATH SIGNIFICANCE TEST

Fornell-Larcker Criterion	Original Sample (O)	T-Statistic (|O/S TDEV|)	P-Values
Digital Capability → Digital Business	0.178	3.673	0.000
Digital Capability → IT Service Management	0.479	17.056	0.000
Digital Innovation → Digital Business	0.174	1.743	0.082
Digital Innovation → IT Service Management	0.485	6.611	0.000
Digital Orientation → Digital Business	0.503	6.881	0.000
Digital Orientation → IT Service Management	0.064	1.008	0.314
IT Service Management → Digital Business	0.160	1.876	0.061

Having analyzed an inner model (see Table III), digital innovation had positive influences and relationships with digital business. However, it turned out that a number of companies still failed to understand and apply various kinds of digital, developing innovation due to lack of mastery of IT skills despite the fact that most of the heads of family companies engaged in digital business already realized and always put innovation as the highest priority to face competitor threats and customer taste changes. Moreover, lack of management experiences, inability to make financial plans, absence of timely innovation, wrong offers of products and services, unwillingness to accept suggestions from others, and capability limitation in adopting IT through existing duplication were found. Therefore, there was no novelty in terms of the digital business. Likewise, the other two relationships between digital orientation and IT service management as well as IT service management and digital business were positive, yet insignificant. Digital orientation could not fully support or influence IT service management since there was no commitment in managing digital business and lack of responsiveness on roles and levels of this management. The fact suggested that the management adopting digital business mostly possessed no digital orientation skills to empower IT service management. Obviously, there was still limitation in terms of availability and skills of human resources, compliance with work mechanisms and procedures, and comprehension of IT infrastructure configuration. This condition was also similar to roles and mechanisms of IT service management for digital business. Clearly, most family companies engaged in digital business put no emphasis on the importance of this management. Failure frequently happened because there was generally no maturity of digital business in terms of readiness and capability to empower application portfolios of IT services, and the quality of IT operation supports were apt to be partial (not fully focused on the availability and guarantee of holistic IT infrastructure capability). Besides, IT service management tended to focus on data processing for internal needs, not on external service needs of digital business customers. Community culture was still a primary obstacle in ensuring security when conducting financial transaction digitally.

Referring to computation outcomes of the adjusted R-squared, the value of digital business was 0.929 (92.9%). Interpretively, digital business was strongly, directly, and indirectly influenced by digital orientation, digital capability, digital innovation, and IT service management. Another percentage (7.1%) represented other constructs not becoming

an influence model in this study. Then, the adjusted R-squared of IT service management was 0.943 (94.3%). The interpretation was that this management was strongly influenced by digital orientation, digital capability, and digital innovation. The rest (5.7%) indicated influences of other constructs not becoming an influence model in this study. Overall, relationships among all constructs of this research model were of great importance for the success of the prediction model of digital business. Finally, the predictive relevance value of R-squared was 0.996 (99.6%). This reflected a very good research model.

Concerning the influences of constructs, the one of digital orientation on digital business possessed the highest path coefficient (0.503). This value was the most influential one in terms of smooth operation of digital business. The capability to understand and adopt digital technology development as well as to substantially apply IT to innovate was a determining success factor. Nonetheless, the readiness to master digital technology required reliable and responsive human resources.

Such the condition similarly happened to digital innovation and digital capability with strong influences on IT service management. The path coefficients were respectively 0.485 and 0.479. In other words, IT service management highly depended on the readiness to accept and apply various digital innovation and digital capability, and further led to the company success in operating the digital business. This new finding associated with IT service management was of great essence despite its weak, insignificant implications for digital business continuity. Meanwhile, digital orientation positively influenced this management.

Based on testing outcomes of research hypotheses, H2, H5, and H7 are not proven. This study is unlike the previous ones [31,36] with direct, positive, yet insignificant influences. Better, more important digital orientation and digital innovation cause the decrease of productivity of IT service management. In addition, better roles of IT service management result in digital business decline. This evidence is inappropriate with the previous one [20,21,22] stating that digital business focuses more on reliability in terms of digital innovation and digital capability. Meanwhile, digital orientation has very strong influences on digital business continuity. Generally, family companies managing digital business focus less on IT service management [18,19]. Based on this study research model, such the management can provide a prime foundation for digital business continuity.

This research is limited in terms of needs and importance of IT service management and digital business continuity in the West Kalimantan. This limitation can be an obstacle in generalizing the findings to other provinces because of environmental dissimilarities. Besides, this research only represents some digital products and focuses on family business. Additionally, the scope of this research excludes discussion of the mechanisms underlying the company's digital business implementation.

V. Conclusion and Future Research

IT service management has substantial roles in digital capability and digital innovation to enhance digital business. Hence, there should be holistic, indirect relationships. The finding is that the management adopting digital business possesses no digital orientation and digital capability to empower IT service management. This research can be continued to more specifically find out relationships among digital orientation, digital capability, and digital innovation to determine the strength and significance of digital business through IT service management.

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