

Needs vs. Aspirations in Inter-Agency IT Alignment

The case of IT for integrated criminal justice systems in Indonesia

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Abstract— Inter-organizational IT/IS implementation must deal not only with the technical complexities across different systems, but also the alignment between strategies and expected functionalities between the involved institutions. This paper aims to uncover the aspirational requirements in the implementation of integrated criminal justice systems (ICJS) in Indonesia. It involved four main agencies: police, prosecutor office, court, and prison, as well as some auxiliary agencies. The research is contrasting the aspiration-based design with rational alignment needs as defined in the classic Strategic Alignment Model. The extension of this classic IT alignment framework provides the inter-relationship discourses between business strategy, business infrastructure, technology strategy, and technology infrastructure in the inter-organizational context. This paper found out that multi-organizational IT alignment framework not always suitable in multi-organizational IT implementation. Improving the alignment inside the respective organization may be provide better answer to address the misaligned situation. This paper also found out that a narrow-focused aspiration should be catered to reach the immediate success.

Keywords—IT/IS Alignment, integrated criminal justice systems, Strategic Alignment Model, needs-based design, aspiration-based design

I. INTRODUCTION

Integrated criminal justice systems (ICJS) is a set of processes to handle the criminal case since its inception (since the crime was committed) until the criminal is being prosecuted, prisoned, and released back to the society [1]. The Republic of Indonesia has mandated the implementation of integrated criminal justice systems in its mid-term development plan as part of its development goal to improve the rule of law [2]. The use of information technology has been inevitable for successfully implementation of ICJS [3]. However, since the process involves multiple stakeholders such as the police, prosecutor office, court, and prison, the policy maker fully understand that they must cater various technical and non-technical issues to implement it, including the policy issues [3].

To resolve the policy issues, a high-level Memorandum of Understanding was agreed on 28 January 2016. The MoU was signed by the highest rank officers in the respective agencies, witnessed by the Vice President of Republic of Indonesia. The Coordinating Ministry of Political, Law and Security Affairs was appointed as the leading agency of the working group, while the Ministry of Information and Communications and the National Cryptography Agency were assigned to support the implementation. The Ministry of National Planning is also involved in that inter-ministerial working group as the agency

that responsible to ensure the alignment with the mid-term development plan [4].

The set of processes in ICJS is depicted in the Figure 1. It involves multiple law enforcement agencies: police, prosecutor office, court, and prison. One notable issue in such process configuration is the discrepancies of needs and requirements between the involved agencies and the corresponding design impacts. It has raised the possibility to analyze it using the supply chain management perspective [5][6][7][8].

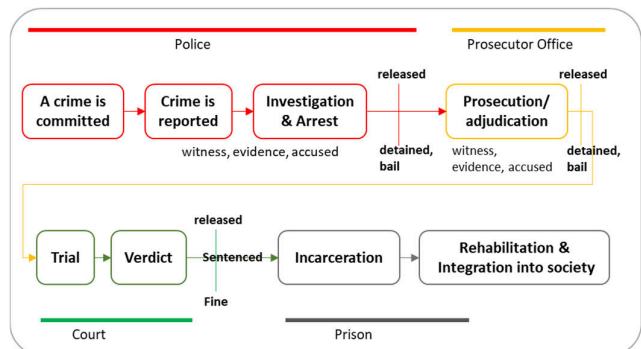


Fig. 1. Key Processes and Parties in the Integrated Criminal Justice Systems

The other issue is related with the discrepancy between needs and aspirations in designing an information technology solution at the development projects [9][10]. Previous discussion on the IS/IT projects at the Indonesian judiciary also found out the issue between what was expressed (expressed needs) and what was not (the aspirations), affects the level of success in information technology initiatives at various donor-funded projects in Indonesia [11].

This paper aims to discuss the discrepancy between needs and aspirations in the IT alignment process of ICJS implementation in Indonesia. The research wants to dig further beyond the classic IS/IT alignment framework of strategic fit and functional integration [12], by exploring further to identify the unexpressed intention – hence gather the aspirations of the relevant actors in the implementation of ICJS in Indonesia. It will adopt the approach to differentiate the needs and aspirations in designing information technology for development projects [9] [10]. The discussion here is part of the research to examine the IT alignment issues during the implementation of ICJS in Indonesia. The research employs Susman and Evered's action research method in the information systems domain [13]. This paper is the extract of the specifying learning stage during that

action research project. This paper hopes that the identified aspirations could become the practical contribution toward the successful implementation of ICJS in Indonesia. The inclusion of needs versus aspirations itself will enrich the theoretical approach of inter-organizational IT alignment framework.

II. RELEVANT STUDIES

There are three kind of studies that are relevant with the discussions in this paper. The first category is studies on IT/IS for integrated criminal justice systems. The second one is researches on IT/IS Alignment. The third one is on the design versus aspirations in the design of information system or information technology solutions.

A. IT/IS for Integrated Criminal Justice Systems

Research on the information technology or information systems implementation challenges in the integrated criminal justice systems is relatively rare. There is no result from a systematic literature on this matter using Kitchenham method [16]. The search was conducted for academic papers in last five years in the following databases: IEEE Explorer, ACM Digital Library, Springer Link, Science Direct, and Emerald Insights. The following combination of keywords are being used: “information technology”, “information systems”, “IT”, “IS”, “computer”, “database”, “integrated criminal justice systems”, “criminal justice systems”, and “criminal systems”. Most of publications are discussing about the technological innovation for the relevant law enforcement agencies, but not about the journey to achieve it.

Expanding the time frame produced a 2008 paper about criminal justice system database in Taiwan [5]. The paper also highlighted the technological aspects of the database but did not discuss the implementation journey as well. However, the research already saw the implementation of integrated criminal justice systems as a supply chain management issue. Further literature review about supply chain analysis for integrated criminal justice systems found two interesting discussions about the system dynamics in the judicial service supply chain [6], and the concerns about level of cooperation among the actor in the justice systems’ supply chain [7].

The research on system dynamics in the judicial services also found the behavioral issues, whereby the capacity of the service supply chain is prone to any influence by actors or agents that acting on their own accord. The actors may work at varying speed and delaying process and even rejecting the results of the related processes [6]. While the other study mainly discussing the aspects of cooperation, coordination, and collaboration among the relevant agencies, it also raises similar behavioral concerns [7]. It is important to note that acting on their own accord is an indication that there is discrepancy between the expressed needs and the true aspirations [9].

These perspectives are also very much relevant with the IT-business alignment in multi-business organization, since there is dynamic alignment that is embedded over time as well independence and interdependence between business units [19]. In the case of ICJS, the dynamic is between relevant law enforcement agencies. The inter-organizational nature of ICJS also increases the magnitude of discrepancy between needs and aspirations, since the aspirations of one institutions may require some changes at other institutions.

B. IT/IS Alignment

Most of the discussion on IT-business alignment refers to the Strategic Alignment Model [12]. Previous systematic literature reviews on IT and business alignment found out that the Strategic Alignment Model was considered as the foundational theory in this subject [15] [16] [17] [18]. The discussion on IT-business alignment in multi-business organization also uses the Strategic Alignment Model as its theoretical basis [19]. There are four intertwined dimensions in the Strategic Alignment Model: business strategy, IT strategy, organizational infrastructure and processes, and IS infrastructure and processes.

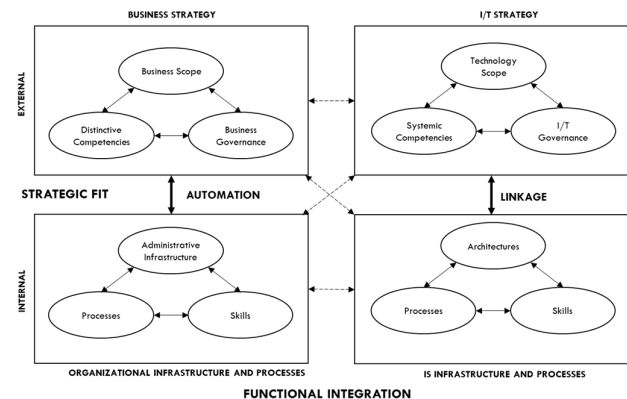


Fig. 2. Strategic Alignment Model [12]

There are two key positions and four strategic perspective from the Strategic Alignment Model. The first position takes business strategy as the main pivot point. There are two possible perspectives here: (1) use the business strategy to ensure the alignment between IS infrastructure and organizational infrastructure; and (2) use the business strategy to drive the IT strategy that in turn will drive the IS infrastructure. The first perspective mandated the alignment between business strategy and business infrastructure and the functional fit of its information systems infrastructure. Its focus is the strategy execution alignment. The second perspective focus on the alignment between business and IT strategy. The IS infrastructure is considered as the derivation of consequences of IT strategy.

The second position take the technology as the key driver. The first perspective is to let the technology drives the business strategy to achieve the desired competitive advantage. The organizational infrastructure should follow. The second perspective is very technology driven, whereby the IT strategy and its derived IS infrastructure will drive the organization infrastructure.

The IT-business alignment in multi-business organization must also cater the dynamics between the organization units. There is a need to align the business strategy and IT strategy between holding organizations and its subsidiaries as well as between subsidiaries with relevant business interactions. There could be different perspectives, priorities, and interests between business units in multi-business organization [19], hence reflected as the difference between expressed needs and aspirations by the relevant stakeholders.

C. Needs vs Aspirations in IT/IS Design

The design principles often try to avoid asking people to change, like the often-said example of badly designed doors: push doors that are meant to be pulled, pull doors that should be pushed, and walk into doors that neither pull nor push, but slide. According to the design theory, a well-designed door should be so obvious in its use that people do not need to learn anything new or change their normal habits [21]. The good designs should put human needs, capabilities, and behavior first, then design it to accommodate them. The design should accept human behavior the way it is, not the way the designer would wish it to be [9].

However, in the context of IS/IT design for social change, such as in the context of ICJS, the design based on needs are not enough. The story of text-free user interfaces [22], shows that: (1) Technology is not enough for meaningful social change. Some individual capacity is needed. Some oversight and management are required. Some institutional support is essential; (2) Design is not enough, even when the design is human-centered, culturally, appropriate, and participatory, if the designed output was a physical artifact or a process, no effort was put toward changing people; (3) Agency is not enough. It is a naïve conception to leave people as they are, no better able to take advantage of “opportunities” made available to them [9] [22]. Good options are not a guarantee of positive social change [9].

On contrary with fulfilling the immediate needs, the aspiration-based approach shall uncover the hidden messages that could address – usually – institutional issues, such as implementability and sustainability [8][9]. However, the requirement analysis should shift from the immediate problem solving (that often limited to the boundary of one organization), into uncovering the more comprehensive and holistic solutions [9].

One of the relevant example is related to the institutional arrangement of ICJS in Indonesia. The governance structure has been identified as key determinant of success in interorganizational IT/IS implementation [23]. Technical infrastructure compatibility and formal assignment of project managers are the two most important predictors in explaining the success of inter-organizational information sharing initiatives [24]. The high-level MoU to implement ICJS has setup the required governance structure [4]. But – as we will uncover in the Findings section, it does not resolve the alignment issue in ICJS. It raises a question whether the technical and operational design employed in the ICJS only caters immediate needs and failed to address the real aspirations of the relevant stakeholders.

III. RESEARCH DESIGN

The research is using qualitative approach. It is an action research project that follow the Susman and Evered’s approach in the information systems domain [13]. It consists of key five steps in close-loop cycle: diagnosing, action planning, action taking, evaluation, and specifying learning. The findings and analysis in this paper was taken from the specifying learning stage of this action research cycle. It focused on identifying the IT-business alignment issues using the Strategic Alignment Model [12] with enrichment from IT-business alignment model in multi-business organization [19]. The action research process was started in 3 March 2017 (for

the development of client-system infrastructure) and ended on 30 September 2017.

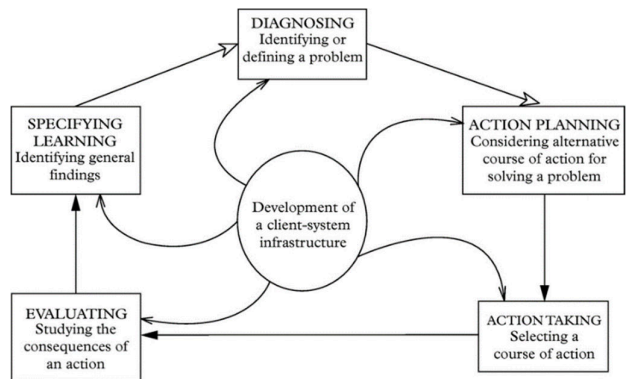


Fig. 3. Susman and Evered’s Cycle for Action Research in Information System [13]

The analysis was conducted by examining the meeting notes, transcripts, and any relevant documentations produced by the working group for the IT implementation of integrated criminal justice systems in Indonesia. As a qualitative research, it is performed in the field by both observing the working group meetings and analyzing their relevant documentation. The data collections include minutes of meetings and focus group discussion reports of the working group. The discussions and advises as part of the action research process are reflected in those formal documents or deliverables of the working group. The minutes of meeting is the formal document of the working group; hence it reflects the agreed discussion topics among the working group members. The observation and verbatim transcripts are only used to clarify the context of the information as stated in the minutes of meetings.

To analyze the qualitative data, the authors employ Strauss and Corbin’s common coding techniques for qualitative research in information systems [13]. The common coding approach was chosen for its suitability to uncover the concepts and categorize it from the qualitative data that is taken from the minutes of meetings. It consists of three steps coding approach: open, axial, and selective coding. The open coding aims to uncover the general concepts in the data by grouping it into some high-level categories. The axial coding was conducted to organize and categorize the concepts. The selective coding was conducted to refine and draw the central categories that reflects the key ideas and theme from the collected data sets [20].

This paper aims to discuss the discrepancy between needs and aspirations in the IT alignment process of ICJS implementation in Indonesia. It wants to dig further beyond the classic IS/IT alignment framework of strategic fit and functional integration [12]. The first step is to conduct the open coding to identify the problems of implementing ICJS in Indonesia, followed by identifying the answer for those problems. The answers will reflect the “immediate needs” of the stakeholders for ICJS IT implementation.

The research then uses the axial and selective coding to uncover the institutional or alignment needs. The coding categorization during the axial and selective coding will refer to the four type of alignment situation as described in the Strategic Alignment Model [12]. It generally describes the “needs” part of the required information system design.

Further analysis will be conducted by referring to the original open codes to uncover the aspirations. It will use the resulting axial and selective codes to define the required design aspirations. The mechanics will refer to the approach to differentiate the needs and aspirations in IT/IS design for development projects [9] [10].

IV. FINDINGS

There are nineteen documents that reflects the working groups meeting and focus group discussions on the use of information technology for integrated criminal justice systems. The meeting was usually attended by 15-20 persons, representing eight institutions in the working group. Hence it reflects the opinions expressed during that period. The implementation of the open coding for those documents is reflected in the following tables.

TABLE I. OPEN CODING FOR QUESTION #1: WHAT KIND OF PROBLEMS THAT ARE RELEVANT FOR THE IMPLEMENTATION OF IT SYSTEMS FOR ICJS?

Open Codes	Properties
The software application is not ready	The prosecutor office is in the process of migrating into the new systems. There are still silos of systems in the national police. The court has nation-wide systems but still not interconnected. The prison has centralized system but only partially design for inter-agency data exchange.
The data is not ready	Although all institutions have implement computer systems, the data input compliance is still low. The data format is sometimes also not in compatible format.
Current system is not properly secured.	Most institution is still focusing on improving the data availability. There is still relatively low-level security awareness and implementations.
Lack of IT people	Most institutions do not have strong internal IT people, hence rely on 3 rd party vendors to implement and modify the systems.
Lack of budget to implement	Most agencies do not allocate specific budget to modify the IT systems to comply with the ICJS requirements.
Internal process is still not fix	Some agencies still have variations of internal process that affects the data production for other institutions in the supply chain.
Inter-agency process is still varying	The inter-agency process still varies between institutions and between offices inside similar institutions.
The policy for inter-agency data exchange is not in-place	Some agencies still have no explicit policy regarding inter-agency process and data exchange.
IT feel not authorized to decide the data exchange requirements	Most of the meetings is with the relevant IT departments, however they are not the data owner and able to decide data exchange requirements.
No leading executing agency in the ICJS implementation	Although the MoU mandated the Coordinating Ministry of Political, Law, and Security Affairs as the leading agency, it has no direct operational role in the criminal justice systems.

TABLE II. OPEN CODING FOR QUESTION #2: WHAT KIND OF POSSIBLE SOLUTIONS TO ADDRESS THE IDENTIFIED PROBLEMS?

Open Codes	Properties
Modify the software	Modify the software to comply with the data exchange requirements. However, it is influenced by the resources and process certainty issues.
Complete the data	Crash program to complete the required data. However, it is not fully realistic since the data aware culture is not in place yet.
Secure the system	Implement secure system implementation methods.
Provide budget to hire external programmers	Additional budget provision, however it is not realistic due to the tight budget policy
Provide additional budget	Additional budget provision, however it is not realistic due to the tight budget policy
Push the agencies to determine the fixed processes along with the relevant internal policies	Fixing the internal process has been a teething issue for most government and state institutions. The implementation not only time consuming but could be very bureaucratic as well.
Involve the business users	Most business users saw it as IT problems, and they are too busy with the BUA (business as usual) activities.
Provide mandate to one operating institutions as the leading agency	Appoint one operating agency as leading institutions, however the agency may need to bear the budgetary and operating burden as well.

To put it into the IT-business alignment context, we conduct the axial and selective coding based on the above open codes, using the perspectives from Strategic Alignment Model. The result is presented in the Table 3.

TABLE III. AXIAL AND SELECTIVE CODING BASED ON THE PREVIOUS OPEN CODES

Open Codes	Axial Codes	Selective Codes
The software application is not ready	The IT system is not ready (IS infrastructure readiness issue)	Misaligned system functionality (functional integration issue)
The data is not ready		
Current system is not properly secured.		
Modify the software		
Complete the data		
Secure the system		
Internal process is still not fix	The business process is not ready (organization infrastructure readiness issue)	Misaligned strategic perspectives (strategic fit issues)
Inter-agency process is still varying		
Policy inter-agency data exchange is not in-place		
IT feel not authorized to decide the data exchange requirements		
No leading executing agency in the ICJS implementation		
Push the agencies to determine the fixed processes along with the relevant internal policies		
The data is not ready	People issue (organization infrastructure readiness issue)	Misaligned strategic perspectives (strategic fit issues)
Lack of IT people		
Involve the business users	Institutional arrangement issue (business strategy issue)	
Provide mandate to one operating institutions as the leading agency		

Open Codes	Axial Codes	Selective Codes
Lack of budget to implement	Resource is not enough (organization infrastructure readiness issue)	
Provide budget to hire external programmers		
Provide additional budget		

V. DISCUSSIONS

The interesting finding from the above coding is that the technology-driven perspective (such as modifying the software, secure the system, or complete the data) faced the IS infrastructure readiness issue. It means although the involved organizations want to use technology to drive the implementation of ICJS, the reality bites that their IT infrastructure is not ready to meet the required functionalities. On the other hand, the business drive to implement ICJS is not followed by sufficient organizational infrastructure. Hence it creates some internal complexities among the law enforcement agencies such as business process readiness, people readiness, and budget allocation.

Those findings are very much internal focused, and they are occurred on all law enforcement agencies. The issue is not inter-organizational as suspected before or as highlighted by in the modified Strategic Alignment Model for multi-business organization [19]. The misalignment is inside each organization; hence it falls under the misalignment issues as originally identified in the Strategic Alignment Model [12].

The lack of inter-organizational issue in the IT implementation for ICJS is probably because each law enforcement agencies (police, prosecutor office, court, and prison) are treated as independent organization. Although the Indonesia's Penal Code already mentioned the linkage point between law enforcement agencies, it does not regulate the level for data and information exchange between law enforcement agencies. This is due to the check and balances and independence principles of criminal case handlings.

The finding uncovers the first aspiration: fixed the internal alignment of each organization, and the inter-organizational IT relationships will follow. It becomes the first learning point of this research. Each law enforcement agencies shall improve the internal alignment in their respective organization. Initially, during the ICJS process the working spends lots of time and efforts to make inter-agency alignment. However, it turns out that the aspiration is very much internal focused.

The Strategic Alignment Model can be used to identify the suitable alignment points. Based on the above selective and axial coding, the most suitable perspective is the business strategy-driven position. The focus is improving the functional integration between organization infrastructure and processes and information systems infrastructure (and applications) inside the respective agencies. The focus is the functional integration between the organizational infrastructure and IS infrastructure, as depicted in the Figure 4. By improving the internal alignment, it will enable the respective organization to fulfil its regulatory duty in providing the required data for the integrated criminal justice systems.

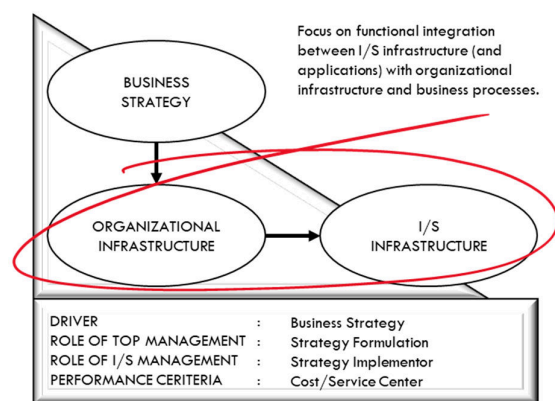


Fig. 4. Strategic Alignment Model to focus on the functional integration between organizational infrastructure and IS infrastructure [12]

The second aspirations that also becoming the second learning point is that there should be a firm or defined direction on who will be responsible and carrying the necessary budgetary and operational resources for the ICJS initiative in Indonesia. Although it falls under strategic fit in the Strategic Alignment Model, just a strategic alignment is not enough. Initially the initial understanding is that there is a need of strategic directions [3]. However, the aspiration is a request for more concrete directions, assignments, and resources allocations. The directions and assignments should also cater the interests of the assigned agency, including its short term and politically oriented interests. Otherwise it will feel too naïve that the respective agencies will just follow the directed designs [9]. Hence it also answers the follow-up question of why the established governance structure as described in other study is not enough [24]. The aspiration is not only formal assignments, but also the resulting consequences such as decision making and budgetary rights and the alignment with their own agenda.

VI. CONCLUSIONS

The research initially aims to uncover the design aspirations for the IT implementation for Integrated Criminal Justice Systems (ICJS) in Indonesia, by using the inter-organizational alignment approach. However, the findings suggested that further alignment approach should put more emphasize in helping the respective law enforcement agencies to align their own IT systems. On the other hand, although the need is for inter-organizational IT systems, the aspiration is more internal focused: improve each agency's system first.

The aspiration for inter-agency strategic alignment is also quite narrow: decide who's responsible, give them formal assignments and the required budget. The others will follow. It is a bit contradictive with the design aspirations that usually more long-term and empowering [9] [10]. However, it could be explained with the aspiration to reach concrete results within the limited time frame of the ICJS. The mid-term development plan is a five-year plan, and now is entering its final two years of implementation [2].

This research provides theoretical contributions that inter-organizational or multi-business alignment approach is not always suitable to address the alignment issue in inter-organizational information systems implementation. There are situations that, in this case, due to the regulatory reasons and readiness situation, each organization must be treated as

independent data processing agency. The practical contribution is that the IT implementation for ICJS should be more realistic and put more focus on improving the internal alignment, that in turn will help the respective law enforcement agencies to provide the required data to support the establishment of integrated criminal justice systems in Indonesia.

The other theoretical contribution is that the design aspiration is not always long-term as in the original idea [9] [10]. In the implementation of such national initiative with limited (political) time frame, the aspiration could be in narrower focus. Hence, the design of the initiative should cater that aspiration as well. In practical term, the research contributes to the idea of assigning one leading or executing agency to expedite the implementation of ICJS in Indonesia and aligning the assignment with their own interests and agenda.

Further research could provide more elaborations on the defined governance structure that could enable the inter-organizational sharing in the context of ICJS implementation in Indonesia. It could use previous works on identifying the determinants of inter-organizational information sharing initiatives as the theoretical basis [23] [24]. It could be combined with further review and elaborations of its relationships with the Strategic Alignment Model, both in the original model or in the expanded multi-business organizational model [12] [19].

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