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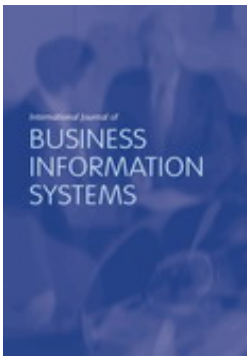

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Developing information system/technology strategy in supporting business process: a case study of insurance state-owned enterprises

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Abstract: The main goal of this study was to develop an information system/technology strategy in supporting process business in one of a state-owned insurance company. The study was motivated by the fact that company branch offices spread out throughout Indonesia. For this purpose, the open group architecture framework (TOGAF) was deployed. Considering the nature of the study is a strategy, Ward and Peppard's model was also used. TOGAF was integrated with Ward and Peppard model to find the solution to the current problem and mapping future activities. Some suggestions to company management resulted from the research. Each year from 2020 to 2024, the company management should strengthen the main platform and internal capability, implement digitise service, enhance contribution towards all stakeholders, speed up excellent performance, maintain the business growth, and start expansion, respectively.

Keywords: information system; TOGAF; strategic planning; information system architecture; business process; the insurance company.

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Biographical notes: Dwi Soelistijanto is the Head of Application Development in the Information Systems Division of PT ASABRI (company). The main task and function is to develop and maintain all existing applications. He became a project manager in several application developments, including human resource applications, survey applications, attendance applications, simultaneous homecoming applications and more. Starting January 1 2020, he occupies a new position as Head of Participant Data Management. The main tasks and functions include ensuring membership data originating from a valid entity, making cooperation agreements with other entities and agencies, and monitoring membership documents in all service offices maintained.

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1 Introduction

PT ASABRI (company) is a state-owned enterprise. The main business of the company is insurance products. The company manages insurance for all Indonesian military, Police Department, and Ministry of Defense staff. There is 18 insurance product offered by the company, besides managing insurance, the company also responsible for paying retirement benefits.

The company does not need to seek new customers, since all Indonesian military, Police Department, and Ministry of Defense staffs became a customer at the day they sign the employment contract according to government regulation number 44 the year of 1971 and number 67 the year of 1991. To run the business, the company had a central office in Jakarta and branch offices in 33 provinces. By located branch office in every province, data integration between branches and headquarter was a necessity.

Unfortunately, data integration between branches and head office had not been implemented. Because the lack of data integration, payment claims and service to customer was often constrained. Failing to deliver services to customer most probably will dissatisfy customer (Agrawal et al., 2019; Singh and Singh, 2018) and influence customer loyalty (Kamble and Walvekar, 2019).

The main problem in PT ASABRI in maintaining and improving service quality was related to customer data. Customer data is one of customer input. Customer input, which has been categorised by many researchers (Sampson and Spring, 2012; Seppänen et al., 2015), forms a central part of service. The customer inputs influence the progress and outputs of the service processes (Seppänen, et al., 2015) that at the end influence customer satisfaction.

At *PT. ASABRI*, customer data was stored and processed centrally at the Jakarta head office. Customer data was received manually from each branch. This data collection was done by assigning staff on each branch to save the data in compact disks (CDs) and delivered to the head office. The problem arose from this practice due to the long trip between the head office and branch. Besides, storing data on a CD was potentially corrupted. The way of existing data handling many times resulted in incomplete, unprepared, unqualified or delayed data, thus produced a lack of consistency in the quality of customer inputs. Customer input failures may also cause the time-lags of

service production, repeated processes and longer cycle times (Leyer and Moormann, 2012), as well as task difficulties for the employees (Chan et al., 2010).

Another problem arose from the current practice method numbering for membership identities (NRP) between military and police. NRP was provided from each branch so thus it may found multiple NRPs to occur. There were 597 double NRPs in the current ASABRI membership database. Double NRPs was potentially happening due to data process that had not been integrated.

Data integration to solve the problem was in demand. Data integration is a long-standing issue that entails a process of schema matching, the goal of which was to identify semantic correspondences between elements of two schemas, and of schema mapping. ICT was a necessity for data integration.

ICT was a must for this business as it has been proved to show significant influence on many aspects of life (Maiga, 2017; Mandal et al., 2016; Hidayanto et al., 2015; Pande and Gomes, 2015; Abareshi et al., 2012; MacCormick et al., 2012; Althonayan and Sharif, 2010). However, in contrast with those researchers, ICT is not always the answer to improve company performance. Arora and Rahman (2017) for instance showed that IT does not provide a competitive advantage to firms operating in India. Santa et al. (2018) found that IT has no direct effect on the improvement of operational performance, but there is an indirect relationship through the achievement of operational effectiveness. This called for further researches to study the relationship between company performance and IT.

To gain benefit from IT implementation, it should be planned properly. Al-Ammary et al. (2019) showed the importance of strategic information systems (IS) planning in supporting the business strategy and improving the organisation overall performance in the Kingdom of Bahrain. Similarly, Mandal (2018) showed the significant effect of information management and technology management strategies on financial performance.

In most ASABRI activities, IT tools had been deployed. But as described above, IT software was implemented locally. Software integration is an urgent need so thus improve company profitability (Maiga, 2017). Therefore it was necessary to formulate a strategic plan for IS/IT in this company. ASABRI membership data collection and processing should ideally be integrated. The workings of manual and semi-automatic must be replaced online and in real-time. Web-based technology urgently to be built so thus could be accessed by all working units. In this case, the data generated would be following the actual time. A network connection must be established immediately. So thus the objective of this study was to develop an IS/IT backbone to support the business process (BP) of ASABRI. Precisely, this study was intended to:

1 evaluated the existing IS/IT architecture

2 designed the application architecture

3 integrated the application

4 generated the company roadmap strategy

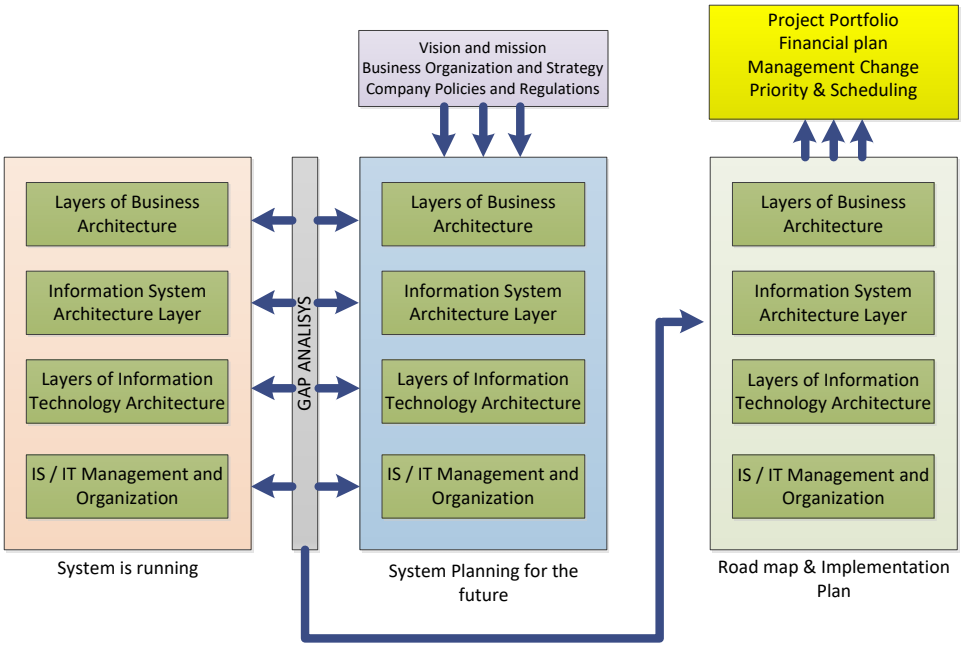
5 planned the IT governance.

By developing the IS/IT backbone to support the BP, it was expected to improve company performance (Maiga, 2017) and enhanced customer satisfaction simultaneously.

2 Research methods

The IS/IT architecture development cycle followed the TOGAF-ADM development cycle as shown in Figure 1. The TOGAF was used to design, plan, implement, and manage IS/IT architecture. Ward and Peppard's strategy model complemented the use of TOGAF-ADM in presenting a detailed analysis of strategic planning. This model consisted of input and output stages.

Figure 1 Planning procedure of IS/IT of PT. *ASABRI* (company) (see online version for colours)



Techniques used in Ward and Peppard's framework and strategic planning included SWOT analysis, Porter's five forces competitive analysis, and McFarlan's strategic grid. In integrating the TOGAF and Ward and Peppard models, mapping was done at each phase. Mapping was done to find complementary relationships. The concepts and integrated IS/IT strategic plans can be seen in Table 1 of supplementary.

Porter's five forces were deployed to analyse micro factors that influence company business. Strategic Grid McFarlan analysis was used to evaluate application conditions that support the operational activities of the company. The information design method in this study was user-centred design (UCD).

Data was gathered from discussions with management. In addition, document analysis was also performed to collect information related to the existing company system. This method produced descriptive data and aimed to gain an understanding of the object under study.

Table 1 Framework mapping of TOGAF ADM and Ward & Peppard

TOGAF ADM	*WARD & PEPPARD*	*Mapping (PT)*
Introduction phase • Define guidelines and frameworks. • Determine the method in detail.	It is not clear in determining the initial stages of an organisation's IS/IT strategic planning.	PT1: IS/IT planning process: • There is commitment and management support • Collecting IS/IT documents of the existing system.
Phase A: Architecture vision • Learning organisation vision, mission and goals to formulate IS/IT architecture vision.	It is not clear in determining the vision, mission, and goals of the IS/IT strategic plan.	PT2: The process of formulating the IS/IT vision, mission, goals, and grand strategy • Determine the vision, mission, and objectives of the IS/IT strategic plan • Formulate a major IS/IT strategy.
Phase B: Business architecture • Documenting existing business model • Determine business process existing system. • Planning business architecture for the future.	Analysing business in terms of environment and external aspects.	PT3: Business analysis process • Analysing the existing business architecture • Analysing business internal environment using tools such as value chain, SWOT, CSF • Analysing the external environment using PEST, Porter's five forces and strategic McFarlan • Displaying ideal IS choices of need analysis.
Phase C: IS architecture • Describe existing and creating a proposed data architecture model • Describe existing and creating a proposed application architecture	1 Analysis IS from the internal and external environment 2 Defining IS strategy	PT4: Analysis process of IS • Identified existing data and application architectures • Describing IS architecture that consists of data and application • Formulation IS strategy
Phase D: Technology architecture • Creating a model of technology architecture.	1 Analysing technology from the point of view internal and external environments 2 Formulating IT strategy	PT5: Analysis process of infrastructure • Identifying future technology architecture • Compiling infrastructure description consists of hardware, network, and building • Formulating IT strategy

Table 1 Framework mapping of TOGAF ADM and Ward & Peppard (continued)

TOGAF ADM	*WARD & PEPPARD*	*Mapping (PT)*
Phase E: Opportunity and solution • Establishing roadmap architecture	Analysing: 1 IS/IT management strategy 2 existing application portfolio 3 and classifying the proposed application portfolio 4 existing infrastructure 5 classifying proposed infrastructure.	PT6: Implementation and Evaluation processes • Formulating IS/IT management strategy • Running an ideal application and technology portfolio • Developing IS/IT roadmap. • Create change management • Preparation of the process using IS/IT governance • Preparation of development program • Preparation of alternative activities
Phase F: Migration planning • Creating an implementation plan and compiling implementation priority	1 Formulation of IT strategy 2 Preparing the migration plan and business case	
Phase G: Implementation • Building IT governance recommendations based on the architecture developed	1 Implementing a business strategy 2 Prepare a development program	
Phase H: Change management architecture • Overseeing the development of IS/IT following the developed reference architectural plans	Analysing other activities plan	

3 Result and discussion

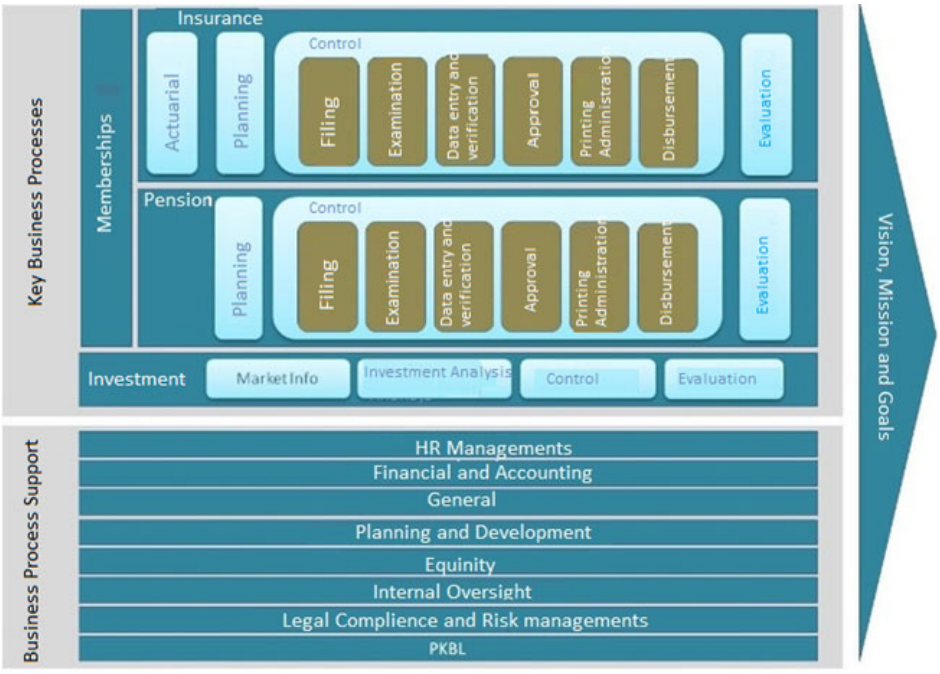
This chapter presents the development of the IS/IT backbone for *PT. ASABRI* (company) business. Following framework mapping of TOGAF ADM and Ward and Peppardas shown on supplementary (Table 1), the discussion was started with existing IS/IT architecture.

3.1 Existing IS/IT architecture (PT1)

PT. ASABRI existing IS was divided into two parts, i.e., main BP (core) and supporting BP (non-core). The main BP included operational records (membership, retirement and actuarial) and the directorate of investment finance (investment, accounting, and finance). Supporting BP included the HR directorate and general, and the main directorate.

Existing IS had been supported by many applications but not yet integrated. These applications were membership, insurance, pension, investment, human resources management system (HRMS), partnership, and partnership program and environment (PKBL), document management system (DMS), executive IS (EIS), system application and product in data processing (SAP), data warehouse, e-procurement, corporate websites, and whistle blowing system applications. The existing IS architecture as described on the Port-Chain Value can be seen in Figure 2.

Figure 2 Port-Chain value of existing IS (see online version for colours)



The communication network topology that illustrated the head office network relationship is shown in Figure 3. Relationships between branch offices, data centres, and disaster recovery centres (DRC) can be seen in Figure 4. The current condition of the

company's infrastructure used the concept of high availability. This was illustrated by the transition of the infrastructure model from a physical server to a virtual server. The transition to virtual servers that began in 2017 had become an urgent need.

Figure 3 Relationship of *PT. ASABRI* (company) head office communication network (see online version for colours)

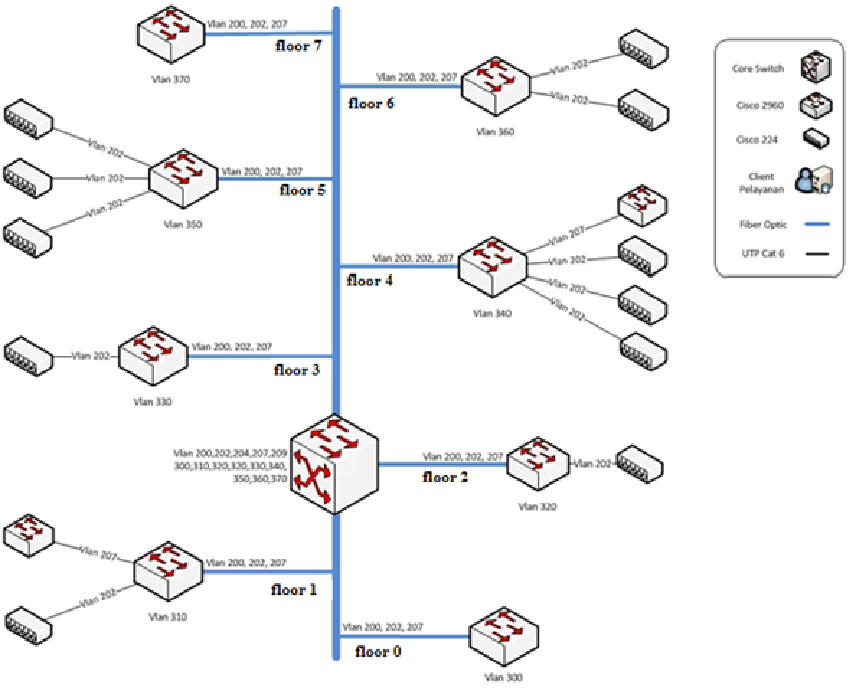
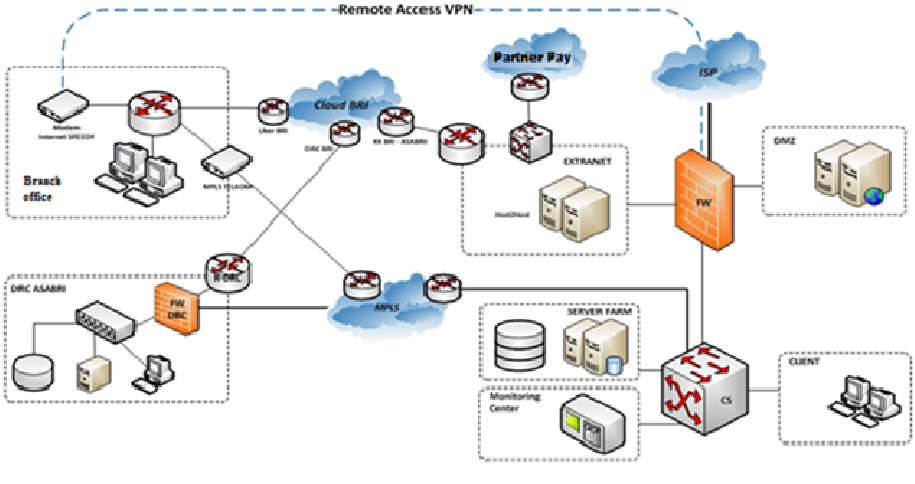


Figure 4 Relationship of *PT. ASABRI* (company) branch offices, DC and DRC (see online version for colours)



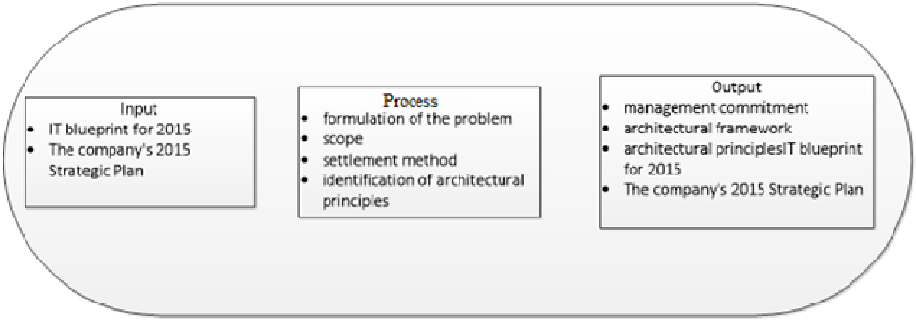
3.2 The concepts and integrated IS/IT strategic plans

This section presents proposed the development of the IS/IT backbone. Following framework mapping of TOGAF ADM and Ward and Peppardas shown on supplementary (Table 1), the activity starting from the formulation of IS/IT vision, mission, goals and grand strategy.

3.2.1 The process formulation the IS/IT vision, mission, goals, and grand strategy (PT2)

The planning process was done by mapping of the preliminary phase of TOGAF ADM and Ward and Peppard. This stage was a confirmation of stakeholder commitment and management support in IS/IT strategic planning. The planning phase classified IS elements as input, process, and output. The relationship between these elements can be seen in Figure 5. The inputs used were the company's strategic plan in 2015 and the IT blueprint in 2013. The document was used as a reference for the development of the next strategic plan.

Figure 5 Relationship between input, process and output of *PT ASABRI* (company)



The process followed the stages of implementation of the TOGAF-ADM that was integrated with the Ward and Peppard model. The targeted outputs were Management's commitment, architecture framework, and architectural principles.

The determination of the mission and vision of IS/IT was influenced by the main goals of the company. Being the best national social insurance management company that can provide optimal benefits/guarantees in the implementation of insurance and pension payment activities, as well as the best service for participants while taking into account employee welfare was the company's vision. To make this happen, IS/IT should play as a leading provider of solutions in completing the implementation of customer services and employee welfare improvement.

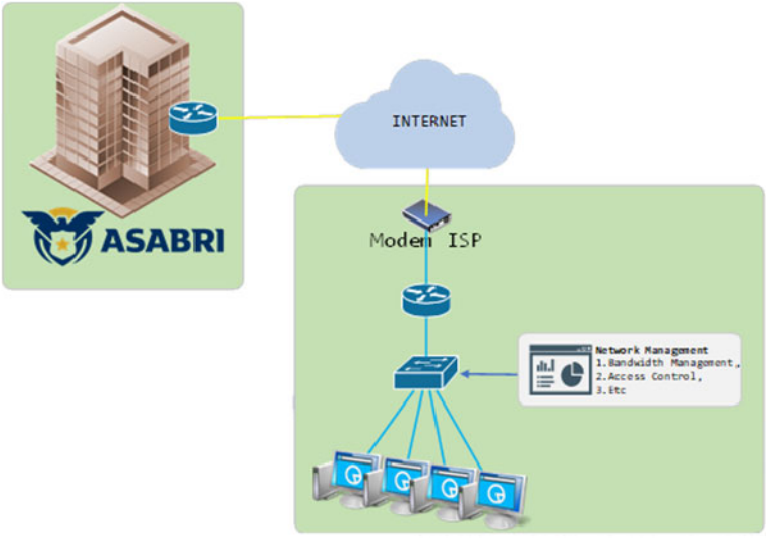
Some major strategies to realise the proposed IS/IT vision were data and application, IT infrastructure, and IS governance strategies. Data and applications were the main issues that need to be corrected and refined. At present, the process of data duplication and data validity cannot be guaranteed. This had an impact on business decisions both minor and major.

To overcome duplication and even data manipulation, in the target preparation stage, a master data management (DM) concept was needed. The DM concept should have a single entry.

The concept of server virtualisation that had been implemented still needs to be addressed and refined. The need for future IS utilisation and development can be predicted through a capacity plan. In addition to capacity planning, the application of the concept of load balancing, failover solutions and cluster computing was a major concern in supporting the concept of high availability for companies.

The increasing customer service demanded the service strategy require to be improved. Independent internet service using WAN services was an option. The concept of independent internet services will be applied between branch offices throughout Indonesia with company data centre. The concept of the proposed WAN network is shown in Figure 6.

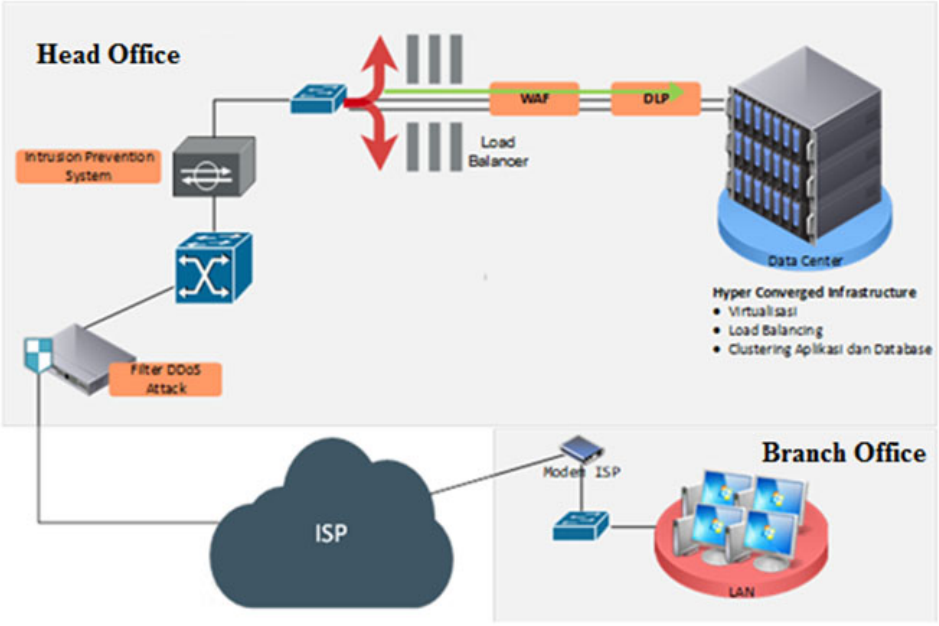
Figure 6 Proposed wide area network (WAN) (see online version for colours)



On the proposed internet network concept, each branch office would subscribe to internet access and install its own devices. Each user would be given their account and password. Accounts and passwords use the Lightweight Directory Access Protocol (LDAP) control model.

The maintenance process would be carried out independently by the branch office based on standards and procedures established by the IS division. This was expected to increase user competency and application service quality. Users in the branch office did not depend on the central office admin. By allowing access to independent internet services would have an impact on the emergence of new risks that need attention. Information security was an important part of this strategy. The proposed information security is shown in Figure 7.

Figure 7 Proposed information security concept (see online version for colours)



System improvement needed to be done, starting from the basic elements of policies, standards and procedures. The company's emphasis on customer services demanded existing BP need to be improved or even re-engineered. Implementation of the latest IS policies, standards, and procedures should be carried out. The strategies that were an urgent necessity are:

1 BP improvement/re-engineering;

2 Determination of IT management policies, standards, and procedures;

3 Implementation of IT Service Management;

4 Implementation of risk management;

5 Implementation of information security.

3.2.2 IT business formulation process (PT 3)

To assure the validity of membership data, collaboration with other government agencies such as the forces, Directorate General of Population and Civil Registration (dukcapil), National Civil Service Agency (BKN) and PT. Taspen was needed. Steps to realise the validity of membership data were proposed in Figure 8.

Service reform must be carried out by providing procedures more effective that applies to all company' working units at the head and branch offices. The determination of service standards included insurance claims and pension payment. The formulation of standard operational procedures (SOP) should be performed for planning, provisioning, distribution, accountability, monitoring, and evaluation. The BP of formulating the SOP was proposed as shown in Figures 9 and 10.

Figure 8 Main BP participation (see online version for colours)

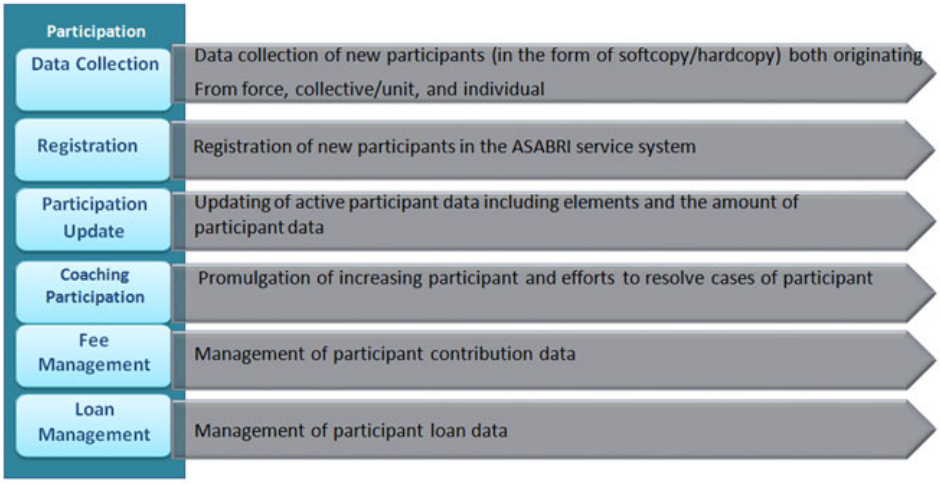
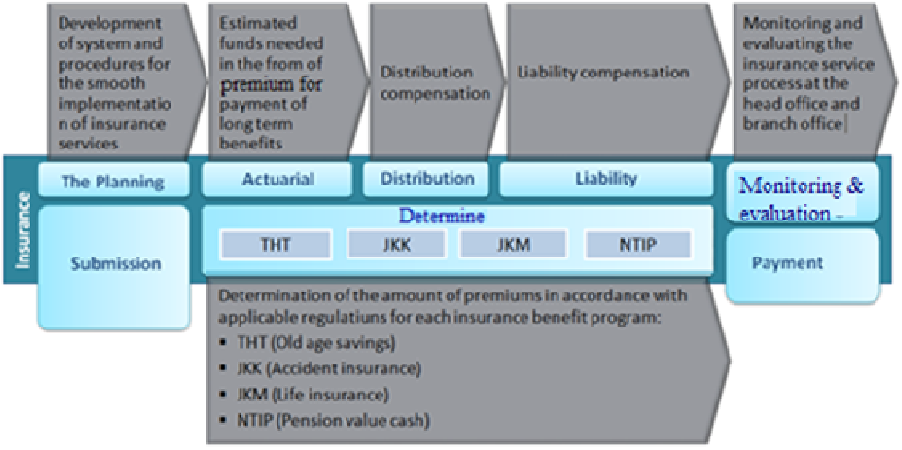


Figure 9 Proposed BP claim procedures (see online version for colours)



The BP procedure for investment development was proposed in Figure 11. The main business success of the company could be achieved if the supporting business can work together. Supporting businesses that must be developed were planning and development, financial management, HRM, procurement and asset management (PAM), compliance, legal and risk management, internal audit, and IS.

Planning and development consisted of various activities. The first activity was coordination and controlling the preparation of the company's long-term plan (RJPP) and the corporate work plan and budget (RKAP). Other activities were preparation of guidelines, SOPs and key performance indicators (KPI), conducted surveys and research for company development and, coordinated the preparation of periodic company reports to agencies related.

Figure 10 Proposed BP payment procedures (see online version for colours)

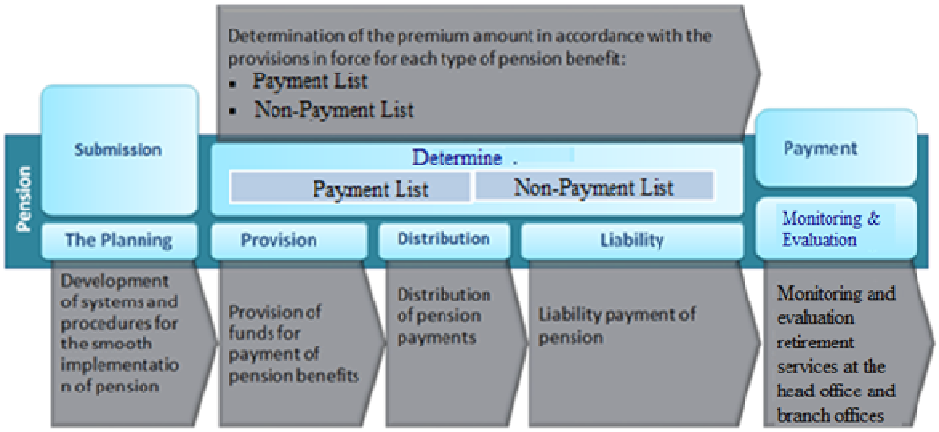
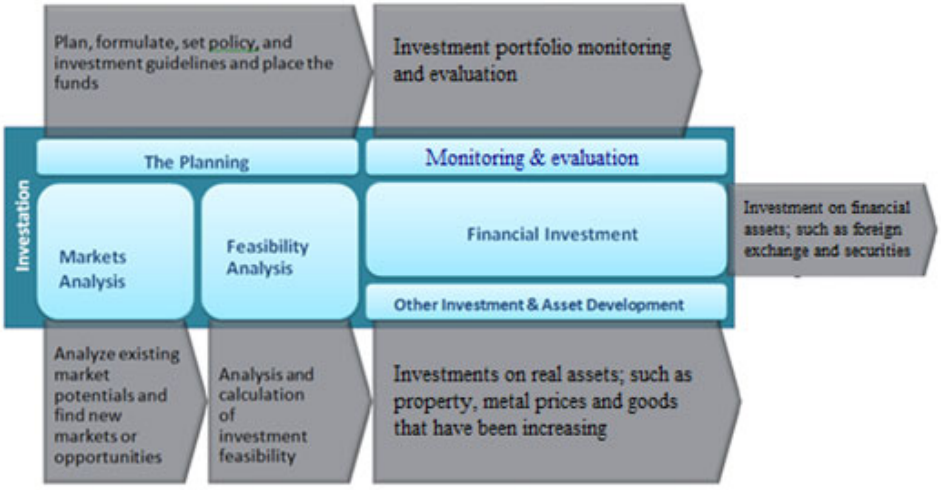


Figure 11 Proposed BP procedures for investment development (see online version for colours)



The financial management business process (FMBP) consisted of several activities. Including in FMBP were managing revenue collection transactions and ensuring the availability of funds for the sustainability of the company. Managing the payment transaction/expenses of the company and the payment process/disbursement of corporate social security in collaboration with related parties such as paying partners. Other activities were carrying out the collection, depositing and reporting taxes, carrying out journal entries and company ledgers, and carry out the preparation of the company's financial statements.

Table 2 Application portfolio (see online version for colours)

Program		*Project*	*2019*	*2020*	*2021*	*2022*	*2023*
Strengthening main BP	1	Membership application development and integration with integrated services and increasing the quality of membership data in accordance with pension reform.					
	2	The integrated application development of membership and payment based on military and 'dukcapil' data.					
	3	The integrated application development of payment with Ministry of Financial applications.					
	4	Application development investment management as well as business development and integration with financial application and risk management.					
Strengthening customer relationship process	5	Public portal development					
	6	Contact centre application development parallel with integration with call centre system, core application of social security (membership, Yandu and payment)					
	7	Mobile Application development parallel with integration.					
Strengthening ERP process	8	Acquisition and integration budgeting and planning applications.					
	9	Implementation cash management					
	10	Development and integration CSR/ PKBL with financial and risk management application.					
	11	Human capital management application development along with integration with related applications such as ESS, finance, performance management, LMS (KM).					
	12	KM integration.					
	13	Acquisition asset management applications and integration with related applications such as e-procurement and financial applications.					
Strengthening governance process, risk and conformation	14	Enterprise risk management application development along with integration with related applications such as investment, finance, CSR, etc.					
	15	Audit management application development.					
	16	Development audit tools along with integration with related applications.					
	17	Compliance management application development.					
	18	Acquisition project management application.					
	19	Acquisition portfolio management applications and integrations with project management applications.					

Table 2 Application portfolio (continued) (see online version for colours)

Program		*Project*	*2019*	*2020*	*2021*	*2022*	*2023*
Strengthening analytic process	20	Acquisition and development data warehouse that is integrated with related application.					
	21	Acquisition corporate performance management application.					
Strengthening collaboration management process	22	Office automation acquisition and its integration with related application.					
	23	Development e-mail and messaging that is integrated with related application such as office automation.					
	24	Integration document management application with office automation					
	25	Development audio/video conference system in head offices and branches.					
Development DM technology	26	Acquisition master data-metadata management application and its integration with related application.					
	27	Acquisition data quality management application and its integration with related application.					
IS platform and integration	28	Acquisition service-oriented architecture (SOA that consists of ESB and related tools)					
	29	Acquisition BP management application.					
	30	Acquisition business rules management application.					
Development infrastructure and security system	31	Acquisition identity management application and its integration with related application and infrastructure.					
	32	Acquisition IT service management application and its integration with related application and infrastructure.					

The HRM BP consisted of employee planning (manpower planning), education and training programs, the establishment and implementation of a management system for evaluating employee performance and guidance, and providing remuneration and welfare improvement. Employee planning was related to the addition of employees in stages. Planning education and training programs should be conducted to meet the demands of increasing competency based on policies and training patterns. Remuneration was in line with consistent rewards and punishments.

The business process of PAM (BPPAM) was related to the management of the procurement of goods and services. The BPPAM consists of the e-procurement, administration, maintenance management system and management of the proposed elimination/auction/sale of assets to shareholders, and the management of company facilities and their utilisation arrangements.

Compliance, legal and risk management BP were built into several activities. Its activities consisted of compiling and establishing a code of ethics, managing and carrying out socialisation, and reviewing and providing recommendations. The code of ethics was a guide to implementing business ethics for all company employees. The company's process and system of compliance with applicable laws and regulations must be promoted. Reviews and recommendations were related to the legal aspects of each legal product and company activities and carry out litigation processes if necessary.

The internal audit BP was related to many activities. Preparing audit plans and programs were based on the company's current risk profile. Carrying out audits to ensure the adequacy of internal control over related risks. Preparing and submitting recommendations for improvement of internal control through the audit report to the auditee and audit committee. Evaluating and ensuring compliance with actions then the audit findings were following the auditor's recommendations.

IS BP was to compile long-term, annual and quarterly IT plans. First activity was to oversight and ensuring IT functions were managed following best practices, standards, and regulations. Second, conducting IT development both in applications and infrastructure, and carrying out IT operations and maintenance. For a comprehensive analysis of potential IT BP support per field please refer to supplementary Table 2.

3.2.3 Analysing external and internal factors

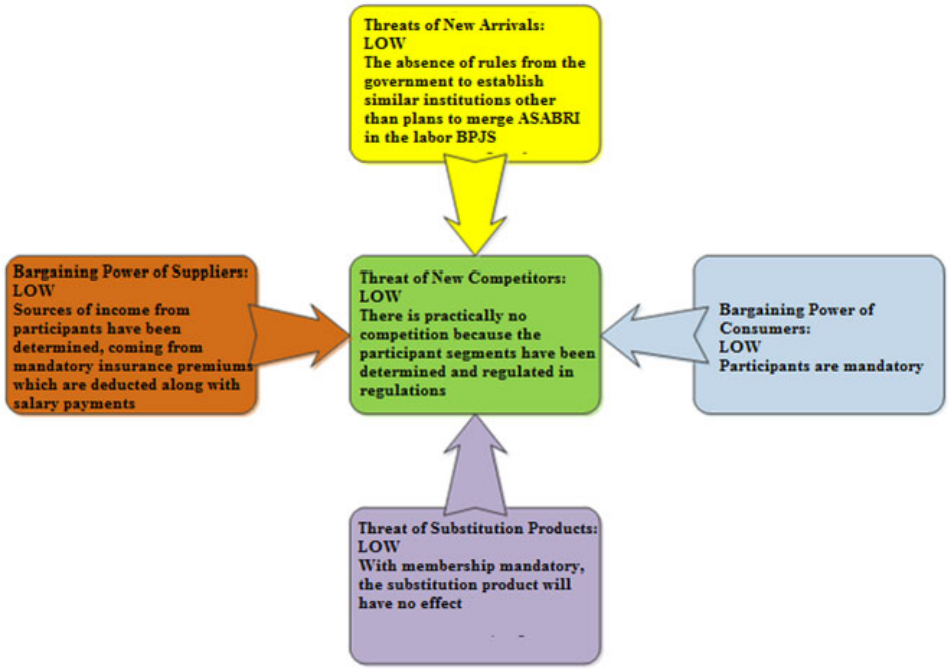
Analysis of the external environment was carried out on political, economic, social and technological (PEST) conditions. From the political aspect, the National Social Security System (*SJSN*) and the Social Security Administration Agency (*BPJS*) Law, supporting regulations, and the pension reform law were noted. In one of the articles of the SJSN and the BPJS Law, it was stated the merger of several state-owned insurance companies, including *PT ASABRI* (company). Supporting regulations included the ministry regulation (*permen*) and the directorate general (*perdirjen*) regulation. Both were changing the above rules.

From the economic aspects, need to be considered were uncertain economic conditions with a marked investment climate that was not yet stable. Public purchasing power was decreasing. The state budget was not proportional to the needs of the country, and ASEAN free market (AFTA). Three important things must be considered in the social aspect. Those three were community behaviour was changing due to the use of IT. Consequently, information dissemination was very fast with a wide reach. Customers had a better understanding of the applicable regulations.

There were six aspects of technology factors that need to be considered in formulating business analysis. IT was required to upgrade to become smart multimedia, and connect with a mobile cell phone, used fibre optics and social media. So thus the development should follow the rapid development of mobile technology and social media platforms (WhatsApp, telegram, Instagram, tweeter, Facebook, and others).

Operational sustainability and service quality enhancement based on Porter's Five Forces approach shown in Figure 12. We could conclude from Porter's five forces analysis that the company performs the low competition. Strategic Grid McFarlan was divided into four quadrants, i.e., strategic, high potential, key operational and support. Table 1 shows the mapping of strategic Grid McFarlan.

Figure 12 Porter's five forces of *PT ASABRI* (company) (see online version for colours)



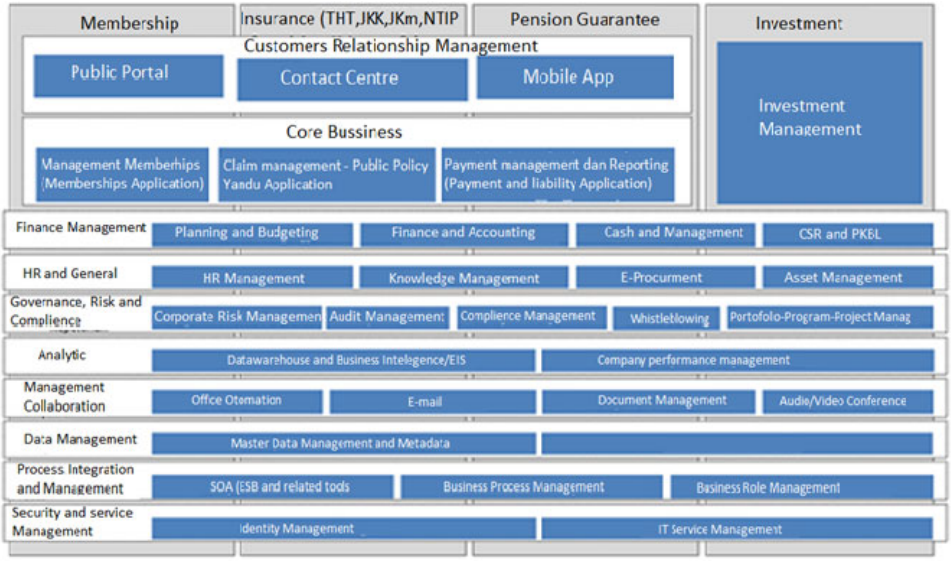
As shown in Table 1 system development should be based on the high potential quadrant. The development of application android-based and its kind should be the main priority. By using mobile applications and portal, stakeholders' satisfaction and trust will increase. Services will be faster even target completing in one hour will be achieved.

3.2.4 Analysis process of IS (PT4)

The proposed application architecture is shown in Figure 13. The development of application architecture was based on the company goal of customer-centric services. The main characteristics of the application architecture were one window services, consolidated interface, personalisation of services and service authorisation based on role. Double entry on a transactional level both related to operational and administration was

eliminated. All information produced on the transactional system was available for top decision-makers whether on the working unit, branches or headquarters.

Figure 13 Proposed main application architecture (see online version for colours)



Application architecture with high complexity and technology can guarantee the achievement of business agility, without decreasing the integrity and quality of IS. When implementing IS, internal control requirements should be taken into account as a part of company risk management implementation.

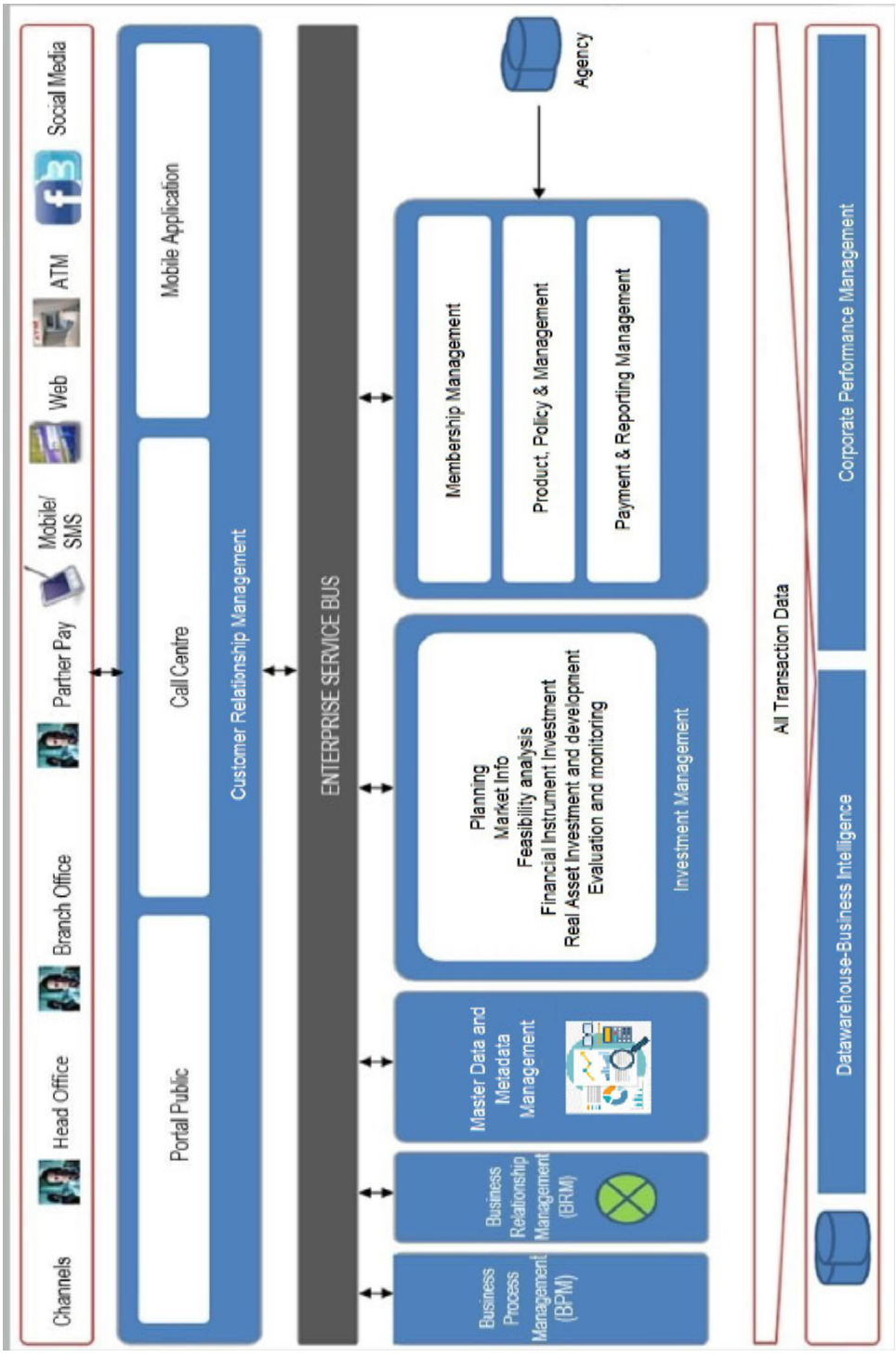
The development of application architecture was role-based access management and a high mobility trend. Application architecture developed can be accessed using a smartphone. The application architecture developed is shown in Figure 14.

The development of software was web-based as shown in Figure 15. A web-based platform was chosen, as it is widely used and common for users. Developed IS architecture allows users to access various IT services using a delivery channel. The integrated platform function was deployed to integrate various transactional applications. The exchange of information can be done easily. The one-on-one approach can be abandoned because it no longer fits the company's needs.

Collaboration platforms provide management functions, communication, and use of unstructured data, such as working paper documents, graphics, and audio-video. This DM standard is an important factor in implementing knowledge management (KM). In the company intranet environment, this platform was composed of key components such as document management systems, document workflows, email systems, file servers, search engines, short messages, and forums.

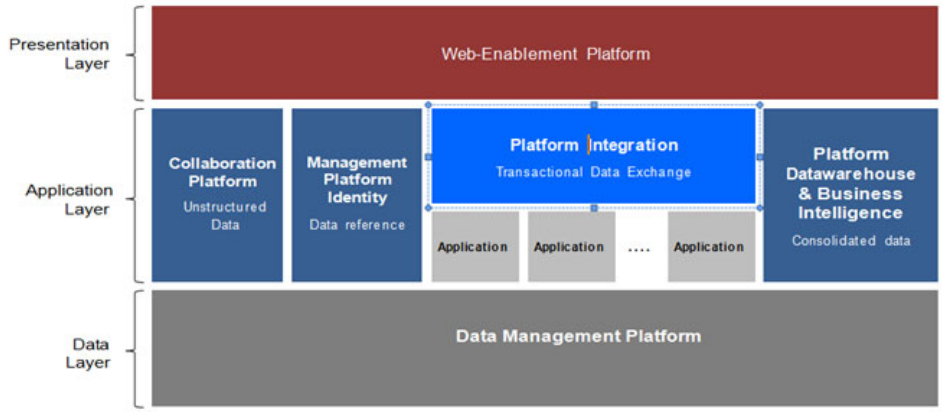
The identity management platform provides basic functions for managing user authorisations. This process is empowered by a hierarchical repository. The existence of this platform allows the management of identity to access various applications that is controlled centrally.

Figure 14 Proposed detail application architecture (see online version for colours)



The data warehouse and business intelligence (BI) platform were used as a basis for interactive processes. This platform aimed to explore and analysed structured and specific information, and to extracted certain patterns and trends. BI functions to empower the process of supervision, planning, forecasting, and decision making process. Sources of information come from the presentation of historical data, data analysis and trends, summary data calculations, and growth projections based on historical data.

Figure 15 Proposed web-based platform(see online version for colours)



3.2.5 *Analysis process of infrastructure (PT5)*

Conceptually infrastructure architecture at the global level consisted of head office network, WAN network, data centre, disaster recovery centre, and pay partner network, as shown in Figure 16. Network architecture at this logical level provided a high-level picture. At the head office, there was a communication network to facilitate the data centre and access to all work units. Connection with branch offices was done using private WAN and paying partners using internet access.

The data centre architecture consisted of application servers using virtualisation, BI systems at the middle layer, BI data sources at the database layer, BI service reports at the application layer, and database servers separate from storage. The disaster recovery centre architecture was recommended to use a data centre backup strategy that used virtualisation technology based on critical services (applications). The rationale for considering factors included the level of support for participant/institution services, the direct impact on income, and the type of scope of BP supported. Data centre architecture is shown in Figure 17.

The conceptual model for ASABRI's security architecture referred to the open enterprise security architecture. The proposed security architecture would have six main services, which would be managed centrally. Those six main services were access control services, traffic security services, detection services, the content control service, audit service, and cryptographic service.

IS strategic targets supported the success of the company's strategic goals. In the year 2020, the company should strengthen the main platform and internal capability. In the year 2021 and 2022 respectively the company should digitising services and enhancing contribution to all stakeholders. In the year 2023, the company should speed up the

excellent performances and in 2024 maintaining growth and be ready for further expansion. The generated roadmap of the company strategy was further generated to implement IS/IT as shown in Table 3 of supplementary.

Figure 16 Proposed infrastructure architecture (see online version for colours)

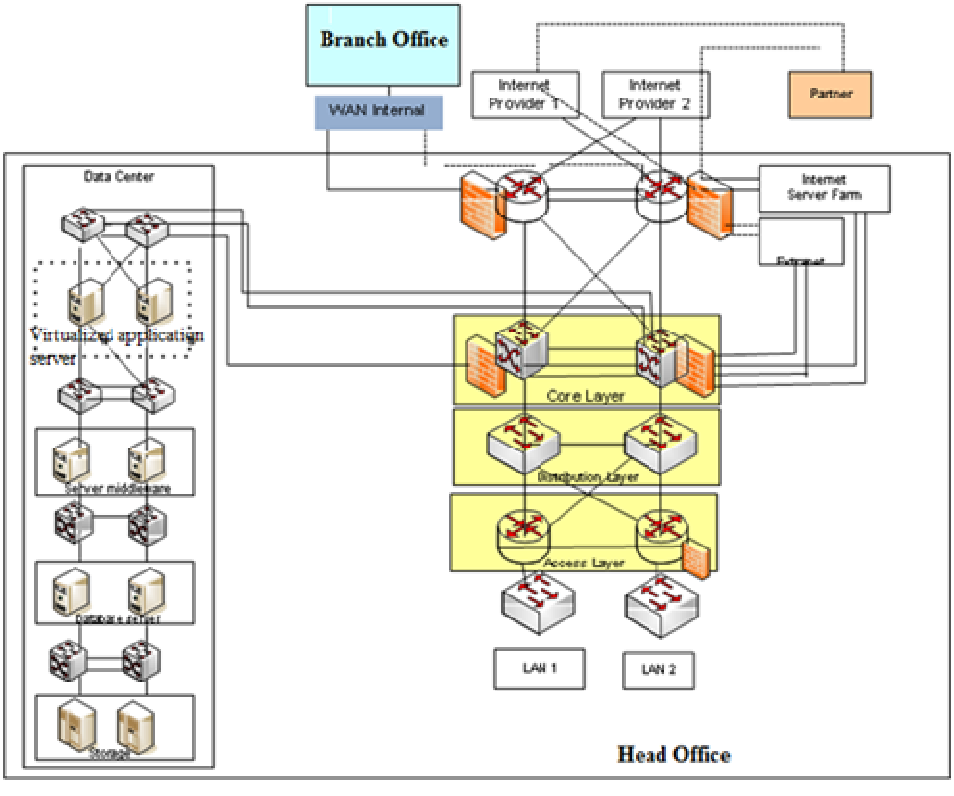


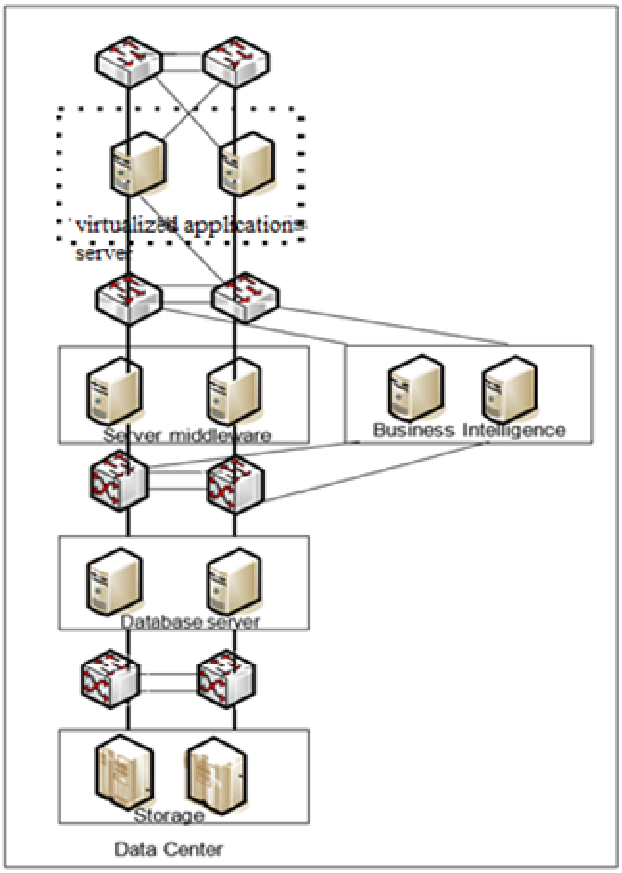
Table 3 Mapping of strategic grid McFarlan

Strategic	*High potential*
• Integrated services application (Yandu) • Financial application (AXAPTA)	• Mobile application (android based and the like). • Portal application (application integration with stakeholder) • Office applications • Internet • Company website • Staffing application. • Audit application • Knowledge Management (KM)
Support	Key operational

IS targets were prepared by emphasising the concept of user-oriented. All user needs were automated by using IT. This process integration model was categorised into two

portfolios, application portfolio as shown in Table 2 and infrastructure portfolio as shown in Table 3.

Figure 17 Proposed architecture of data centre (see online version for colours)



As shown in Table 2, of 32 application development projects, 11 projects have been performed in the year 2019 and to be continued in the year 2020. Those projects were:

1 The integrated application development of membership and payment based on military and dukcapil data.

2 The integrated application development of payment with the Ministry of Financial applications.

3 Application development investment management as well as business development and integration with financial application and risk management.

4 Public portal development.

5 Mobile application development.

6 Development and integration of CSR/PKBL with financial and risk management applications.

7 Human capital management application development along with integration with related applications.

8 KM integration.

9 Office automation acquisition and its integration with the related application.

10 Email and messaging development that is integrated with the related application.

11 Acquisition IT service management application and its integration with related applications and infrastructure.

One project, i.e., compliance management application development should be completed in the year 2019. In addition to 11 projects to be continued in the year 2020, there were 15 projects to be started. Those projects were:

1 Membership application development and integration with integrated services and increasing the quality of membership data following pension reform.

2 Contact centre application development parallel with integration with call centre system, core application of social security (membership, Yandu and payment).

3 Acquisition and integration budgeting and planning applications.

4 Implementation of cash management.

5 Acquisition asset management applications and integration with related applications.

6 Enterprise risk management application development along with integration with related applications.

7 Audit management application development.

8 Development audit tools along with integration with related applications.

9 Acquisition and development data warehouse that was integrated with the related application.

10 Integration document management application with office automation.

11 Development audio/video conference system in head offices and branches.

12 Acquisition data quality management application and its integration with the related application.

13 Acquisition BP management application.

14 Acquisition business rules management application.

15 Acquisition identity management application and its integration with related applications and infrastructure.

Only four projects of above mentioned to be continued in the year 2021, i.e., KM integration (started in the year 2019), acquisition Asset Management Applications and integration with related applications, development audio/video conference system in head offices and branches, and acquisition Identity Management application and its integration

with related application and infrastructure. Three projects would be started in the year 2021, i.e., acquisition project management application, acquisition portfolio management and integrations with project management applications, and acquisition service-oriented architecture (SOA that consists of ESB and related tools). Acquisition portfolio management applications and integrations with project management applications will be continued in the year 2022.

Acquisition corporate performance management application, and acquisition master data-metadata management application and its integration with the related application will be started in the year 2022. The last one, acquisition Master Data-Metadata Management application and its integration with the related application will be continued in the year 2023. As can be seen in Table 2, project no 1 until no 7 would be operated during the year 2021 until 2023.All projects' infrastructure portfolio as shown in Table 3 would be implemented during the year 2019 until 2023.

Under the IT vision of being a backbone of operational and service excellence, ASABRI needed to reach the level of maturity of a level 3 IT organisation (customer focus) that meets several characteristics: vision and strategy, steering, process, HR, technology, and culture. Vision and strategy level 3 is the centre of IT service provider as the alignment of the achievement of IT strategy with the business. On steering, the realisation of the Service Level Agreement (SLA) and integrated management of changes in the project structure is to ensure appropriate changes in the development of IT solutions. On process, the formal process of implementing Service Level Management (SLM) includes regular reporting of SLA achievements. On HR, IT service management activities have been institutionalised with the support of adequate IT HR competencies. On the technology aspect, the IT system has been integrated and accompanied by the support of ITSM platform solutions. On culture aspect level 3 is the formation of a culture of customer satisfaction.

The steps that should be taken to reach level 3 include IT governance structures. IT governance must at least meet the needs of decision making at the strategic level, daily management of IT activities, IT project management and risk control related to IT implementation. Referring to the ministry regulation of state-owned enterprises on IT Governance, the existence of the IT steering committee would have a vital role.

HR needed to be optimised through strengthening the Sisfo Division organisation. The transformation was adapted to the latest conditions in IT organisations, making it possible to run the IT governance process optimally. During the transition from old to new organisations, application development activities were proposed to be divided into two, i.e., main (core) and supporting (non-core and analytical) applications.

The organisational strengthening of the Sisfo Division was intended to transform the Sisfo Division following the general IT organisation. Along with the stabilisation of application development in the next five years, the structure needed to emphasise more separation of functions by focusing on planning and operations in one area.

To support the achievement of level 3, the preparation of HR competencies was very important. IT HR capacity will play a key role in achieving the target. There were two key parameters. They were the quantity and the competency of IT HR.

From the aspect of quantity, it was required to be adjusted to the needs of the current and future workload. Based on the results of the 2015 workload analysis 26 personnel were proposed. To anticipate future growth it was necessary to plan the augment according to the development of workload.

Table 4 Infrastructure portfolio (see online version for colours)

Program	*No*	*Project*	*2019*	*2020*	*2021*	*2022*	*2023*
Strengthening IT infrastructure	1	Leasing and strengthening LAN, WAN and internet headquarters and branches, including increased availability with redundancy					
	2	Strengthening of DC facilities including increasing availability with redundancy.					
	3	Strengthening of disaster recovery centre facilities including increasing availability with redundancy					
	4	Addition of computing facilities at Headquarters and Branches including increased availability with redundancy (PCs, laptops, UPS, printers, operating system licenses etc.)					
IT assets maintenance	5	Annual technical service					
	6	Server license extension (operating system, application and database).					
	7	Maintenance of IT infrastructure (DC facilities, DRC, network, workstation)					

Table 5 Planning IT governance (see online version for colours)

Program		*Project*	*2020*	*2021*	*2022*	*2023*	*2024*
Strengthen governance structure and IT HR	1	Revitalisation IT steering committee					
	2	Strategy formulation, curriculum and development program of IT HR competency					
Strengthen governance process and planning technology of IT	3	Review and update policy/guidelines, SOP and formulation of work instruction IT- based in line with organisational development.					
	4	Revised BCP DRP and policy, disaster recovery SOP formulation					
	5	Review and update policy, SOP and work instruction related to ISO 20000					
	6	Certification and maintenance of ISO 20000					
	7	Review and update policy, SOP and work instruction related to ISO 27001.					
	8	Certification and maintenance of ISO 27001					
Strengthen data governance	9	Assessment and formulation policy, SOP and work instruction related to data governance and management.					
Formulation data architecture	10	Formulation data architecture for the purpose of detailing data as a follow up to the IT revision					
	11	Master Plan and application development reference requirements					
Monitoring, evaluation and assessment of IT	12	Audit/Assessment IT					

From the quality aspect of view, the development of ASABRI IT HR was based on competency through a structured and systematic learning structure. Based on an analysis of IT challenges, IT HR competencies must be able to answer the following questions and needs:

a What was the right IT strategy per business development?

b What was the right IT architecture per IT strategy?

c What did an agile IT organisation look like in business development?

d Maturity of IT Governance following regulatory requirements and business competition.

e Strong guarantees for all stages of the IT life cycle.

f Continuous comparison of business and technology in similar industries.

By considering the scope of IT activities and the sourcing strategy used by ASABRI, the following three IT HR development pathways can be applied, such as planning, development, and operations. The framework of the competency development program will later be revealed in the curriculum and syllabus. Including the implementation mechanism, to ensure operations can be carried out.

With the current conditions, IT governance planning for the next five years can be seen in Table 4.

IT governance, as shown in Table 4, consists of 12 planned projects. Projects no. 3 and 12 would be implemented continuously from 2020 until 2024. Project no. 1 would be implemented in the year 2020. In the year 2021, projects no. 2, 4, 9, 10, and 11 would be implemented. Projects no. 5 and 6 would be implemented in the year 2022, but project no. 6 would be continued until the year 2024. Projects no. 7 and 8 would be implemented in the year 2023 but project no. 8 would be continued until the year 2024.

4 Conclusions and implication

As has been discussed comprehensively in the previous section, strategies target for the next five years were as follows. In the year 2020, it is important for company management to strengthen the main platform and internal capability. In the year 2021, the company is suggested to implement digitise service. The Year of 2022 company management should focus on enhancing contribution towards all stakeholders. In the year 2023 company management should foster to speed up an excellent performance. The year of 2024 company is expected to maintain business growth and started to expand.

By implementing IS/IT backbone developed, comprehensive updating of customer data, payment of claims, system integration and others can be completed. The IS/IT strategic planning that was compiled not will only solve the current problem but will also guide for the next five years. These expected benefits indicate the need for further research. We suggested evaluating the effectiveness and accuracy of data handling in the year 2024. Along with that, we also suggested further research to evaluate customer satisfaction and company performance.

However, the study has a limitation. Due to time limitations, the implementation of the proposed IS/IT backbone was not reported in this study. In addition, the IS/IT

backbone developed should be evaluated continuously and adjusted with the dynamics and development of PT ASABRI (company) as well as technology development.

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