Operational Alignment Framework for Improving Business Performance of an Organisation

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Abstract: Business strategies are vital for an organisation in the dynamic business environment today. However, most organisations are still facing issues in effectively executing the business strategies. The misalignment of operational factors such people, business operations, and IT systems, is one major problem that hinders the best performance of an organisation and degrades the value of business strategies. Therefore, this paper aims to produce an operational alignment framework, in order to ensure the business and IT components are operationally aligned. It contains a set of operational alignment components and its assessment methods. An operational alignment map is produced to identify the root cause of the alignment issues in an organisation. A case study in a Thai University Healthcare Centre is used for validating the operational alignment framework.

1 INTRODUCTION

Business and IT alignment is vital to the IT-centric business today. It aims to drive business more effectively with the use of IT (Henderson and Venkatraman, 1993). The early motivation of the business-IT alignment study focuses on the strategic business planning and long-term IT planning (Chan and Reich, 2007). Today, the study focus has shifted to the efficiency, effectiveness and adaptability of IT to support business strategies of an organisation due to the dynamic business environment (Silvius, 2007). Strategic alignment is introduced in order to assist organisations for aligning their business strategies to the IT strategies. In a contrary, the research on operational alignment is scarce. Operational alignment is important as it determines the success of executing the predefined business and IT strategies of an organisation.

Therefore, the aim of this paper is to develop an operational alignment framework that enhances the business-IT alignment of an organisation from the operational perspective. This framework is stemmed from the operational perspective of the business-IT alignment framework. It is used to examine and evaluate the identified operational alignment factors such as business strategy, business operations, information technology, and people. In addition, it shows the relationship between these factors and provides a method to identify the root cause of operational alignment problem in an organisation.

This paper is structured as follows: Section 2 discusses the research work in relation to the development of the operational alignment framework (OAF). Section 3 describes the design of OAF. Section 4 narrates the application of OAF in a chosen case. Section 5 discusses OAF from the empirical perspective with comparing to other relevant framework and concludes the paper with future work.

2 RELATED WORK

2.1 Business-IT Alignment

Business-IT alignment is the degree to which the information technology mission, objectives, and plans support and are supported by the business mission, objectives, and plans (Reich and Benbasat, 1996). Most research in the business-IT alignment

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focuses on the strategic level and functional level (Aversano et al., 2013). The strategic level alignment concerns if organisation's goals, activities and processes are in harmony with the information systems that support them. Jabbari Sabegh and Motlagh (2012) conclude that IT resource management, performance management, knowledge sharing, IT architecture and IT infrastructure are the five aspects contributing to the strategic alignment. On the other hand, the functional alignment focuses on optimizing the effectiveness of IT systems supporting business processes. The functional or operational alignment is equally important as it is one of key success factors of business-IT alignment for an organisation. Baker and Niederman (2013) discover that one of the key failures in mergers and acquisitions is the misalignment at the operational level. Henderson and Venkatraman (1993) propose a strategic alignment model (SAM) in which there are four areas, aligning with each other in two dimensions, the strategic fit and functional integration. The strategic fit is the alignment between external and internal domains. The external domain concerns about external factors that influence the organisation such as economy, market trend, competitors, regulations, and technologies. The internal domain focuses on operational factors in an organisation such as organisational structure, business processes, business functions and information technology. Functional integration is the unification of the organisational functions and IT functions.

It is vital to understand what business and information systems alignment is and how to obtain and maintain the alignment, but at the same time not neglecting how to correct the misalignment (Carvalho and Sousa, 2008, Pereira and Sousa, 2003). Aversano et al. (2013) suggest three aspects for business-IT alignment: modelling, alignment evaluation and evolution execution. The business-IT alignment should have at least one of these aspects in order to ensure that it is useful and applicable. Modelling defines various alignment entities and relationship between business and IT in order to achieve the best alignment in an organisation. The alignment evaluation aspect targets on assessing the level of alignment between business and IT. The third aspect, evolution execution is to improve the degree of alignment in the case that the level of alignment does not satisfy the needs of an organisation. According to Aversano et al., (2012), this aspect is still open for further research.

2.2 Organisational and Process Alignment

Organisational alignment is the alignment that looks at the extent to which strategy, structure, and culture for creating the environment that facilitates the achievement of organisational goals (Sender, 1997). This alignment helps an organisation to create an efficient internal environment to achieve better cooperation and performance by removing internal obstacles. Kathuria et al. (2007) define two types of organisational alignments: vertical and horizontal alignment. Vertical alignment refers to the alignment of business strategies from a management level then cascaded to other organisational departments. Horizontal alignment refers to the cross-departmental or intra-departmental integration.

The purpose of process alignment is to ensure the harmonisation of various processes and activities in an organisation to work in order to achieve common goals (Weiser, 2000). Process alignment consists of three dimensions of alignment (Hung et al., 2010): 1) structural alignment, 2) strategic alignment and, 3) IT alignment. Structural alignment aims to organise responsibilities and to provide linkages between business units or departments so that the employees can cooperate with each other coherently (Daft, 2000). Strategic alignment is about external-internal alignment. IT alignment is the integration of business functions with IT systems. IT systems must be carefully integrated with the operational processes within an organisation in order to make the best performance in an organisation (Gagnon and Dragon, 1998).

2.3 Organisational Operating Model

An organisational operating model is the necessary level of business process integration and standardisation for delivery goods and services to customers (Ross et al., 2006). Different companies have different degrees of process integration and process standardisation that suits their organisational operating model. The organisational operating model is a matrix of two dimensions: business process integration and business process standardization. The aim of process integration is to share information across business units in order to increase efficiency and collaboration. Process standardisation produces the same outcome from a particular process in regardless of who is performing it and where it is completed.

2.4 Socio-technical Alignment

Socio-technical alignment is the social dimension of business-IT alignment which emphasises the integration of human factors in the alignment mechanism (Lee et al., 2008). The aim of socio-technical approach is to explain how the functional integration in the business-IT alignment process is accomplished in a collaborative environment.

Organisational onion can be adopted in studying socio-technical alignment of an organisation. It studies an organisation in three layers such as the informal, formal, and technical layer (Liu, 2000). The informal layer reflects the human aspect in an organisation such as culture, values, beliefs, and behaviour of individuals. The formal layer signifies the tangible aspects of an organisation such as business rules, organisation structure, bureaucracy, business activities and processes. The technical layer refers to IT systems that help automate the business activities from the formal layer.

The People Capability Maturity Model (PCMM) is a tool that contributes to the social perspective of the socio-technical alignment (Curtis et al., 2009). It helps an organisation to identify the critical people issues in organisation's workforce. In order to measure the level of the maturity, Lu et al. (2010) have developed a set of measurement scales to assess the degree of maturity. A greater human involvement in the alignment strategies will help in improving the overall performance of an organisation (Zarrabi and Vahedi, 2012).

3 THE OPERATIONAL ALIGNMENT FRAMEWORK

The Operational Alignment Framework (OAF) is the framework for aligning organisational components such as business strategy, business operations, people, and IT in an operational manner. Figure 1 shows the design of OAF. It considers four main aspects of the alignment: 1) strategic fit, 2) people involved, 3) infrastructure-process fit and, 4) functional integration. Strategic fit (or strategic alignment) is the extent of which strategy from management to be implemented in the operational level such as business processes and activities. The people alignment is the capability of the staff in performing business operations. OAF adapts PCMM in assessing the staff proficiency in performing their day-to-day business activities. Socio-technical alignment is employed to assess the aspect of people and IT in an organisation. Infrastructure-process fit is to assess the extent of how organisational structure supports the business processes. Organisational alignment is adapted to assess the coherence between organisational structure and business strategy. The organisational operating model defines the way an organisation runs its business. It is considered together with the process alignment in order to estimate the level of cohesion between organisational structure and business processes that contributes to the organisational performance. Functional integration (or IT alignment) is the degree of IT systems in supporting the organisation processes and activities.

There are two alignment assessments in OAF: 1) the operational alignment assessment and, 2) the organisational process alignment assessment. The

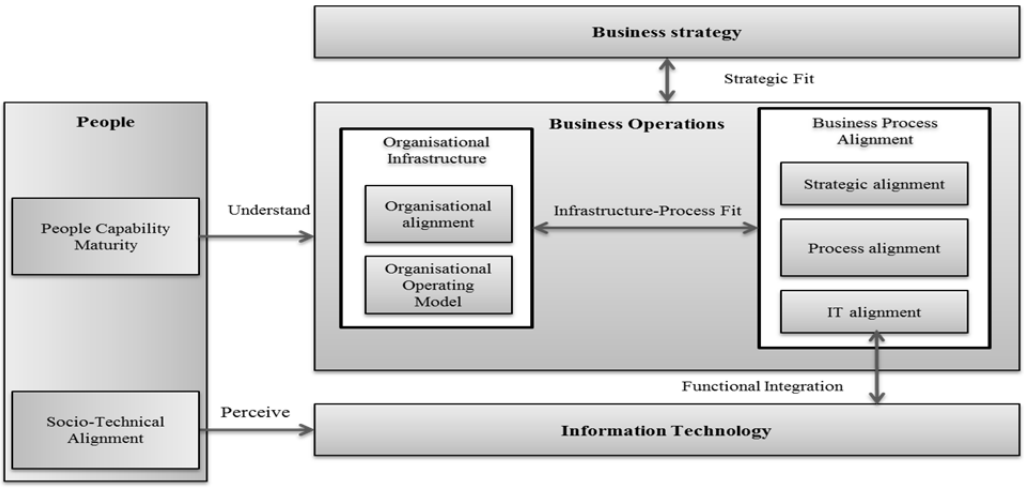

Figure 1: The Operational Alignment Framework.

respondents will be asked to rate each question ranging from 1 "strongly disagree" to 5 "strongly agree". Table 1 interprets the level of alignment based on the score obtained.

Table 1: Level of alignment.

Score	Level of alignment
< 3	Low
≥ 3 and ≤ 4	Medium
> 4	High

3.1 The Operational Alignment Assessment

This assessment aims to evaluate the alignment among operational alignment factors such as the business strategy, business operations, people, and IT factors in an organisation. Figure 2 depicts the OAF components involved in this assessment. The components are the strategic alignment (SA), IT alignment (ITA), people capability maturity (PCM), and socio-technical alignment (STA). Table 2 presents the operational alignment assessment questions. The operational alignment value (OAV) is the average score of SA, ITA, PCM, and STA as shown in Equation 1.

$$OAV = \frac{SA_{avg} + ITA_{avg} + PCM_{avg} + STA_{avg}}{4} \quad (1)$$

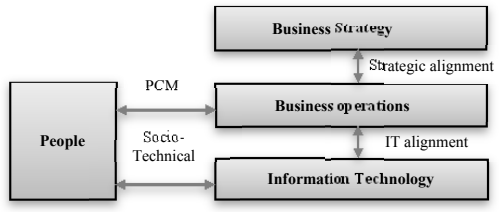

Figure 2: Alignment measurements in the framework.

3.2 Organisational Process Alignment Assessment

This assessment aims to assess the infrastructure-process alignment. It assesses the organisational alignment and process alignment. The organisational process alignment value (ORPAV) can be computed by Equation 2.

$$ORPAV = \frac{ORAV + PAV}{2} \quad (2)$$

It is the average score of the organisational alignment value (ORAV) and process alignment value (PAV). Table 3 shows organisational process alignment assessment questions. The process integration alignment value (PIAV) and process standardisation assessment value (PSAV) are the supplementary alignment of PAV. PIAV is adopted by unification or coordination type of organisation that has high level of process integration. PSAV is employed for the replication and unification type of organisation that has high level of process standardisation.

3.3 Alignment Analysis and Interpretation

The OAF produces a set of alignment outcomes. This includes the OAV that considers the SA, ITA, PCM and STA, and the ORPAV that considers the ORAV and PAV. These values form the operational alignment map as shown in Figure 3. It contributes to the root cause identification of the alignment issues in an organisation.

The operational alignment map shows the relationship among alignments in an organisation. For example, an organisation that has a low score in ITA and STA indicates that, due to the lack of IT skills of the staff, the IT systems are not being optimised for enabling the business processes. Therefore, the management should rectify this issue by providing more training to the staff. The mechanism of applying the operational alignment map is: 1) Incorporate all the obtained values (SA, SA, ORPAV, PCM, STA, ITA, ORAV, PAV, PIAV, and PSAV) in the operational alignment map, 2) start with the alignment component that is on the association line and has the lowest value, the value should not be more than three, 3) move to the next alignment component that is on the association line with the lower score, 4) in the case where the alignment path hits ORPAV, step two and three will be adopted, but the both derivation paths that connect to PIAV and PSAV will be considered. Both PIAV and PSAV will be considered when the values are low, in this case, it is set at 0.5 and, 5) the alignment components which identified in the alignment path are the key alignment factors that impact the operational alignment of an organisation the most. The prior alignment component on the

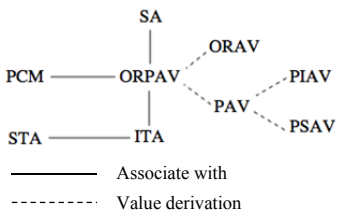

Figure 3: Operational alignment map.

alignment path has higher impact factor than the later alignment component. ORPAV and PAV are omitted from the operational alignment path.

4 APPLICATION OF OAF

4.1 The Case

A case study of applying OAF has been conducted in a Thai University Healthcare Centre. The healthcare centre provides free medical services for all students, lecturers, and administrative staff in the university. The healthcare services include medical consultation, dental clinic, rehabilitation service, and laboratory. The healthcare centre serves approximately 200 to 300 patients a day. The healthcare centre employed an IT company to implement a healthcare system called Hospital OS for the past six years. This system consists of several main healthcare related functionalities such as electronic patient record (EPR), clinic management, and laboratory management. The system requires frequent customisations and enhancements in order to comply with the new services and policies released by the university. Although the healthcare centre has invested a huge amount of money on IT systems in order to improve the healthcare service quality, still the healthcare centre is receiving constant negative feedbacks from the patients, mainly criticising the operation of the healthcare.

The operational issues are identified and analysed by adopting OAF. From the people perspective, it is discovered that the IT staff have not had the sufficient skills in maintaining the system. This causes delay in solving the system problem whenever it occurs. From the operational perspective, healthcare staff still have to go through the manual business processes. The complexity of these business processes are growing incrementally due to the constantly changing university policy. This is incredibly challenging when the business process requires collaboration from other departments in the university. For instance, in order to verify the identity of students, the healthcare centre is required to make a request to the student administrative department every week for an updated list of expired student to in order to update the healthcare system. This process is cumbersome especially towards the end of the month. Staff are required to check the record of the visit of a group of expired students and produce a report to inform a healthcare manager. In the IT viewpoint, the healthcare system does not support the aforementioned business operational activities. The existing healthcare system is not integrated with the student administration system in the student department. Therefore, it is challenging to share student information.

4.2 Alignment Assessment Result

Twelve respondents including administrative staff, nurses, doctors, and medical practitioners are participated in the alignment assessment. They complete the operational alignment assessment (cf Table 2) and the organisational process alignment assessment (cf Table 3) through an online questionnaire. Table 4 shows the score and the level of alignment for each alignment components in OAF.

According to alignment result in table 4, the healthcare centre has a low level of operational alignment due to the low score in both OAV and ORPAV. Although the centre gets a good score in the SA, other operational alignment components such as ITA, ORPAV, and PCM are having low scores. This lowers the overall alignment of the healthcare centre. This shows that the healthcare centre has good organisational strategies but faces difficulties in realising these strategies at the operational level. ITA has the lowest score out of all operational alignment components. Hence, ITA is considered as the major alignment issue in the healthcare centre. This implies that the healthcare system is not able to fully support the business operations. The healthcare has a low level of organisational process alignment (ORPAV). This indicates that the organisational structure of the healthcare centre does not support the organisational processes well. When considering ITA together with ORPAV, it indicates that the healthcare system is not supporting the organisational processes. For example, the manual process is employed in identifying student identity. In addition, the low PCM alignment indicates that the staff in the healthcare centre do not have the necessary skills and knowledge to perform their tasks adequately. For example, the IT staff do not have sufficient skills and knowledge in solving the system issues and maintaining the system.

4.3 Operational Alignment Map

Figure 4 shows the operational alignment map of the university healthcare centre. Each score of the operational alignment components are incorporated

Table 2: Operational alignment assessment questions.

Strategic alignment (SA) (adapted from Hung et al., 2010)
SA1: Corporate strategies are developed based on customer needs SA2: Core business processes are incorporated in the strategic plan SA3: Operational improvement has direct impact on executing corporate strategies SA4: There are sufficient measures in tracking of organisation performance SA5: The existing strategic plan is executed well
IT alignment (ITA) (adapted from Hung et al., 2010)
ITA1: Those IT enabled business processes are performing well ITA2: The adopted IT systems are well acknowledged ITA3: IT systems are vital in improving business processes efficiency ITA4: IT systems are well integrated across business units
People capability maturity (PCM) (adapted from Lu et al., 2010)
PCM1: Staff recruitment contains a set of normative criterion PCM2: Staff are allowed to raise their opinions on organisational policy and work condition PCM: Staff are equipped with the sufficient skills in performing the job PCM4: Organisation provides sufficient resources in assisting staff in performing the job PCM5 - Organisation provides sufficient training for staff
Socio-technical alignment (STA) (adapted from Lee et al., 2008)
STA1: Both operational and IT staff have great confidence in each other. STA2: Both operational and IT staff share the equal benefits when working together STA3: Both operational and IT staff achieve high level of teamwork STA4: Both operational and IT staff always motivate each other to maintain the team synergy STA5: Both operational and IT staff communicate frequently

Table 3: Organisational process alignment questions.

Organisational alignment (OA) (adapted from Powell, 1992)
OA1: Written budgets are clear OA2: There is frequent staff performance appraisal OA3: Reports are generated to benchmark the performance towards organisational goals OA4: Asset management is good OA5: The cost accounting system is good OA6: There are standardised procurement procedures OA7: The salary review and promotion procedures are standardised OA8: There is an official management training OA9: There are cross departmental planning and decision making committees OA10: There are temporary teams or cross departmental resources collaboration in executing a specific project OA11: There are regular meetings cross departmental management meetings on key organisational policy OA12 : There is a designated person in managing the cross departmental collaboration
Process alignment (PA) (adapted from Hung et al., 2010)
PA1: There are collaboration barriers between departments PA2: There are designated business process teams PA3: The cross departmental teams have higher authority in making day-to-day decisions than the departmental PA4: Customer are satisfied with response time PA5: The front-line tasks are delegated well

in the operational alignment map. The operational alignment path is identified. The path starts from ITA (1.60), which has the lowest score among all the alignment components. It is then moved to ORPAV (2.75), which ITA is connected to. Finally, it is moved to PCM (2.22). PCM has a lower score comparing to other alignment components (ORAV and PAV) in which OPRAV is connected to. In addition, the ORPAV can be analysed further to find the root cause of the misalignment of the organisational processes. The alignment path of ORPAV is then starting from PAV, which has a lower score (2.68) in comparison to ORAV (2.81). Same applies to the comparison of PIAV and PSAV. Therefore, the final operational alignment path starts from ITA, follows by PIAV and PCM. Hence, the healthcare centre should consider these three factors to improve its operational alignment. For example, the relationship between ITA and PIAV indicates that the healthcare centre should improve integration of the existing healthcare system with other IT systems. This will enhance the information sharing

Table 4: The score of each alignment component.

Alignment components	Scores	Level of alignment
Operational Alignment Value (OAV)	2.59	Low
Strategic alignment (SA)	3.75	Medium
IT alignment (ITA)	1.60	Low
People capability maturity (PCM)	2.22	Low
Socio-Technical alignment (STA)	2.78	Low
Organisational Process Alignment (ORPAV)	2.75	Low
Organisational alignment (ORAV)	2.81	Low
Process alignment (PAV)	2.68	Low

within the healthcare centre and other departments in the university. Similarly, the relationship between ORPAV and PCM denotes that staff training in increasing their IT skills is important to improve the overall performance of the healthcare centre.

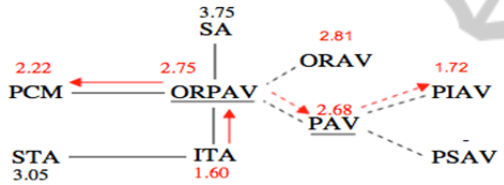

Figure 4: The operational alignment map of the healthcare centre.

5 DISCUSSION AND CONCLUSION

This paper has developed an operational alignment framework (OAF) that aims to enhance the business-IT alignment from the operational perspective. OAF can be employed to investigate and evaluate the alignment of the operational factors such as business strategy, business operations, people, and IT. OAF is developed by integrating the concept of strategic alignment, organisational processes, IT alignment and people alignment. OAF fulfils the three aspects (modelling, alignment evaluation and evolution execution) of business-IT alignment suggested by Aversano et al. (2013). From the modelling perspective, it provides a set of components that contributes to the operational alignment. The alignment evaluation aspect is satisfied with the set of alignment assessment questions based on the operational alignment components in OAF. The components are categorised into the organisational process alignment and operational alignment. Organisations can adapt and adjust the alignment assessment questions within each operational alignment component based on their business needs. The evolution execution factor is fulfilled by the operational alignment map, a technique in OAF for examining the operational alignment issues in an organisation. It shows the relationship between the operational alignment components. It also indicates the operational alignment path that identifies the root cause of the operational alignment issues within an organisation. The operational alignment map can be used as a preliminary tool to improve the operational alignment in an organisation. The applicability of OAF is proven in the case study illustrated in section 4.

One of the key strengths of OAF is it provides a holistic view of the alignment in an organisation from the strategic level to operational level. In addition, OAF incorporates the three aspects of business-IT alignment such as modelling, alignment evaluation, and evolution execution. This makes OAF different from other approaches that usually focus on a particular aspect. Although one may get an insight of a particular area when focussing in one particular aspect, it is still challenging for practitioners to adopt the framework in the real situation. For example, the alignment framework such as SAM offers a conceptual perspective of alignment, but it is not advising the implementation techniques. The benefit of integrating these three aspects is to increase the practicality of the framework. As illustrated in section 4, OAF helps the healthcare centre to understand and examine the level of alignment of the existing alignment by the assessment questions. It identifies the root cause of misalignment through the assessment result, and improves the alignment via the alignment map. Another advantage of OAF is it incorporates the people dimension. The capability and adaptability of staff to changes brought by alignment is vital to the success of any alignment implementations (adapted from Zarrabi and Vahedi, 2012). This enhances the people dimension of the existing alignment frameworks, including SAM in analysing human related issues in an organisation.

As for future work, the derivation of the assessment value and the relationship between operational alignment components will be improved. In addition, more case studies across various industrial sectors will be conducted in order to improve the validity of these two aspects. The

assessment questions will be improved in order to increase the generalisability of OAF. A technical prototype of OAF will be produced towards the end. This will help the end users in entering the calculating the scores of each operational alignment component.

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