

Boosting E-Service Quality of Online Product Businesses Through IT Leadership

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Abstract—Boosting e-Service Quality of online product businesses is dependent on the mapping of application portfolios of IT services. Nonetheless, implementing procedures, systems, and mechanisms to manage IT resources is still partial, unspecific. To be precise, they are still a part of inappropriate work units. This study intended to find out and ascertain the extent to which IT leadership was required and had positive, significant influences on e-Service Quality improvement. A survey and a convergent triangulation method with an explanatory design through a follow-up explanation model were applied. Questionnaires were completed by 97 leaders and the management selected from the total population of family companies running online product businesses. All data were collected and processed with Likert Scales. An analysis tool named SEM-PLS was utilized. FGDs with five key informants were further conducted. Outcomes show that the management ability of family companies to empower IT resources is absent. This scientific proof is reinforced by the incompatibility of IT leadership with digital capability to boost e-Service Quality despite very significant digital orientation. There is a negative value found here. In comparison to other constructs, IT leadership is required to manage digital innovation.

Keywords—E-Service Quality, IT Leadership, Digital Orientation, Digital Capability, Digital Innovation

I. INTRODUCTION

E-Service Quality is a vital business strategy element for every company to win competitions today and in the future [1]. Companies must improve, control, and assure the capability to accelerate e-Service Quality applications for internal and external necessities. Possessing and implementing e-Service Quality technology, and providing information services are unavoidable factors [2]. The capability to provide fine information services becomes increasingly complex as customer needs vary and constantly change. The fact indicates that a number of companies perform digital transformation toward digital business process models. The progress of e-Service Quality immensely supports the growth of commerce online without being limited to space and time [3]. Studies [4,5] aver that the success of online product businesses is strongly dependent on reliable, appropriate e-Service Quality exceeding customer expectations. Such the quality has become an essential instrument of operational activities in online product businesses [6]. This condition is reinforced by the progress and growth of Information Technology (IT) that has exponentially surpassed current reality.

The shifts and perspectives of implementing e-Service Quality remain to be a requirement for developing online product businesses specifically performed by family companies in West Kalimantan. So far, they have been managed by one generation to another without empowering IT professionals. Also, decision making refers to seniority in hierarchical family orders [7,8]. Based on survey results on family companies marketing online products, it is noted that the pattern of a physical business process model is referred to by the majority. Other details are that utilized systems and mechanisms of application portfolios of IT services are still shared responsibilities and there is no evident, structured disposition on decisions to realize e-Service Quality. Current phenomena are relevant to the previous research [9,10,11,12] revealing that managing online product businesses relies on standards and guidelines of work, as well as fulfillment of customer expectations. For most family companies, procedures, systems, and mechanisms of managing IT resources tend to be partial.

The previous elucidation is in line with the results of follow-up surveys [13,14] indicating that the majority of family companies in West Kalimantan have IT departments. Nevertheless, none of special divisions exists. Hence, for the work purposes, other units are embraced. Moreover, IT services are still prone to be centralized and can only be accessed by certain divisions. Next, the management system is oriented toward seniority in hierarchical family orders, owned procedures and mechanisms of each department are based on the family seniority ranks [15], and IT investment decisions focusing on operational financing tend to be temporary (only some of it can provide added values as a whole). Contextually, there has been no mapping of application portfolios of IT services involving IT leadership empowering IT divisions [16].

The complexity has been discussed in the previous research [17,18] affirming that there is neglect of IT leadership that is crucial for compliance, reliability, and innovation of family company management in building strategic values to boost e-Service Quality. In addition, the capabilities to provide and disseminate information through fine e-Service Quality based on customer expectations are no longer in terms of the accuracy, completeness, and updates of products. This quality capability is inseparable from the role of the management in managing all IT processes to guarantee the fulfillment of online customer satisfaction, trust, and loyalty. Besides, only several IT investment decisions pertain

to the need awareness of e-Service Quality and selected IT processes are apt to be partial [19]. Lastly, rare interrelationships among work units lead to failure of boosting e-Service Quality benefitting consumers shopping online products. Neglecting the ability to apply IT smoothly is another failure factor.

This research is interesting considering that most online product business companies incompletely believe in e-Service Quality. They hold a seniority principle. What they comprehend is that the roles and mechanisms of IT are on operational activities, not more on strategic tools to win competitiveness. Strengthened by previous research [20,21,22], only a small number of them have explicitly claimed that efforts to boost the capabilities of e-Service Quality can be influenced by IT leadership in conducting digital transformation of online product marketing.

The study problems formulated pertain to the allegation that IT leadership has significant roles in boosting e-Service Quality influenced by these antecedent factors: digital orientation, digital capability, and digital innovation [23] in digital transformation of online product businesses of family companies in West Kalimantan. Most areas in this province are still dominated by aforesaid companies with growth potential of relatively large market shares and promising investment opportunities because they are close to a neighboring country, i.e. Malaysia. Capabilities of this transformation actualize the flexibility and ease of communication establishing personalized relationships with domestic and foreign customers to develop global competitiveness [24]. The rarity of this study lies on the extent of the roles of IT leadership in advancing family companies to face changes in digital transformation. Finally, the purposes of the research are to find out and ascertain the extent to which the roles of IT leadership are required and have positive, significant influences on e-Service Quality improvement, especially for family companies managing online product businesses.

II. LITERATURE REVIEW

A. e-Service Quality

E-Service Quality is an IT service managed by customers through interaction mechanisms on the internet referring to the capability and availability of online information [25]. Such the quality crucially influences decision making and develops competitive advantages in online retail. To provide definition in terms of interaction with the website, it is the level indicating effectiveness and efficiency of facilitating consumers in shopping, making purchases, and shipping of products and services [25, 26]. In the context of the website, e-Service Quality is also interpreted as the extent of efficient, effective facilitation of information service delivery and IT services. Boosting this quality is requisite to achieve customer satisfaction and increase consumer intention to make online purchasing decisions [26]. The decision to provide e-Service Quality must exceed commercial transaction services through the framework including system functionality, manageability, customer supports, procedures, and content [27].

B. IT Leadership

IT leadership functions to create a successful organization. Its existence has become a critical component in achieving organizational success [28]. IT leadership is a process of social influences in the context of making changes of attitudes,

feelings, thoughts, and performance. This definition emphasizes the use of IT in managing all company assets and building application portfolios of IT services to ensure e-Service Quality and support the business performance of online products [29]. In digital transformation era, a dynamic, effective, flexible type of leadership empowering IT is required to aid IT configuration infrastructure [28,29]. Globalization, intense competitions, diverse workforces, information explosion, and socioeconomic upheavals are pressure of changes in managing digital product businesses. This affirmation is inseparable from the readiness of mastering various types of communication technology among business units and of managing changes in organizational business patterns, and the ability to adapt any changes in IT governance [30]. The success of IT leadership in managing online businesses is measured through e-communication skill, e-social skill, e-team building skill, e-change management skill, e-technological skill, and e-trustworthiness [31]. IT leadership should be ready to accept changes in digital transformation to realize IT service governance.

C. Digital Orientation

The management managing digital businesses should have high commitment to constantly changing technology. Companies with superior performance certainly have the readiness to manage resources and specific skill difficulty imitated by the competitors [32]. The use of resources is oriented toward digital technology trends, an essential asset in managing innovative product businesses. Digital orientation is conceptualized in digital technology and reflects the company commitment to apply it to provide innovative products, services, and solutions [33]. Through this orientation, companies become more open in adopting digital technology to create digital products more innovatively. It has a positive relationship with product innovation [34]. In other words, digital orientation significantly drives digital innovation. Specifically, with the commitment to use and excel in digital technology accepted by companies, digital innovation opportunities become open [35].

D. Digital Capability

Digital capability is an important resource used to make innovation and differentiation of new products and services in response to the dynamics of market conditions in digital transformation [36]. This capability is interpreted as skill, talent, and expertise of managing digital technology to develop new products. Digital transformation requires information management capability and IT infrastructure flexibility [37]. Regarding the strengths and foundations of digital organizations, digital capability covers physical technology infrastructure and creative, organizational aspects. Furthermore, such the capability supports realization of innovation and digital products to boost e-Service Quality [37,38], improves business performance, and becomes routine strategy of utilizing digital assets to create different values. Digital assets, however, refer to the availability of IT resources, knowledge of IT design, and the competence to effectively implement IT [38]. Marketing products online relies on the extent of digital technology management [38,39]. Digital capability consists of empowerment of digital technology, identification of new, digital opportunities, responsiveness to digital transformation, digital skill, and innovation in the development of digital products and services [30,39]. All these elements further lead to better performance of providing application portfolios of IT services.

E. Digital Innovation

The importance of this innovation is in line with frequent digitization of products and services [38]. In a general context, it is defined as the creation of market offers or business processes derived from the use of digital technology [40]. Another definition implies the development of new products, services or solutions using digital technology [41]. Digital innovation has a main characteristic, that is uniqueness of ideas, systems or stages and has the nature of novelty implemented through a planned program based on a final desired goal [40,41]. It further brings IT solutions by creating added values for IT products and services in online businesses [39]. Principal criteria to realize the success of digital innovation are that digital solutions and their features must be better than those possessed by competitors, and digital applications and platform advantages are completely different [23,41]. Recent research highlights the unique nature of digital technology enabling new types that are different from the analogous one in the industrial era. This is highly possible considering that the company's decisions to pursue them can come from the technological, environmental dimensions.

III. RESEARCH METHOD

This study applied a convergent triangulation model and an explanatory follow-up design. It involved background definition, literature review, problem formulation, hypothesis design, data collection, data analysis, research results, and conclusion [42]. Surveys on organizational analysis units were conducted. The population covered all family companies that have marketed their online products for more than five years in West Kalimantan. Data was collected from January to March 2020. All questionnaires were directly sent to the company management and 97 respondents successfully returned them to the researchers. To provide categories, there were small and medium-sized companies marketing apparel for children and teenagers (65%), operating culinary businesses (25%), and marketing accessories (10%). Most online business products were owned by family companies in Pontianak (55%) and Singkawang (25%), while the rest were in Ketapang, Sintang, Melawi, Landak, and Putussibau (20%).

Likert Scales with Score 6 (strongly agree) to Score 1 (strongly disagree) were used for a data processing mechanism. Their ordinal values can enhance data accuracy [42]. Questionnaires created referred to previous research through adjustment based on conditions, time, and locations. Moreover, before being in use, their validity and reliability were tested. An analysis method named Structural Equation Modeling (SEM) was integrated with Partial Least Square (PLS) approach. SEM-PLS phases consist of a conceptual model, an algorithm analysis method, bootstrapping, a path diagram model, an evaluation model, conclusion, and recommendations [43]. Bootstrapping normality was concerned for data distribution. Results of the quantitative analysis were validated through justification represented through explanation given by five key informants previously determined. These respondents comprehending and experiencing online product businesses were selected based on the study population through criteria of inclusion and exclusion, interviews, and Focus Group Discussions (FGDs). Such discussions are conducted to understand each respondent's perception on phenomena and research formulation [42]. Eventually, a qualitative validity test was applied and data was analyzed and interpreted through the support of key informants' feedback [42,43].

The need for exploration to discover influences of latent variables comprising the digital orientation, digital capability, and digital innovation boosting e-Service Quality mediated by IT leadership was emphasized. Tested hypotheses encompassed H1: digital orientation had positive influences on e-Service Quality improvement; H2: digital orientation had positive influences on e-Service Quality improvement mediated by IT leadership; H3: digital capability had positive influences on e-Service Quality improvement; H4: digital capability had positive influences on e-Service Quality improvement mediated by IT leadership; H5: digital innovation had positive influences on e-Service Quality improvement; and H6: digital innovation had positive influences on e-Service Quality improvement mediated by IT leadership. Developing the whole hypotheses involved a number of antecedent factors to determine the extent of the roles of IT leadership in boosting e-Service Quality of online product businesses. None of previous studies placed this leadership as a mediating factor of various constructs.

IV. RESULT AND DISCUSSION

Here is detailed description of indicators of each research construct: (a) digital orientation included the commitment to use digital technology (OD1), excellence in digital technology solutions (OD2), digital technology that was accepted by the company (OD3), and digital technology innovation with new opportunities (OD4); (b) digital capability covered digital technology empowerment (CD1), identification of new, digital opportunities (CD2), responsiveness to digital transformation (CD3), digital skill (CD4), and innovation in the development of digital products and services (CD5); (c) digital innovation consisted of more superior digital solutions of innovation (ID1), features (ID2), completely different applications (ID3), platform advantages (ID4), and slight improvement of existing products (ID5); (d) IT leadership involved e-communication skill (ITL1), e-social skill (ITL2), e-team building skill (ITL3), e-change management skill (ITL4), e-technological skill (ITL5), and e-trustworthiness (ITL6); and (e) e-Service Quality included system functionality (e-SQ1), manageability (e-SQ2), customer supports (e-SQ3), procedures (e-SQ4), and content (e-SQ5). However, it was the representation that the loading factor value of e-Service Quality Indicator 1 (system functionality) was 0.699. It was less than 0.70 (invalid) and should, therefore, be excluded from the research model (see Figure 1).

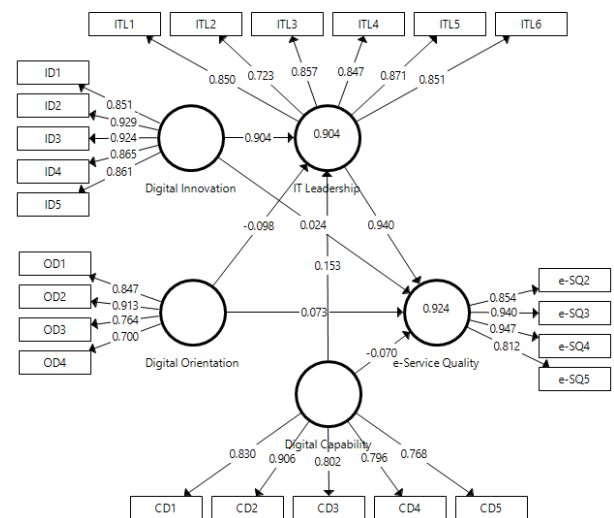


Fig. 1. Path Diagram of Modified Research Model

Table 1 showed the test results of discriminant validity of each construct using Fornell-Larcker Criteria. Table 2, meanwhile, showed all values processed through tests of reliability and validity of each construct in order to further obtain Composite Reliability (CR), Cronbach's Alpha, and Average Variance Extracted (AVE). CR that is greater than 0.80 is in a good category. It should be supported with Cronbach's Alpha and AVE which are consecutively greater than 0.70 and 0.50.

TABLE I. DISCRIMINANT VALIDITY

Fornell-Larcker Criterion	Digital Capability	Digital Innovation	Digital Orientation	IT Leadership	e-Service Quality
Digital Capability	0.822				
Digital Innovation	0.749	0.886			
Digital Orientation	0.913	0.708	0.810		
IT Leadership	0.740	0.949	0.682	0.835	
e-Service Quality	0.710	0.915	0.667	0.960	0.890

TABLE II. CONSTRUCT OF RELIABILITY AND VALIDITY

Construct of Reliability and Validity	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted
Digital Capability	0.879	0.883	0.912	0.675
Digital Innovation	0.931	0.934	0.948	0.786
Digital Orientation	0.823	0.854	0.883	0.656
IT Leadership	0.912	0.919	0.932	0.697
e-Service Quality	0.911	0.912	0.938	0.792

Significance test results of the path coefficients revealed that only several original sample values were positive (see Table 3). At first, digital capability had no influence on e-Service Quality (-0.070). Second, digital orientation had no influence on IT leadership (-0.098). It could be interpreted from both of these original sample values that the better the digital capability and digital orientation were, the lower the e-Service Quality and IT leadership were. This circumstance reflected that the presence and readiness of digital capability were minor factors of boosting e-Service Quality of family companies in marketing their online products. On average, the focus on empowering all IT resources to facilitate and expedite their online services in relation to digital capability and IT capability was evaded. Additionally, the management perspective was still in the context of a smooth internet connection, not comprehensively of digitalization of marketing products online. The truth showed that family company management mostly failed to have the skill to perform digital transformation as there were limitation of availability and readiness of human resource skill, compliance with mechanisms and work procedures, and configuration knowledge of IT infrastructure. Likewise, digital orientation had no influence on IT leadership. In other words, family companies missed high intensity and willingness to use and manage the IT infrastructure architecture in marketing business products online. Also, commitment on IT management system was absent. Finally, utilization of IT was restricted to the data processing mechanism and, thus, e-Service Quality improvement was neglected.

TABLE III. PATH SIGNIFICANCE TEST

Fornell-Larcker Criterion	Original Sample (O)	T-Statistic (O/S TDEV)	P Values
Digital Capability → IT Leadership	0.153	1.565	0.118
Digital Capability → e-Service Quality	-0.070	0.845	0.398
Digital Innovation → IT Leadership	0.904	22.201	0.000
Digital Innovation → e-Service Quality	0.024	0.261	0.794
Digital Orientation → IT Leadership	-0.098	0.967	0.334
Digital Orientation → e-Service Quality	0.073	0.995	0.320
IT Leadership → e-Service Quality	0.940	10.936	0.000

The test findings showed that there were five insignificant values because the probability values were greater than 0.05 (see Table 3). At first, digital capability had positive yet insignificant influences on IT leadership. Second, such the capability had negative, insignificant influences on e-Service Quality. Third, digital innovation had positive yet insignificant influences on e-Service Quality. Fourth, digital orientation had negative, insignificant influences on IT leadership. Fifth, this orientation had positive yet insignificant influences on e-Service Quality. The representation was that there was apparently lack of emphasis on the use of application portfolios of IT services in operating online product businesses. Contextually, it appeared that only digital innovation had positive influences on IT leadership. In other words, IT leadership was required to manage digital innovation compared to other constructs toward digital transformation in marketing online products. These findings became extra contributions. It was noted that on average, previous studies explored IT leadership only in terms of customer satisfaction and family company performance. Also, none of them specifically addressed the use of application portfolios of IT services to boost e-Service Quality.

Following these, R-squared values were calculated to test the goodness of fit model (an inner model). After adjustment, the one of e-Service Quality was 0.920 (92%). Interpretively, this quality was only influenced by digital orientation, digital innovation, and IT leadership. The reason why there was no influence coming from digital capability was that the path coefficient was negative, insignificant. This claim renewed previous findings [37,38] stating that such the capability essentially boosted e-Service Quality. The reflection was that having good digital capability was unable to certainly contribute to e-Service Quality improvement. Vital contributions were presented to the governance of family companies. Here, the use of application portfolios of IT services was optional. Another case revealed that the adjusted R-squared value of IT leadership was 0.901 (90%). In other words, IT leadership was only influenced by digital capability and digital innovation. Digital orientation, however, had no influence on this leadership since its path coefficient was negative, insignificant. Next, calculating R-squared predictive relevance and the result obtained was 0.992 (99%). Overall, digital innovation had the most significant contributions through IT leadership. Conversely, digital orientation previously regarded as a critical element became insignificant for this purpose [39,40,41].

Referring to the path coefficient of each construct, it was noted that the highest value was the influences of IT leadership on e-Service Quality (0.940). This leadership boosted online service quality in maintaining the sustainability and performance of companies through online marketing. Its great importance for family companies was supported by an attestation that achieving and boosting e-Service Quality was inseparable from influences of digital orientation (0.073) and digital innovation (0.024). In this context, digital capability had no influence at all. These findings were inconsistent with previous research [23,38,39] indicating that ownership of digital capability greatly influenced the success of implementing the application portfolios of IT services. In other words, there was no certainty that digital capability could always contribute to online business growth.

Precisely, the existence of IT leadership brought assurance of the alignment and interrelationships of digital orientation and digital innovation in e-Service Quality improvement. In terms of such the leadership, the most powerful influence came from digital innovation (0.904) followed by digital capability (0.153). Digital orientation, however, had no influence on IT leadership at all. Again, this affirmation was dissimilar from previous studies [32,33,34]. Interrelationships among constructs reflected that the family company weakness of boosting e-Service Quality in operating online product businesses could be due to no understanding on digital orientation despite the fact that digital capability had direct influences on IT leadership. Digital orientation, IT leadership, and digital capability, therefore, required linkage.

Aforementioned conditions became answers of hypotheses tested in this study. Evidently, H2 and H3 were disproved. The findings were of great importance for family companies operating online product businesses in making management changes. The first one indicated that digital orientation had negative influences on e-Service Quality mediated by IT leadership. Contrarily, another one showed that digital capability had negative influences on e-Service Quality. In other words, digital orientation was unnecessarily needed for good IT leadership to boost e-Service Quality.

Links among research constructs appeared. IT leadership was only a requisite for digital innovation in relation to online product businesses, not to digital orientation and digital capability to boost e-Service Quality. It could be reflected that there was novelty when this study was compared to previous findings. Here, boosting e-Service Quality had no absolute dependence on the need for IT leadership. Most importantly, there should be linkage between digital orientation and digital capability through roles of IT leadership because of its most powerful influences on e-Service Quality.

In addition, the measurement model revealed that each path coefficient of each indicator was quite dissimilar. There was, however, an invalid indicator, namely system functionality (e-SQ1) since its loading factor value was smaller than 0.70. Hence, there were only four indicators that were directly related to endogenous constructs of e-Service Quality such as manageability (e-SQ2), customer supports (e-SQ3), procedures (e-SQ4), and content (e-SQ5). They influenced each other to boost this quality of maintaining service consistency and customer satisfaction of online shopping. Nonetheless, the family management should notice the manageability (0.854) and content (0.812) of IT services as they failed to exceed real expectations in the era of digital business transformation.

In another area, digital capability had negative influences on e-Service Quality with the path coefficient of -0.070. There has been none of the understanding of the management of family companies to realize e-Service Quality through digital capability. The lowest path coefficient of each digital capability indicator was innovation in the development of digital products and services (CD5 = 0.768). In spite of the fact that it was still greater than 0.70, its influence lacked the strength to support digital capability for e-Service Quality. Among other indicators, identification of new, digital opportunities possessed the greatest path coefficient (CD2 = 0.906). It was aligned with obstacles to map innovation opportunities to develop digital products and services. A principal reason was that all decisions were centralized based on authority and seniority of the management without being supported by IT professionals to empower application portfolios of IT services.

Unlike the previous proof, digital orientation had vital roles because path coefficients of their whole indicators were above 0.70. The one with the lowest path coefficient was digital technology innovation with new opportunities (OD4 = 0.700), whereas the one with highest path coefficient was excellence in digital technology solutions (OD2 = 0.913). There was a significant difference stating that synchronization and harmony of managing the use of IT resources were absent. On one hand, there were advantages of digital technology solutions. On the other hand, digital technology innovation received no supports. As a consequence, IT leadership had useless roles compared to their direct influences on e-Service Quality of online product businesses for family companies.

Furthermore, the path coefficients of all indicators of digital innovation were positive (greater than 0.800), strongly influenced the existence of IT leadership, and significantly boosted e-Service Quality. Nevertheless, there was an insignificant relationship if IT leadership was excluded. Influences of digital innovation representing excellence were deniable. Eventhough IT leadership supported realization of structures, processes, and mechanisms of managing online product businesses, there was no absolute requirement of it if digital orientation was concerned to improve e-Service Quality. This was inseparable from weaknesses in terms of e-social skill (ITL2) with a path coefficient which was only 0.731. Therefore, changes were certainly required in order to make the management better understand the context of service quality of managing online product businesses.

V. CONCLUSION AND FUTURE RESEARCH

This evidence is reinforced by the incongruity of IT leadership with digital capability resulting in difficulties to take further actions for the success of boosting e-Service Quality. In this case, with or without full reliance on IT leadership whose roles are significant for the need to integrate digital orientation with digital capability, e-Service Quality improvement can still be realised. Most crucially, there should be a connection between digital orientation and digital capability through IT leadership due to its most powerful influences in boosting e-Service Quality. This study can have advancement by exploring specific relationships between digital orientation, IT leadership, and digital capability to determine the influence strength and the significance of e-Service Quality improvement, especially for family companies in expediting information services and managing online product businesses.

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