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Discussing IS Alignment Results: A Classification Framework

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IS ALIGNMENT DISCUSSION: A CLASSIFICATION FRAMEWORK

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ABSTRACT

Information system (IS) alignment has been one of the most important topics recognized by management since the last decade. However, it is a complex concept. Although some classification frameworks and guidelines have been suggested, they are only useful to understand the nature of alignment constructs and the types of relationships between them. None of them classifies the ways of discussing alignment results which are the final outcomes of an alignment assessment that describe the extent and appropriateness of various constructs to one another. This paper suggests a framework to help understand how alignment results can be discussed, which includes four perspectives. It is expected that the framework can help not only readers understand IS alignment research, but also IS researchers initiate appropriate alignment research projects. Several future research projects based on this framework are also revealed.

Keywords: strategic alignment, classification framework, IS strategy, alignment dimensions

INTRODUCTION

Information system (IS) alignment has been one of the most important topics recognized by management since the last decade. This has called a large number of researchers dedicating to academic publications on this topic. Yet, as Papp [35] commented, it is a complex concept. Various kinds of definitions of alignment have been found in the IS literature. For example, Weill and Broadbent [58] defined the alignment of organizational and information strategies as the extent to which the organizational strategies were enabled, supported, and simulated by information strategies; Chorn [11] defined alignment in a broader context as the "appropriateness" of the various elements to one another. In addition to various definitions, various terms are used interchangeably to describe alignment, such as "fit" [11] [14] [33], "link" [20] [22] [37] [47], "congruence" [23] or "match" [41].

Since researchers have various viewpoints on the meaning of alignment, it is not surprising that the research on IS alignment are carried out from different perspectives. The universal agreement on a most orthodox way of conducting alignment research is hardly to be found. Although a number of classification frameworks and guidelines have been suggested to help understand how IS alignment can be discussed (e.g. [38] [48] [55]), they are mainly useful for explaining the nature of alignment constructs and the relationships between them. They seldom show us what alternatives are available for discussing alignment results. This paper defines alignment results as the final outcomes of an alignment assessment, which describe the extent and appropriateness of various constructs to one another.

For discussing alignment results, this paper proposes a classification framework to demonstrate what perspectives are available. This framework is based on the discussion of two questions: whether the discussion is a qualitative or quantitative approach and whether the discussion is the dimension or overall level. Apart from helping readers understand what perspectives are available for discussing alignment results, it is expected that this framework is useful for IS researchers to develop appropriate alignment research projects.

PREVIOUS LITERATURE

Three issues are found in the alignment literature as fundamental considerations when designing an IS alignment research: the number of constructs (constructs are the elements to be aligned), relationship between the constructs, and alignment dimensions. They are explained in the following sections.

Issue 1 – Number of Constructs

The first issue is how many constructs are involved in the IS alignment discussion. The study of alignment must have the elements to be aligned, which are called "constructs". The numbers of constructs are various in the IS alignment studies. For example, Henderson and Venkatraman [16] proposed an alignment model termed "strategic alignment model" which explains the interrelationships between four constructs: business strategies, IS strategies, business structures, and IS structures. Some studies are based on three constructs, such as organization structures, organization process, and organization strategy [12]. Burdett [7] studied the alignment among three constructs which were customers, organization, and team.

Studying two constructs is most frequently seen in the IS alignment. For example, Sun and Hong [45] focused on the alignment between manufacturing and organizational strategies. Teo and King [51] researched the alignment between business planning (BP)

and information systems planning (ISP). Beal and Yasai-Ardekani [4] were interested in aligning CEO functional experiences with organizational strategy. It is suggested that IS researchers should clearly define how many constructs are included and what constructs are the focus in their alignment research.

Issue 2 – Relationship between Constructs

The second issue is the relationship between constructs. As Van de Ven [53] suggested, the alignment can be induced with or without causation between the constructs. This implies that the alignment of any two constructs can be with or without causation.

Relationship without Causation

The relationship without causation between two constructs means that no causation is found between two constructs or the causation is disregarded. This type of relationship can be illustrated by Figure 1.

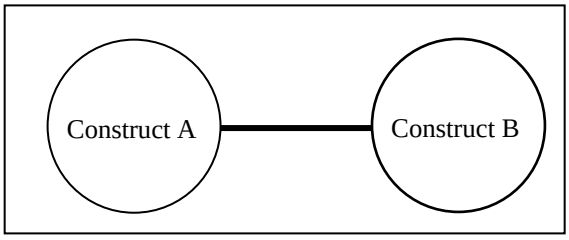

Figure 1 No causation between two constructs

Van de Ven [53] reviewed the studies (e.g. [11] [15]) concerning the theory of population ecology that was being applied to the relationship between organization and environment. The findings showed that it was possible that there was no causation implied between environment and organization structure. The reasons for no causation existing between the constructs are that the two constructs (organizations and the environment) are part of a social system. Thus, the alignment is an interaction effect of organizational environment and structure on organizational survival.

Another meaning, as suggested by Van de Ven [53], tends to disregard the causation existing between organizations and the environment. This meaning is that the alignment between organizational environment and structure may simply be a spurious result of a third set of factors that explain the observed covariations among environment and structure. For example, Broadbent and Weill [6] identified six indicators which were important in aligning organizational and information strategy in the banks. For this group of studies, the relationship between the constructs is not the focus, and can be disregarded.

Relationship with Causation

The relationship between two constructs can be considered with causation. As Van de Ven [53] suggested, an organization must adapt to the characteristics of its environment if it is to survive or to be effective. This perspective shows a clear deterministic theme derived from the environment causes of the organization's structure which must be in place if the organization is to survive [53]. For this reason, the causation does exist between the two constructs.

The causation which exists between two constructs has been widely recognized by the IS researchers [16] [25] [46] [57]. [16] revealed that each of the four constructs in their strategic alignment model can be the driver and has the driving force to influence to the other constructs. This can be termed "one-way alignment". This type of relationship is illustrated by Figure 2.

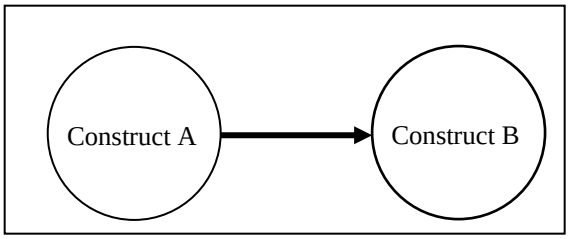

Figure 2 One-way alignment

One-way alignment means that the construct B should be aligned with the construct A. The construct A has the driving force, and is the driver in the alignment model. As construct A has the driving force, construct B should support construct A.

A number of IS alignment studies are based on this relationship. For example, Pyburn [37] tried to link the MIS plan with

organizational strategy. Tavakolian [50] focused on linking the information technology structure with organizational competitive strategy. Venkatraman and Camillus [55] studied aligning those external issues of the organization (e.g. environmental factors, competitive responses) and internal issues (e.g. internal structures, management processes) with organizational strategy.

However, many IS researchers have called for investigating two way relationships between the constructs. For example, Tallon and Kraemer [46] define strategic alignment as the extent to which the IS strategy supports, and is supported by, the organizational strategy. Baets [1] suggested not only attempting to align IS strategy into organizational strategy, but defining them in parallel.] Lederer and Mendelow [27] also argued that aligning an IS plan (ISP) with a business plan (BP) is different from aligning a business plan (BP) with an IS plan. These two types of alignment provide benefits to businesses in different aspects. Luftman [28] insisted that alignment addresses both how IT is in harmony with the organization, and how the organization should, or could, be in harmony with IT.

The "two way relationship between the constructs" means both of the constructs are the drivers. This can be termed "two-way alignment". The causation between the two constructs is illustrated in Figure 3. In regard to the issue of causation, researchers need to consider whether a clear deterministic theme of the causation is existing in the relationship between any two constructs.

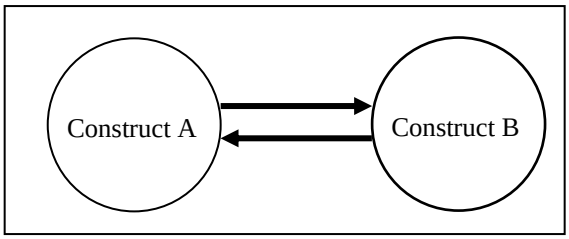

Figure 3 Two-way alignment

Issue 3 – Alignment Dimensions

The third issue is the alignment dimensions utilized to clarify the concept of alignment. Various classification frameworks have been proposed to discuss the alignment dimensions [21] [34] [38] [43] [48] [52]. The following sections will discuss the cause and effect, the social and intellectual, the behavioral and cognitive, and the current and future dimensions.

Cause and Effect

Reich and Benbasat [38] suggested two dimensions for measuring alignment: cause and effect. The effect dimension is the result or outcome produced from the alignment [43] [54]. It has various meanings to the organization, such as coordinated functional documents with the strategic plans [55], shared understandings between different levels of management, aligned behavior of the management or aligned management thinking [38] [48] [55]. However, the evaluation on the effect dimension is of little help in understanding "how" [43].

In contrast, the cause dimension focuses on understanding and measuring the means to achieve the outcome [43] [54]. This can be the explanations of the alignment [52], the process to achieve the alignment [48] [55] or the factors which cause the alignment [30].

Social and Intellectual

In addition to cause and effect dimensions, Reich and Benbasat [38] also suggested social and intellectual dimensions for measuring alignment. The social dimension emphasizes the people's profile and ability, degree of involvement and social factors in determination of alignment [18] [38]. It is the "personnel linkage" described in Lederer and Mendelow's [27] study, the "organizational linkage" described in Shank, Niblock, and Sandalls' [44] study and the "subjective alignment" mentioned in Ball, Adams, and Xia's [2] study. The social dimension focuses on measuring the units that are responsible for developing the constructs. For example, whether the agreements between the IS executive and general executives on the IS are coordinated [2]. Thus, social alignment means that the units, personnel, and social factors which are responsible and involved in the development of the constructs are aligned.

The intellectual dimension is the methodologies and tools which can be aligned or which can help a decisionmaker utilize the best way to formulate the alignment [18] [38]. This is the "content linkage" described in Shank et als' [44] study, and "objective alignment" mentioned in Ball et als' [2] study, which deals with the correspondence between the content of two constructs. For example, the data presented in the plan document and that presented in the budget are aligned [44]; and the IS strategy and organizational strategy are aligned. Thus, the intellectual alignment means that these methodologies and tools are aligned or these methodologies and tools utilized by decisionmakers are aligned.

Behavioral, Cognitive, Current, and Future

There are four other dimensions which have not been paid much attention in comparison with previous four dimensions (case, effect, social, and intellectual dimensions). Tan [49] distinguished alignment research into behavioral and cognitive dimensions. These two dimensions focus on how organizations "behave" (behavioral dimension) and how organizations "think" (cognitive dimension). In addition, Tan [49] argued that these two dimensions are considered as inseparable because managers behave what they think. In comparison, the behavioral dimension has been adopted frequently in the alignment literature. He suggested that more focus should be added to cognitive dimension to enrich the assessment of alignment.

The other two dimensions are current and future dimensions. They are embodied in the studies of Itami and Numagami [21] and Nakayama [34]. They recommend that alignment researchers focus more on the "current" constructs and the "future" construct. For example, Nakayama [34] suggested a consideration of the alignment between what businesses are currently doing and what they can be doing. Itami and Numagami [21] studied current strategy and technology and future strategy and technology. They identified three kinds of dynamic interaction that are conceivable between strategy and technology:

1. Between current strategy and current technology,
2. Between current strategy and future technology,
3. Between future strategy and current technology.

As organizations become more complex, alignment is more dynamic than static and incorporates more than just the readily available structures [9]. Thus, businesses should consider more about aligning the present construct with the future construct. Bergeron, Raymond, and Rivard [5] also called for adopting longitudinal perspective rather than cross-sectional operationalizations of alignment.

THE PROPOSED FRAMEWORK

The three issues discussed previously focus on the discussion of the nature of alignment constructs and the relationships between them. After we determine how many constructs are involved in our research, any causation between them, and the alignment dimensions which we are going to choose, the next is to decide how the alignment results will be discussed. Should the results be a qualitative or quantitative format? Should the results be a yes or no answer or a degree level?

This paper provides a framework, which includes four perspectives, to classify the discussion of the alignment in the IS alignment literature. This framework is based on two considerations – whether the discussion of alignment is based on qualitative or quantitative approach, and whether the discussion of alignment is at the dimension or overall level. Different from previous three issues, these two considerations specifically deal with how alignment results can be discussed and presented.

Qualitative or Quantitative

The first consideration is whether the discussion of alignment is based on a qualitative or quantitative approach. In general, the discussion of alignment results can be dichotomized into qualitative and quantitative approaches. When the qualitative approach is adopted, alignment results can be a form of qualitative descriptions [42], qualitative terms [10] [31], or alignment perspectives [1] [16] [17] [29] [56]. When the quantitative approach is adopted, alignment results refer to the "appropriateness" of the various elements to one another [11]. The alignment results are represented as a degree rather than a set of descriptions. Frequently, a quantitative approach employs the survey technique to collect data (e.g. [24] [42]).

As Schneider et al [42] contended, the richness and detail of information necessary to fully understand and apply the concept of alignment is missing in the statistical test of synergies existing among the practices. Thus, the qualitative discussion of alignment is advantageous when studying the alignment system involving a new notion. This approach can provide an intimate assessment of the extent to which the alignment construct is enacted in ways that the management actually experience it. In other words, it not only discusses what practices the informants "say", but also how they "experience" them.

Dimension or Overall level

The second consideration is whether the discussion of alignment is on the dimension or overall level. In the studies of Cragg, King, and Hussin [13] and Hussin, King, and Cragg [19], they proposed nine items which can be used to measure alignment between the constructs of business and IT strategies. They argued that the alignment is discussed by what the results in each end and how different the results of two ends are from an overall perspective rather than splitting alignment into various parts of the nine items. In other words, the discussion of alignment can be an overall level or on the dimension level (e.g. on the nine items).

In regard to the two considerations, the framework proposed by this paper comprises four perspectives. Figure 4 shows this framework and the four perspectives.

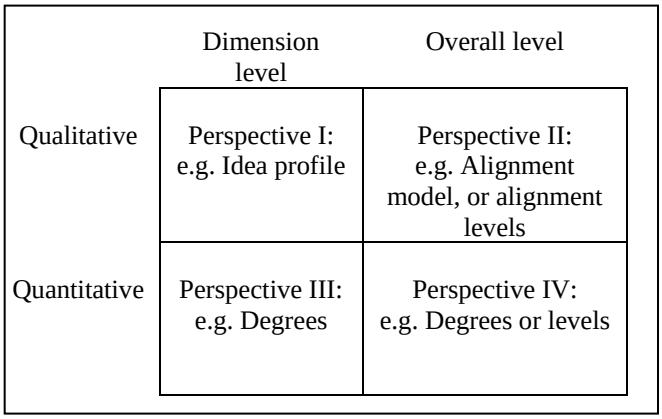

Figure 4 The proposed framework

Perspective I

When perspective I is adopted, the focus is on the qualitative discussion of alignment at the dimension level. The most common method to discuss the alignment of constructs is to create an "ideal profile". That is, to develop a profile to match the dimension of one construct with the dimension of the other [39]. A large number of IS alignment researchers have adopted this perspective to discuss the alignment between two constructs (e.g. [3] [32] [33] [39] [40]).

Take the work proposed by Miles and Snow [33] as an example. They identified the ideal profile for matching the organizational characteristics with three typologies – Defenders, Prospectors, and Analyzers. These characteristics are summarized in Table 1.

Table 1 Ideal profile for matching organizational characteristics with business typologies (Adapted from Miles and Snow [33])

Organizational Characteristic	Defenders	Prospectors	Analyzers
Product-market strategy	Limited, stable product line, market presentation	Broad, changing product line, first in to new markets	Stable and changing product line, second in with an improved product
Research and development	Process skills, product improvement	Product design, market research	Process and product adaptation
Production	High-volume, low cost specialized processes	Flexible, adaptive equipment and processes	Project development shifting to low-cost production
Organizational structure	Functional	Divisional	Mixed project and functional matrix
Planning process	Plan, Act, Evaluate	Act, Evaluate, Plan	Evaluate, Act, Plan

As shown in Table 1, the typology and organizational characteristics represents two constructs. Those descriptions in the triangulated quadrants are the ideal profile which is used to match the specific organizational characteristics to each of the business typologies. When a company adopts one typology and has all characteristics included in the typology's idea profile as shown in table 1, it means that the company's characteristics are well aligned with its typology. When some company characteristics are not matched with the idea profile, it infers that some characteristics of the company are poorly aligned wile the rest are well aligned.

Perspective II

When perspective II is adopted, the focus is on the qualitative discussion of alignment results at the overall level. It is to generate the alignment discussion between the two constructs overall rather than on the dimensions of the two constructs. Two methods are utilized frequently in this perspective – the discussion on the alignment levels and alignment models.

In regard to the discussion on the alignment levels, alignment researchers developed levels for discussing the alignment between two constructs. For example, Woolfe [59] proposed four stages of alignment to describe the alignment between IT plans and organizational plans: functional automation, cross-functional integration, process automation, and process transformation. Luftman [28] developed five levels to discuss the alignment maturity: initial/ad-hoc process, committed process, established focused process, improved/managed process, and optimized process. Burn and Szeto [8] also discussed the alignment between the organization and IT strategies based on five levels: failure, few benefits, better than not doing it, successful but can improve, and highly successful.

In regard to the discussion on the alignment models, the qualitative discussion on the strategic alignment model is dominant in the IS alignment literature [1] [16] [17] [29] [36] [56]. They discussed the implications of the alignment of any three of the four constructs in the model. Kerr and Jackofsky [26] also developed a contingency model which can be used to discuss the alignment between managers and organizational strategy. This was based on the assumption that organizational effectiveness is enhanced by aligning managerial talent with strategic demand.

Perspective III

When perspective III is adopted, the focus is to discuss the alignment results in the dimension level quantitatively. In other words, it is to quantify the degree of the alignment on each dimension. Pyburn [37] argued that it was important to identify whether the IS plan addressed the critical needs of the organization and in what degree. As Ball et al [2] revealed, the degree of similarity of response on the dimensions determines the degree of alignment. The degree can also be seen as a unique continuum from low to high, rather than as polarities on a single scale [53].

Perspective IV

When perspective IV is adopted, the focus is to discuss the alignment on the overall level on a quantitative basis. The researchers from this perspective quantitatively analyzed the alignment of the dimensions in the construct(s) first, and then discussed what level or type of overall alignment the results should be fit into. For example, Miles and Snow [33] first defined the degree of alignment as depending on how the alignment creates success to organizations. Then, they categorized the overall alignment into four levels:

1. Misfit: failure
2. Minimal fit: survival
3. Tight fit: excellence
4. Early, tight fit: hall of fame

Tan [47] also analyzed the degree to which IT was explicitly considered in organizations' strategy formulation first. Then, he categorized the overall alignment of IT and organizational strategy into three types: independent, supportive, and integrated. The results derived from the degree to which IT was explicitly considered in organizations' strategy formulation as being used to justify what type of IT-strategy alignment the case belongs to.

CONCLUSION

This paper has discussed three issues from the literature, which are fundamental considerations when designing an IS alignment research: the number of constructs, relationship between constructs, and alignment dimensions. However, these issues only focus on discussing the nature of alignment constructs and the relationships between them. They are not helpful for discussing the alignment results. To fill this gap, this paper proposed a framework to help those who are initiating or planning to develop IS alignment research select appropriate perspective to discuss their alignment results. This framework poses two considerations to researchers: whether the discussion of alignment is based on a qualitative or quantitative approach and whether the discussion of alignment is on the dimension or overall level. In line with these two considerations, four perspectives are identified in this framework, which are qualitative discussion on dimension, qualitative discussion on overall, quantitative discussion on dimension, and quantitative discussion on overall levels. How alignment results should be discussed when each perspective is adopted has been explained.

Several questions are posed here based on this framework, which offers plenty opportunities to conduct a series of future research projects. Firstly, is there any interrelationship between the four perspectives? As discussed earlier, the qualitative discussion of alignment is advantageous when studying the alignment constructs which involves a new notion. Therefore, should one who is exploring a new notion firstly adopt the Perspective I (Qualitative Dimension level) or Perspective II (Qualitative Overall level) to discuss alignment results? And what perspective should be adopted in the next? Secondly, what are the strengths, weaknesses, and

limitations of each perspective? Answers to these questions help IS researchers select proper perspective in order to develop more appropriate alignment research projects. Lastly, can different definitions and views on the meaning of alignment fit into this framework? And can this framework explain the reasons which cause different views on the meaning of alignment? A research project based on an extensive survey on the IS alignment literature is currently being conducted to find answers for these questions.

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