Investigation of the strategic alignment in public sector organisations using knowledge based strategy

Shuwen Ma*

Hangzhou College of Commerce, Zhejiang Gongshang University, 310012, Hangzhou, China

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Abstract

Ageing workforce is one of the critical challenges a public sector organisation is facing and will face more terribly. The cost of knowledge loss can have huge impact on the bottom line of business. A major issue facing Public Sector Organisations (PSOs) in recent times has been the increasing pressure to demonstrate value from investments in Information Technology (IT). One omnipresent but often overlooked solution is Strategic Alignment (SA) between corporate business objectives and IT initiatives as achieving SA remains one of the more enduring challenges for organisations. Moreover, deriving value from IT investments through SA requires both IT and business executives to foster synergies between their respective areas, which contributes to increased organisational performance. Conversely, business-IT misalignment may eventually lead to failure in achieving business goals. Shared Domain Knowledge (SDK) is a key factor within the social dimension of SA and is concerned with the level of knowledge business and IT have of each other's to each other's missions, objectives, and plans. This paper presents findings from a study which investigated the influence of SDK on SA within organisations in the Australian public sector. The developed research model examined SDK between business and IT professionals as a factor that would potentially influence SA. The findings suggest that increased levels of SDK between professionals from the business and IT domains leads to more efficient SA in PSOs.

Keywords: shared domain knowledge, strategic alignment, public sector, organisational performance

1 Introduction

Ageing workforce is one of the critical challenges a public sector organisation is facing and will face more terribly. The speculation of the mass retirement of the baby boomers generation will leave an organisation with a big challenge of retaining knowledge of experience employees, storing this knowledge and transferring knowledge to the new or existing employees in understandable manner. The cost of knowledge loss can have huge impact on the bottom line of business. A major issue facing public sector organisations (PSOs) is the increasing pressure to demonstrate the value for business from Information Technology (IT) investment which has been more often than not intangible. In order to reap the full benefits of IT, decision-makers are encouraged to integrate IT missions, objectives, and plans into various aspects of business functions within the organisation [1]. In an attempt to boost operational efficiency, organisations have been making continuous efforts to take advantage of IT investments to improve business performance and customer service [2]. Improving the communications, shared domain knowledge, relationship between business and IT executives have been proposed to meet the challenges of value realisation and obtaining maximum benefit from IT investments [3].

A strategic alignment (SA) between business and IT has been long sought by public and private sector organisations for many years [4]. Not only it is hard to achieve, but this type of alignment is also hard to maintain [5]. SA refers to the "congruence between an organisation's business and IS/IT strategies" [6] and is found to have a direct impact on firm performance because of its role as a mediator between IT investments and business objectives [7]. Not only that, but SA is also found to positively influence the effectiveness of IT and contributes to maximising business profits [8]. On the other hand, failure to leverage existing IT investments (i.e., not simply just investing more in IT) is expected to get in the way of organisations performance and viability [9].

Some of the issues that obstruct achieving the social dimension revolve around shared domain knowledge (SDK) between the business and IT domains [10] as SDK is major contributor to the successful creation and execution of strategic plans [11,12]. Consequently, IT managers need to have knowledge about business goals and objectives prior to developing IT strategic plans. For example, it has been observed that CIO's with good business knowledge enjoy greater participation in top management decision-ma king [13], whereas the lack of such knowledge hinders the organisation's ability to employ IT strategically and thus stands in the way of SA [14]. Business executives also need to be aware of IT initiatives so that they are able to objectively make investment decisions, which enables a more realistic expectations of the organisation's IT capabilities [14]. Therefore, exploring effective ways for achieving and sustaining SA in PSOs through SDK remains a challenge requiring more research to address what is still conside-

* ***Corresponding author's*** e-mail: 1622913173@qq.com

red a major concern for executives [15]. While many relevant factors are important in achieving high levels of SA, the focus of the study reported here is solely on understanding the influence of shared domain knowledge on strategic alignment.

2 Related works

Given the emphasis in today's environment on customer focus, stake holder interests, public sector organisational performance and other methods of assessment are employed to address issues in the new public management and prevailing managerialism in measurement of public sector organisations around the world. Therefore, many public sector organisations have been encouraged to implement benchmarking as one way of satisfying the government's requirement that public organisations provide best value services. SA between business and IT is usually described in terms of strategy (i.e., business strategy, IT strategy). In literature, business strategy is considered the driver of an organisation through a set of actions and decision -ma king relating to long-term direction and the scope of activities, addressing changes in the environment to gain advantage over competitors, and building on resources to meet stakeholders' expectations [16,17]. Within the same context, IT strategy often refers to the identification of innovative solutions that provide a competitive edge for businesses and optimise the return of investments [18]. A well-crafted IT strategy is expected to be based on a clear business strategy, and covers technology, information systems, and governance [19].

There are a number of different definitions of SA that describe how business and IT should be integrated, coherent and in sync. SA is defined as "the continuous process, involving management and design subprocesses, of consciously and coherently inter relating all components of the business-IT relationship in order to contribute to the organisation's performance over time." [20] It is no longer considered as an end-state, but rather a continuous and dynamic process that evolves into a relationship between IT and business functions and requires to be actively maintained [21,22]. Further, SA is not an isolated management action as "…no single activity will enable a firm to attain and sustain alignment." [23], but rather a "…continuous and dynamic synchronization of the capabilities inherent in the information infrastructure and the demands of strategy" [24]. SA can be seen as "… applying IT in an appropriate and timely way, in harmony with business strategies, goals and needs…" [25]. In a public sector context, SA is expressed as "the degree to which the IT goals support the strategic goals of a public agency, and to which administration and IT stakeholders are committed to support these goals." [26]

The motivation for SA emerged from a focus on strategic business planning and long-term IT decision-ma king. SA is a major concern for business executives and is ranked among the most important issues faced by IT managers [27]. The most proclaimed advantage in which SA can be beneficial to organisations is the capability to achieve a more focused and strategic use of IT resources leading to improved business and organisational performance [28]. Financial benefits are no longer the only factor used to measure the value added by IT investments. Instead, business executives are now considering non-financial benefits (e.g., the ability to react to new possibilities) as an indication of sound IT investments [29]. Although, the importance of SA has been widely recognised and well documented, many organisations today are still misaligned and this has led to undesirable outcomes including dissatisfied stakeholders, cancelled or failed projects, amplified costs of IT, and systems that do not meet the needs of the business [30]. Thus, the effect of misalignment between business and IT is expected to lead to degraded business performance [31].

A wide range of factors/dimensions that influence SA exist in literature, such as structural, strategic/intellectual, social, and cultural. Although more attention is given to the strategic/intellectual and structural dimensions, SA is also contingent on many of the social and cultural aspects of an organisation [32]. The social dimension is defined as "the state in which business and IT executives within an organisational unit understand and are committed to the business and IT mission, objectives and plans" [33]. The main social dimension factors that have the potential to influence SA are: connections between business and IT planning, communication between business and IT executives, previous imp le mentation of IT plans/projects, Shared Domain Knowledge (SDK), and external influences [11].

SDK is defined as "the knowledge that the IT manager possesses about the business process, the knowledge that the business manager possesses about the potential opportunities to apply IT to improve business process, and the common understanding between the IT and the line manager regarding how IT can be used to improve business process performance." [34] Consequently, two dimensions of SDK have been identified, namely: IT managers' knowledge of business and business executives' knowledge of IT [12].

SDK improves communication [35], increases innovation [36], and enhances IT performance and the use of IT resources [11]. The business and IT executives' knowledge of IT and business strategy results in developing a shared perception and vision [37], and achieves better linkages between objectives and actions [11]. In contrast, business managers' lack of IT knowledge hinders SA [38].

Emerging from the literature thus far, previous research focused on SA as an outcome of integration between business and IT [39], while others have concentrated on the relationship between SA and IT performance [40], or between SDK and IT performance [41]. However, an empirical investigation of the relationship between SDK and SA in PSOs has not been conducted. This paper endeavours to address this limitation by

investigating the influence of SDK on SA within the Australian public sector.

3 The proposed method

Presents, from a systemic perspective, an examination and discussion of performance measurement, performance indicators and associated improvement initiatives, as typically applied in public sector organisations. Such mechanisms are usually implemented as a causal loop which is established between perceived performance and resulting actions, thereby constituting a form of feedback control. Within this context a two dimensional matrix model is postulated in which the independent dimensions are the source of control and the nature of the resultant control action. As PSOs are large consumers of information technology [42], this paper aims at exploring the potential influence of SDK on SA within these organisations. The research methodology, which is exploratory in nature, draws on a survey of business and IT/IS professionals. This paper utilised key informants from the Australian public sector to provide information about PSOs' level of IT and business knowledge, and SA levels. Officers with at least 3-5 years of experience in IT or business and public administration were chosen as key informants. The selection of experienced officers reduces the number of informants required as they tend to be a more reliable source of information; however, this approach provides the potential for common method bias [43]. In addition, this paper endeavoured to control other external and IT characteristic factors which may influence SDK or SA by collecting data from organisations within the same environment/industry. As well as choosing a sample from organisations where IT was regarded of high strategic value, as measured by IT budget and the appointment of a dedicated CIO or senior IT executive.

3.1 RESEARCH MODEL

The model presented below illustrates the conceptual hypotheses and hierarchical relationships of three constructs examined in this paper (i.e., Business objectives knowledge, IT processes knowledge, and SA). The theoretical model depicts the relationships that this paper aims to investigate (i.e., SDK association with SA). The lines connecting constructs symbolise the hypotheses that will be statistically tested. Each of the constructs correlated to items on the data collection instrument (i.e., questionnaire). The model has been designed to examine two hypotheses; business objectives knowledge correlates with the SA (H1), IT processes knowledge correlates with the SA (H2).

3.2 HYPOTHESIS DEVELOPMENT

The available literature contains definitions and measurable indicators (or variables) of the constructs but the operation allocation of these indicators was not specific to the SDK-SA relationship examined in this paper. Rather than adopt these broader indicators, this study used field-driven measures based on existing theory. In total, 22 items were used to measure three constructs. The measurable indicators of each research construct are discussed below.

The first construct, business objectives knowledge, was conceptualised as the aggregate of two variables: experience in public administration (V1) and familiarity with business objectives within the surveyed organisation (V2). Both variables were perceived as important to the ability to participate in strategic decisions within PSOs. A prerequisite of 3-5 years of experience was established for the first variable (V1), whereas the second variable (V2) was assessed on a five point Likert-type scale. The second construct, IT processes knowledge, was operationalised using two variables: experience in IT governance (V3) and familiarity with IT processes within the surveyed organisation (V4). Potentially, both of these variables would lead to identifying opportunities for utilising IT to support business goals. A prerequisite of 3-5 years of experience in IT governance was established for the first variable (V3), whereas the second variable (V4) was assessed on a five point Likert-type scale. As two variables (i.e., V1 and V3) were established prior to data collection and therefore did not require measuring, only two variables (i.e., V2 and V4) were measured using the data collecting instrument to indicate the level of business objectives and IT processes knowledge of each respondent. The third construct, strategic alignment, has been frequently measured using financial and perceptual indicators in previous research (e.g., Kearns and Sabherwal [12]; Reich and Benbasat [35]; and Winkler [26]). Perceptual indicators were selected for this study through utilising high-level processes from the COBIT 5 frame work due to its worldwide application (e.g., private and public industries, governments, accounting and audit firms) as a reliable source for assessing IT governance and business/IT alignment [44]. The latest version, COBIT 5, divides the governance of IT into five domains: Evaluate, Direct and Monitor (EDM) ; Align, Plan and Organise (APO); Build, Acquire and Implement (BAI); Deliver, Service and Support (DSS); and Monitor, Evaluate and Assess (MEA), which are broken into 37 high-level processes [45]. As a result, and judging by the nature of each of the COBIT 5 domains, the EDM (V5-V9) and APO (V10-V22) do ma ins were used as measurable indicators of strategic alignment.

3.3 DATA SETS

Data were drawn from a cross-sectional field study from the public sector population. A pilot test of the questionnaire was administered to five thought leaders from the Queensland public sector with at least ten years experience in the field. Based on their feedback, no further amendments were required to the developed instrument. The survey included participants drawn from

three different representative groups to limit any sample frame bias. Moreover, to reduce the possibility of single-source bias that might result from exaggeration or self-pro motion and to encourage participation, the respondents were assured that the results would be completely anonymous and that they would receive a summary of the study findings.

From a total of 112 invitations, 56 usable responses were available which provided an unadjusted response rate of 50%. Analysis of nonresponse bias was performed by comparing early and late responses [46]. Early respondents are those who respond to the initial email, while late respondents are those who respond only after a reminder is sent. T-tests of the mean differences for each of the constructs and number of respondents failed to demonstrate any significant differences ($p<0.05$, two-tailed), suggesting that nonresponse bias was not an issue in this study.

4 Experiments

Specific statistical approaches were used to assess the model and establish the results. The primary method of assessing the correlation between the knowledge areas was Spearman's Rank Correlation Coefficient. The tables below (see Tables 1-2) detail some descriptive statistics that characterise the data collected. Analysis of descriptive statistics was undertaken to search for possible affects or bias resulting from certain patterns in the sample data. The results of the descriptive statistics for constructs are displayed in Table 2 and show no sign of misrepresentation as all responses seem to follow an approximately normal distribution (i.e. all data-points fall within two standard deviations).

TABLE 1 Role distribution

Role	Count
Executive/Manager	26
Junior/Operational	30
Total	56

TABLE 2 Descriptive statistics

Construct	Total	Average	StdDev
Business objective knowledge	222	4	0.94
IT Processes knowledge	216	4	0.92
Strategic alignment	177	5	1.3

For internal consistency analyses of the Likert-type scales, Cronbach's Alpha reliability coefficient was used as it relates to the measurement of the internal consistency and homogeneity of items in a scale [47]. The results were significant for all items in the questionnaire at Cronbach's alpha >0.7. Construct validity was measured using the Kaiser Meyer Olkin (KMO) and Barlett tests. The KMO test assesses the adequacy of the sample magnitude for factor analysis, while the Barlett test is used to determine whether the data come from multivariate and normal distribution. The KMO's value ranges between 0 to 1 and is expected to be over 0.60 while 0.80-0.90 is considered a very good range [48]. For this study, the KMO value was 0.89 indicating sampling adequacy, and the Bartlett's test result was significant at 1256.7 ($P<0.05$). Other forms of data validation (i.e., confirmatory factor analysis) for convergent and divergent validity could not be performed on such low sample size as the minimum sample recommended for conducting such analysis should be at least 100 [49]. Descriptive statistics for variables (V5–V22) is expressed.

Variable correlation was conducted using the Spearman's rank correlation coefficient, which is a non-parametric correlation suited for small sample sizes where a normal distribution is difficult to be assumed [48]. The Spearman's Rank Correlations values vary from -1 to 1, where a high positive value denotes a stronger relationship between the variables and vice versa. Based on the p-value no null hypotheses can be rejected, therefore no results are significant. Hypothesis one has moderately a stronger positive correlation based on the Spearman's rank ($R=0.21$) whereas hypothesis two has a weaker positive correlation ($R=0.19$).

Despite the low significance of results an attempt will be made to draw implications of the relationship between SDK and SA from the Spearman's rank correlation. The results indicate that the relationship between SDK and SA is not as clearly defined as previous research indicated. Although the initial expectation was that there is a strong direct relation between SDK and SA in PSOs, the results suggest that the level of SA may depend on other factors as well, perhaps more than SDK. For instance, knowledge of IT Governance was found to improve the perceived level of SA.

Looking back at the theoretical frame work, results of the construct measurements (i.e., business objectives knowledge, IT processes knowledge, and SA) suggest that mutual understanding between the business and IT domains may create imp roved SA as both correlations of SDK (i.e., business objectives knowledge and IT processes knowledge) were relatively positive.

Based on the number of items where the average score was greater than the mean score, we note that participants with senior roles placed higher emphasis on stakeholder management, while operational areas (e.g., security) were perceived less important. Similarly, participants with junior roles perceived risk management as more important than benefits delivery and managing innovation. This supports the assumption that junior roles have a great understanding of the use of IT processes and risk management in PSOs while executives have a better understanding of enabling business objectives to meet stakeholders' needs.

FIGURE 1 SDK and SA breakdown based on role

Furthermore, the business objectives knowledge rating for senior and executive participants was higher than their rating of IT processes knowledge as illustrated in Figure 1. In contrast, IT processes knowledge rating for junior participants was higher than their rating of business objectives knowledge.

Moreover, IT knowledgeable business executives and business savvy operational/IT staff are expected to optimise SA in PSOs. Presumably, regular communication is intended to bridge this identified knowledge gap between executives and operational staff. The results also demonstrated that the rating of SDK has a positive relation with the rating of SA. For instance, the SDK rating for junior staff was higher than the one for executives, and as a result, the SA rating for junior staff was also higher. Thus, staff at all levels should invest in identifying capabilities for business and IT to interconnect, which consequently improves SDK and SA. Academics on the other hand are urged to extend the understanding of SDK by testing the individual constructs identified in this paper using a larger sample sizes to refine the exploratory results; explore the applicability of results on non-public sector organisations; and explore alternative measurable indicators/variables for SA and SDK.

5 Conclusions

This research contributes to an overall conceptual understanding of SDK as a factor fo r build ing organisational and Information Systems performance. SDK is concerned with reaching a state by which IT managers grow into business savvies and business executives develop IT governance/processes knowledge. As PSOs are forced to operate in an environment where demands grow and resources are reduced, improving business-IT synergies through SDK becomes critical. Based on the results, it appears as though, achieving high levels of SDK within PSOs result in optimising SA between business – IT. Consequently, in order to improve SA, IT and business staff at different levels should have adequate knowledge about business objectives and IT processes. In order to create an environment for SDK to develop, actions such as physically moving IT staff into business units, planning shared workshops and brainstorming sessions, and sending IT staff on regular visits to frontline offices may be required. Other methods may include rotating business managers through IT roles to reinforce the message that IT is an integral part of the business. In line with previous research [e.g.,50] external factors (e.g., IT processes/governance) have less effect on SA than internal factors (e.g., business objectives/governance). Thus, a possible direction for this research stream is to evaluate if SDK is only necessary for internal evaluations. Research points to the conclusion that SA is contingent on the existence of SDK between the business and IT domains. Improving SDK within PSOs like any other core competency takes time to develop, therefore; IT managers and business executives need a clear roadmap to build and maintain these capabilities.

This study suggests several implications for future research. First, this paper supports the critical role of SA in deriving value from IT investments and highlights the mediating role of SDK in PSOs. Future research could examine if SDK indirectly improves other aspects of IT. Second, future studies could include a more comprehensive conceptualisation and operationalisation of SA that better reflects its multi-dimensional nature. It is suggested that further research investigate whether the results are reproduced using other methods and in other contexts and industries. Moreover, it is important to study other factors (e.g., changing political environments) that might facilitate or inhibit SDK and subsequently influence SA.

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Author

Shuwen Ma, 1968.02, Jilin, China.

Current position, grades: an associate professor in Hangzhou College of Commerce, Zhejiang Gongshang University.
Scientific interest: information management and innovation management
Publications: 20 papers.