

# Improving Information Service Performance of Family Businesses through IT Governance

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**Abstract**—Improving information service performance is central and immensely influences all business activities, run by family enterprises in particular. Contextually, online businesses have not engaged mapping of transparent and accountable information services. This research aimed to obtain more comprehensive results to ease improvement of IT process values in actualizing information service performance. Besides assessing maturity values and managerial implications, the model of IT governance was recommended based on the relationship of processes of Acquire and Implement (AI) Domain, Monitor and Evaluate (ME) Domain, and others through COBIT 4.1 Framework. Results show that averages of AI and ME Domains are respectively 2.788 and 2.417. The lowest scores of these domains are 2.312 (AI4), 2.416 (AI5), 2.356 (ME1), and 2.235 (ME4). A recommended model of IT governance emphasizes the management of changes through horizontal communication and orientation of the seniority level in the family and synchronization and interoperability of improving information service performance for internal and external needs.

**Keywords**—Information Service Performance, Family Businesses, IT Governance, AI, ME

## I. INTRODUCTION

Roles and functions of IT are on improvement of quicker, more proper, more relevant, more accurate information services of all stakeholders [1]. It pertains more particularly to efficiency, transparency, and acceleration of decision making, empowerment of human resources, and transformation of digital businesses [2]. Information service levels are associated with ownership of proper IT governance based on organizational needs and behavior [3]. IT governance can assure effective, efficient process performance of IT businesses. It also enhances expectation values of all stakeholders [4]. IT governance crucially provides guarantees of achieving business goals and preventing risks of failure or inappropriateness of each business process by noting appropriateness of data management. Moreover, it ascertains that IT empowerment can be reached consistently in synchronization and interoperability through alignment of

business strategy and IT when proving information services of all business processes [5]. The other functions of IT governance are specifying decision rights and accountability framework to direct information service attitude based on necessities and determining those contributing systematically to decision making [6]. IT governance is required since IT has become the main stimulus of making business transformation, operational cost decrease, innovation, and efficiency through improvement of information service performance [7]. The fact becomes an important implication for the management to particularly actualize proper IT governance and needs of enterprises operating family businesses in West Kalimantan, Indonesia.

Professionally managing IT governance of family businesses is alike that of other public business organizations [8]. Every family business enterprise also has IT departments managing IT resources when implementing management of application portfolios of information services to support all operational activities, management lines, and top management [9]. Possessing strategic roles actualizes integrated business communication through services and exchange of information more interactively [10]. Effective information service performance is a strategic asset enhancing business performance and users' additional values [11]. It further influences performance of business activities [12].

Preliminary survey results show that the majority of family business enterprises in West Kalimantan have possessed IT departments. Nevertheless, some of such departments are still integrated with others. The use of information services tends to be central and can only be accessed by certain departments. In addition, the management system is oriented toward a seniority factor and ownership of processes, procedures, and mechanisms of departments on the basis of family stratification. Next, decisions of short-term IT investment focusing on operational budget are unable to give overall values. Lastly, there is no information mapping on the relationship between the use of IT and information service performance.

The present condition evidently requires fine information service performance. Availability of good solutions of service system remains an essential need of achieving organizational performance indicators. There should also be standardization of information service system between organizations and online service providers, adequate security, integrity, and availability of information. The fact reflects the two domains such as (a) procurement and implementation of solution software of IT infrastructure system and (b) control and evaluation of information service performance at current and upcoming time.

Several previous studies indicate that existence of IT is getting more strategic in forms of conformity, reliability, and innovation when creating strategic values of information services in online businesses [13]. IT investment management is prone not to focus on IT governance. The lack of knowledge and IT governance results in selection of IT processes not fulfilling the identification capability and implementation to reach conformity of business strategy and IT [14,15]. It is noted that IT governance is limited to fulfillment of internal information services. Therefore, perspectives of strategic needs are ignored [16]. Information service performance immensely determines success of business competitiveness [17]. Measurement of maturity values of IT governance of family businesses in terms of Plan and Organize (PO) and Deliver and Support (DS) Domains is generally at the second level (repeatable but intuitive) despite the fact that the average is at the third level (defined process) [18].

This research was the continuation of the previous study [18] in terms of AI and ME Domains. It aimed to obtain more comprehensive results so that IT processes could be improved to actualize information service performance. Apart from assessing maturity levels, this research intended to cognize managerial implications and recommended a new model of IT governance processes so that the basis of improving information service performance was guaranteed. The research results additionally assured procurement system and implementation of IT governance to ease control and evaluation of information processing system in improving information service performance of family businesses.

## II. LITERATURE REVIEW

### A. IT Governance

IT governance is the form of responsibility of the top management and integral departments of organizational governance, covers decision rights and accountability framework influencing behavior using IT properly, and ensures effective, efficient IT goals [19]. IT governance reflects responsibility of the board of commissioners, managers, and IT management when formulating organizational structures of business management, business strategy, IT, and processes of IT management to achieve organizational goals, and ensures the implementation [20]. Building organizational relationships through IT governance can only be reached through interrelationships of structures, processes, and mechanisms [21].

### B. IT Maturity Levels

Maturity levels of IT governance indicate existence of problems and determine improvement priority. Maturity values are designed as IT process profiles. Accordingly, description of existing and upcoming probability is cognized [22, 23]. Maturity values fulfill maturity criteria of several levels despite similar processes [24]. Through maturity levels of IT governance, current and expected conditions of IT governance are measurable [25].

### C. AI Domain

AI Domain includes processes of recognizing feasibility and cost saving solutions technically, guaranteeing development of cost saving applications, and effective, efficient development of infrastructure allowing procurement and maintenance of IT skills, minimizing IT risks, and controlling changes of infrastructure, applications, and technical solutions. Acquiring and implementing strategy should be planned, communicated, and managed. Besides, IT infrastructure should be functioned as it is [26]. AI Domain consists of AI1 (identifying automatic solutions), AI2 (acquiring and maintaining application software), AI3 (acquiring and maintaining IT infrastructure), AI4 (allowing operation and use), AI5 (fulfilling IT resources), AI6 (managing changes), and AI7 (installation, solutions, and changes) [27].

### D. ME Domain

ME Domain includes strategy, tactics, and IT mechanism identification contributing based on the conformity control of achievement of business goals. Furthermore, in actualizing strategy, observation and evaluation should be planned, communicated, managed, and prepared. Also, IT infrastructure should be functioned as it is [26]. IT processes of ME Domain comprise ME1 (controlling and evaluating IT performance), ME2 (controlling and evaluating an internal control), ME3 (ensuring fulfillment of external needs), and ME4 (providing IT governance) [27].

## III. RESEARCH METHOD

This research applied a quantitative, qualitative method to obtain comprehensive, valid, reliable, objective data [28, 29]. Such the combination method also applied convergent triangulation and an explanatory design through a follow-up explanation model [30]. The first step was to collect data used for computation and quantitative analysis. Identifying parts of quantitative data supported with qualitative data was conducted afterwards. Qualitative data were used to interpret quantitative data through explanation [30]. Obtained results of quantitative data analysis were computed by using Likert Scales consisting of four choices such as Strongly Disagree (SD), Disagree (D), Agree (A), and Strongly Agree (SA) [31]. However, this research used even scales to evade the tendency of respondents to be neutral. Next, obtained results were processed with explanation of informants to strengthen qualitative research results.

Primary data were obtained through questionnaires using the analysis unit of family business enterprises applying online

business marketing. Answers were given by 65 respondents working at 82 family business enterprises. Meanwhile, for triangulation, qualitative data were collected through in-depth interviews and Focus Group Discussions (FGDs). In order to calculate maturity values of IT processes, COBIT 4.1 Framework was in use. This framework can bridge gaps of the two kinds of controls through control objective levels such as activities/tasks, processes, and domains. The main characteristics are on businesses and orientation of business processes based on measurement so that accurate results are achievable [32].

It was started by finding out averages and producing maturity levels of IT processes. Produced results were important for accumulation of data obtained from each process by referring to AI and ME Domains as representation of gap values. Next, aggregation of maturity levels was measured with arithmetic means. The calculation result indicated tendency levels of changes. In order to determine maturity levels of IT processes, index =  $\{\sum (\text{sum of answers} \times \text{maturity values}) : (\text{number of questions} \times \text{number of respondents})\}$  was the formula in use. Calculation results were mapped by referring to rounding index scales [31, 32]. Results of aggregation values were presented in forms of the table and the radar graphic (see Table I).

TABLE I. ROUNDING INDEX SCALES

| Scales      | Level of Maturity Model      |
|-------------|------------------------------|
| 4.51 – 5.00 | 5 – Optimized                |
| 3.51 – 4.50 | 4 – Managed and Measurable   |
| 2.51 – 3.50 | 3 – Defined Process          |
| 1.51 – 2.50 | 2 – Repeatable but Intuitive |
| 0.51 – 1.50 | 1 – Initial/Ad Hoc           |
| 0.00 – 0.50 | 0 – Non-existent             |

#### IV. RESULTS AND DISCUSSIONS

Through calculation, the current maturity values of AI and ME Domains are less than 2.50 and do not reach the third level (defined process) yet. Such values are at AI4 (allowing operation and use), AI5 (fulfilling IT resources), ME1 (controlling and evaluating IT performance), and ME4 (providing IT governance). They are respectively 2.312, 2.416, 2.356, and 2.235 (see Tables II and III).

TABLE II. MATURITY LEVEL GAPS OF AI DOMAIN PROCESSES

| Domain | Process  | Testing Result | Maturity Level |
|--------|--|----------------|----------------|
| AI1    | Identifying automatic solutions                | 2.956          | 3              |
| AI2    | Obtaining and maintaining application software | 2.825          | 3              |
| AI3    | Obtaining and maintaining IT infrastructure    | 3.325          | 3              |
| AI4    | Allowing operation and use                     | 2.312          | 3              |
| AI5    | Fulfilling IT resources                        | 2.416          | 3              |
| AI6    | Managing changes                               | 2.723          | 3              |
| AI7    | Installation, solutions, and changes           | 2.960          | 3              |

TABLE III. MATURITY LEVEL GAPS OF ME DOMAIN PROCESSES

| Domain | Process  | Testing Result | Maturity Level |
|--------|--|----------------|----------------|
| ME1    | Controlling and evaluating IT performance      | 2.356          | 3              |
| ME2    | Controlling and evaluating an internal control | 2.565          | 3              |
| ME3    | Ensuring fulfillment of external needs         | 2.512          | 3              |
| ME4    | Providing IT governance                        | 2.235          | 3              |

A computed average of AI Domain is 2.788. However, this score is still low to fulfill a defined process standard. Existing processes have not significantly contributed to stated maturity values yet. For AI Domain, maturity values which are less than 2.51 are at AI4 and AI5 Processes. These two processes give an indication that IT for online businesses of family enterprises does not possess a clearly defined process on operational needs yet to reach a good level of information service performance. Specifically, there are no procedure manuals with clear, structured standardization in managing IT resources. In addition, clear IT description on training materials does not exist. Hence it is hard to understand and apply. Moreover, there are no appropriateness of process standards, procedure manuals, and structured documentation system. Following these, IT trainings tend to vary without comprehensive mechanisms and clear structures. In developing IT, there is no similar approach of all business functions and work units. The orientation is only on each individual. Finally, planning and socialization on trainings, IT implementation, and processes tend to be inconsistently conducted and be dependent on each individual's condition (see Figure 1).

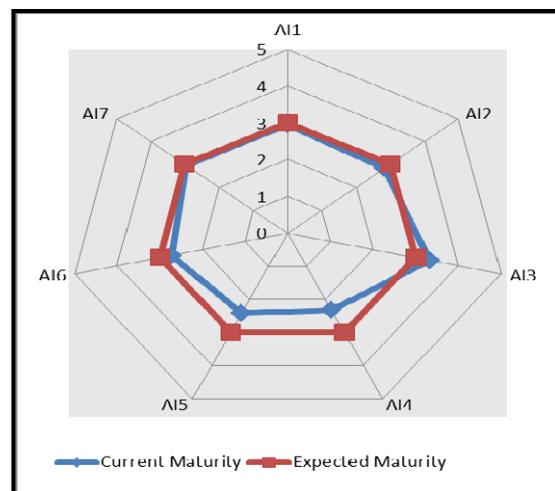


Fig. 1. Maturity Level Model of AI Domain

Meanwhile, another calculation result shows that the average of ME Domain is 2.417. This score is still less than the one in the range of 2.51. In other words, it is at a repeatable but intuitive level. Despite the fact that there are two processes (ME2 and ME3) reaching the score that is greater than 2.51, they have not significantly given contributions on influences of other processes. This condition represents that the use of IT is more centralized to needs of individuals and work units. All IT

processes are at a repeatable but intuitive position. Also, all family business enterprises operating online businesses do not have clear, effective planning on an internal control program through well-defined observation yet. Besides, effective IT governance defining organizational structures, processes, leadership, roles, and responsibility, and aiming to ascertain that IT investment has conformity with strategy and goals is absent. Based on observation, IT process controls are not concerned well. Ultimately, possession of an internal control ensuring operational effectiveness based on valid rules does not exist (see Figure 2).

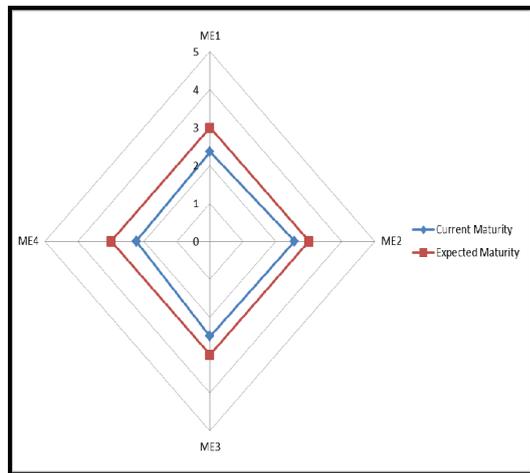


Fig. 2. Maturity Level Model of ME Domain

Research results indicate that based on the description, IT processes are dissimilar and do not reach a defined process level yet. This becomes an essential implication for managers of family business enterprises operating online businesses that information service performance should be concerned seriously.

A way to improve AI4 Domain (allowing operation and use) is planning of addition, implementation, and maintenance of IT infrastructure. This can fulfill business functions and technical needs based on IT directions. Implementing an internal control, security, and auditing size while configuring, integrating, and maintaining infrastructure of hardware and software to protect resources is another requirement. Assuring availability and integrity is also certainly needed. Developing the strategy of planning of the infrastructure treatment and ensuring that control changes are in line with management procedures of organizational changes should be further conducted. Next, regarding AI5 Domain (fulfilling IT resources), there should be allocation of procedure controls of IT processes. Procurement comprises computing resources, servers, network devices, operation system, application software, programs, software modules, internet, consultants, and other external human resources. Management and procurement of IT can be conducted by making application portfolios independently, renting the internet connection, holding IT workshops, cooperating with the third parties and IT industries, and exchanging services with vendors.

On the other hand, improvement of ME1 Domain (controlling and evaluating IT performance) is through

redefinition of indicators of information service performance including arrangement of schedules, techniques and mechanisms of measurement, reports of analysis results, and analysis of all measurement results. Mechanisms of controls and evaluation are required to ascertain IT implementation based on directions and policy of the management of online businesses. Meanwhile, ME4 Domain (providing IT governance) can be improved through IT processing. The management should take remedial actions on inappropriate processes through existing standards to prevent similar cases in the future. Improving effectiveness of IT governance is through definition of organizational structures, IT processes, leadership, roles, and responsibility assuring that IT investment and capabilities to determine measurement indicators of information service performance are in line with business strategy and IT.

Information service performance should be completed with readiness to implement IT governance by referring to obtained, expected maturity values. Updates of investigating all IT processes are required to improve information service performance. It is noted that in operating online businesses, availability and easiness to get information of products should exist. Moreover, improving IT governance can ensure control mechanisms and evaluation of IT investment producing business values and minimizing IT risks.

Thus, initially, improving maturity values of IT governance is necessary. Maturity of AI and ME Domains is related to the one of PO and DS Domains. All of these domains influence each other through IT processes. Interrelated processes aim to improve information service performance through alignment of business strategy and IT of family enterprises operating online businesses.

A recommended model of IT governance is on domains with IT processes possessing values which are less than 2.51, i.e. AI4, AI5, ME1, and ME4. These four processes are very important factors since they have direct relationships with PO and DS Domains. However, they need improvement. This activity requires commitment, readiness, and assurance of implementing change management oriented toward effectiveness of IT governance.

The following description of a recommended model of IT governance is used to improve expected maturity values. Each IT domain represents a number of detailed activities on objective controls of inputs and outputs. Maturity of IT governance is the representation and guarantee of improving information service performance.

- 1) AI4 Domain (allowing operation and use) is related to other objective controls. The input objective control consists of PO10 (detailed project plans), AI1 (business requirements), AI2 (application software knowledge), AI3 (infrastructure knowledge), AI7 (known and accepted errors), and DS7 (documentation updates). Conversely, the output objective control comprises AI7, DS4, DS8, DS9, DS11, DS13 (users, operational supports, and technical and administration manuals), DS7 (knowledge transfer requirements), and DS7 (training materials).

- 2) AI5 Domain (fulfilling IT resources) is related to other objective controls. The input objective control consists of PO1 (IT acquisition strategy), PO8 (acquisition standards), PO10 (detailed project plans), AI1 (feasibility studies), AI2-3 (procurement decisions), and DS2 (supplier catalogs). In contrast, the output objective control covers DS2 (third party relationships), AI7 (procured items), and DS2 (contractual arrangements).
- 3) ME1 Domain (controlling and evaluating IT performance) is related to other objective controls. The input objective control comprises PO5 (cost-benefit reports), PO10 (project performance reports), AI6 (changing status reports), DS1-13 (process performance reports), DS3 (performance and capacity plans), DS8 (user satisfaction reports), ME2 (reports on effectiveness of IT controls), ME3 (reports on compliance of IT activities), and ME4 (reports on IT governance status). On the other hand, the output objective control consists of PO1, PO2, DS1 (performance inputs to IT planning), PO4, PO8 (remedial action plans), PO9 (historical risk trends and events), and ME2 (process performance reports).
- 4) ME4 Domain (providing IT governance) is related to objective controls. The input objective control covers PO4 (IT process framework), PO5 (cost-benefit reports), PO9 (risk assessment and reporting), ME2 (reports on effectiveness of IT controls), and ME3 (catalogs of legal and regulatory requirements related to IT service deliveries). Meanwhile, the output objective control consists of PO4 (process framework improvement), PO1, ME1 (reports on IT governance status), PO5 (IT-enabled business investments), PO1 (strategic enterprise directions for IT), and PO9 (enterprise appetites for IT risks).

#### V. CONCLUSION AND FUTURE RESEARCH

Improving information service performance of family enterprises operating online businesses in West Kalimantan should be through effective IT governance referring to relationship conformity of business strategy and IT. Conducting change management having horizontal communication and not focusing on seniority of family should be concerned. These are crucial activities of making strategy of implementing IT governance through integration of IT processes. Integration mechanisms of processes of businesses and IT are important parts of achieving synchronization and interoperability when improving information service performance for internal and external needs.

Maturity values of IT governance of AI and ME Domains show these averages: 2.788 and 2.417. These two values do not reach a defined process position or an expected maturity level yet. In fact, the one of AI Domain does not reach 3.00 or even exceeds 3.51. Meanwhile, the maturity value of ME Domain is still lower and is at a repeatable but intuitive position. It is recommended that AI4 (allowing operation and use), AI5

(fulfilling IT resources), ME1 (controlling and evaluating IT performance), ME4 (providing IT governance), and other IT processes should be interrelated. Improvement of maturity values should be immediately conducted to achieve consistency values of processes.

This research can be continued with analysis of IT governance on interrelationships of PO, DS, AI, and ME Domains to obtain Key Performance Indicator (KPI) and Key Goal Indicator (KGI) of each IT process. Determining KPI and KGI through combination of gaps of PO, DS, AI, and ME Domains can provide more comprehensive information on weakness aspects of IT processes of IT governance of family enterprises pertaining to online business operation in West Kalimantan. Hence, this stimulus is important for achievement of conformity of business strategy and IT when supporting improvement of information service performance.

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