Summer 7-26-2022

Combining Intellectual Alignment and Social Alignment to Achieve Agility: Polynomial Regression and Response Surface Analysis

Zhou Zhang
School of Economics and Management, Jiangsu University of Science and Technology, Zhenjiang, 212000, China

Nianxing Wang
School of Economics and Management, Jiangsu University of Science and Technology, Zhenjiang, 212000, China

Full Research Paper

Combining Intellectual Alignment and Social Alignment to Achieve Agility: Polynomial Regression and Response Surface Analysis

Zhou Zhang, Nianxing Wang

School of Economics and Management, Jiangsu University of Science and Technology, Zhenjiang, 212000, China

Abstract: One of the difficulties and hotspots in the current information system (IS) research is determining how to combine the different dimensions of information technology (IT) alignment to better achieve agility under the condition of limited resources. To address this challenge, this study decomposes IT alignment into intellectual and social dimensions and examines the effects of balance and imbalance between them on agility in dynamic environments. Based on survey data from 245 dyads of business and IT executives, we apply polynomial regression and response surface analysis to assess these effects. Results indicate that a firm achieves more agility when intellectual alignment and social alignment are balanced and at high levels, and social alignment is higher than intellectual alignment. Furthermore, the relationship between agility and the balance of intellectual alignment and social alignment will be negatively moderated by environmental dynamism, and the relationship between agility and the combination of low intellectual alignment and high social alignment will be positively moderated by environmental dynamism.

Key Words: IT Alignment; Agility; Intellectual Alignment; Social Alignment; Environmental Dynamism

1. INTRODUCTION

Organizational agility, defined as the ability of firms to sense and respond effectively to market opportunities and threats in competitive environments, is critical for the survival and success of firms [1]. A large number of researches have identified business–IS alignment (hereafter, IT alignment) as the fit between business and information system (IS) operations that is essential to achieving agility [2]. Information technology (IT) alignment and organizational agility are thus considered two parallel organizational goals, where the effect of IT alignment on agility has generated considerable interest. To study the relation between IT alignment and agility, IS scholars have decomposed IT alignment into two distinct but interactive dimensions: intellectual alignment and social alignment. Although some scholars have noted that intellectual alignment and social alignment affect agility in different ways [3], they have not explained the effects of different combinations of intellectual alignment and social alignment on firm agility. These effects can be vary considerably, however, as firms attempting to increase agility have different challenges in deploying appropriate or limited resources in dynamic or uncertain business environments.

The main purpose of this study is to explore how firms can better combine intellectual alignment and social alignment to achieve agility. Researchers have suggested the importance of pursuing these alignments simultaneously. For example, if firms pursue a singular dimension of IT alignment, either favoring social or intellectual associations, imbalance between the two can eventually impede agility [4]. Yet it is often difficult for firms to pursue both intellectual alignment and social alignment over an extended period, as the two goals often compete for limited resources, thus creating a dilemma in resource allocation. Also, as organizational culture and circumstances shift over time, one form of alignment and associated relationships might be more relevant or important to a firm at any given point. The question nevertheless remains as to whether achieving a higher level of balance between the two will lead to greater agility. To help organizations achieve this goal, it is therefore

necessary to understand the advantages, disadvantages, and challenges of pursuing intellectual alignment and social alignment at equally low or high levels, separately, or to varying degrees, as well as their interactive or interdependent components. As their effects on agility are different in a stable or dynamic environment, this research investigates how environmental dynamism moderates the combination of these alignments in firm operations and their relationship with agility. The effect of the same combination of operations on agility in different settings differs [5], where the best combination in a stable environment may be the worst combination in a dynamic environment. In this context, a better understanding of the moderating effect of environmental dynamism is important, as it can show how firms can combine intellectual alignment and social alignment more effectively in different environments, and improve agility by investing in IT alignment.

This study contributes to the literature in two aspects. First, we empirically confirm the distinguished impact of different combinations of intellectual alignment and social alignment on agility. Second, we demonstrate that the combination of intellectual alignment and social alignment's relationship with agility is moderated by environmental dynamism.

2. THEORETICAL BACKGROUND

2.1 Relationship between IT alignment and agility

The relationship between IT alignment and agility has become a hot topic in IS research, scholars have carried out fruitful research on IT alignment. However, there are conflicting opinions regarding how IT alignment influences agility. In general, the previous literature has confirmed a positive effect of IT alignment on organizational outcomes (e.g., performance and agility). For instance, Tallon and Pinsonneault find that IT alignment is the key for enterprises to gain competitive advantage by promoting the agility of enterprises[6]. Bradley et al. demonstrate that IT alignment can promote the ability of enterprises to respond to external changes efficiently and flexibly[7]. Nevertheless, the opposing view is that IT alignment impedes agility. For instance, Gerow et al. shows that when the enterprise's architecture and process are set, the ability of IT system to flexibly integrate new business requirements will be reduced, which hinders enterprise agility[8]. Liang et al. found that the tight alignment between enterprise IT system and current strategy will hinder enterprise agility unless there is appropriate social interaction[3].

2.2 Dimensional view of IT alignment

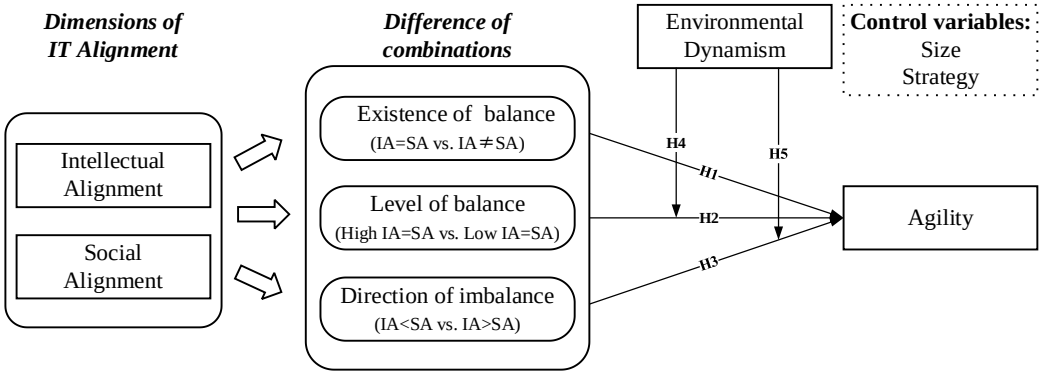
Due to the multiple conceptualizations and definitions of IT alignment, it is difficult to accurately describe how IT alignment influences agility [9]. Some scholars suggest that if related researches take the dimensional view of IT alignment, a better understanding of the IT alignment–agility relationship might be achieved . Two major ways have been proposed by IS scholars to dimensionalize IT alignment. The first was a strategic alignment model suggested by Henderson, which included six dimensions: business strategy, IT strategy, organizational infrastructure and process, and IS infrastructure and process. The second was proposed by Reich, consisting of two dimensions: intellectual and social alignment. In this study, we follow Reich's classification because it is theoretically concise, has been widely applied , and encompasses both strategy artifacts and human actors. These two dimensions are proposed to work simultaneously to influence organizational agility through different mechanisms. Table 1 summarizes the specific differences between the two dimensions of IT alignment.

Table 1. Dimensions of IT Alignment

	Intellectual alignment	Social alignment
Definition	The state in which a set of interrelated business and IT strategies exists [7].	The state in which business and IT executives mutually understand and are jointly committed to each other's mission, objectives, and plans [4].
Focus	The content of plans and planning methodologies.	The people involved in the formation of alignment .
Effect	The effect of intellectual alignment is explicit, manifested in artifacts such as strategic plans that are onto logically objective.	The effect of social alignment is tacit, manifested in mutual understanding that is ontologically subjective.

3. HYPOTHESES DEVELOPMENT

Based on the dimensional view of IT alignment, Fig.1 shows the research model.



Notes: IA: Intellectual alignment; SA: Social alignment

Figure 1. Research Model

3.1 Difference of balance and imbalance between intellectual alignment and social alignment

A balanced IT alignment indicates that intellectual alignment and social alignment are maintained at equal levels. When intellectual alignment and social alignment are balanced, firms can not only quickly mobilize integrated IT resources to enhance efficiency to cope with external threats and opportunities, but also facilitate collaboration between business and IT to explore new IT and market opportunities [10]. Imbalance between intellectual alignment and social alignment can be manifested in two directions: intellectual alignment is larger than social alignment or social alignment is larger than intellectual alignment. When intellectual alignment is higher than social alignment, it gives rise to inertia without enough coordination which restricts agility. When social alignment is higher than intellectual alignment, it leads to disorder and inefficiency which impedes the ability of a firm to respond quickly to change [11]. The positive effect of the two IT alignment dimensions on agility is not guaranteed unless they are pursued simultaneously, the following hypotheses can be put forward:

H1: Agility is higher when intellectual alignment and social alignment are balanced compared to when intellectual alignment and social alignment are imbalanced.

3.2 Difference of levels of balance between intellectual alignment and social alignment

When intellectual alignment and social alignment are balanced but low, meaning present in equal amounts but at low levels. The absence of enough information repositories and planned architectural designs increasing efficiency, combined with the absence of timely communication to propose innovative responses, suggests that it is unlikely to have a significant positive impact on agility. Yet when both intellectual alignment and social alignment are present at high levels, firms have more IT resources to cope with external threats and opportunities more effectively [12], and high social alignment can help firms respond to external changes by coordinating business and IT functions. Thus, high level of balance greatly improves ability of firms to sense and respond effectively to market opportunities and threats in a competitive environment. Thus, we propose the following hypothesis:

H2: Agility is higher when the level of balance between intellectual alignment and social alignment is high compared to when the level of balance is low.

3.3 Difference of direction of imbalance between intellectual alignment and social alignment

When intellectual alignment is higher than social alignment, it impedes agility. High intellectual alignment means such a large amount of IT investment that induces firms to continue following the previous established IT processes rather than make such adjustments timely and effectively in the face of unpredictable changes. Because of low social alignment, business and IT executives lack communication, cooperation and perspective integration to generate innovative IT solutions to eliminate the rigidity induced by intellectual alignment because of the low

social alignment. In this case, firms either tolerate the existing complex IT system, or abandon the old system to look for a new system that can support business processes. However, both methods will waste time, increase the cost of the enterprise, and finally lead firms to miss the opportunity [13]. Conversely, when social alignment is higher than intellectual alignment, it improves agility. Appropriate intellectual alignment can not only improve the response efficiency of predictable problems, but also avoid the problem that it is difficult to adjust in time when facing unpredictable problems. At the same time, high social alignment enhance communication and collaboration between business and IT executives, who can work together to explore possible new uses for existing systems and new market opportunities rather than endure or abandon them. Thus, we propose the following hypothesis:

H3: Agility is higher when social alignment is higher than intellectual alignment rather than when intellectual alignment is higher than social alignment.

3.4 Moderating effect of environmental dynamism

Low environmental dynamism represents a stable environment, changes in the external environment are predictable, intellectual alignment can provide an integrated IT system to facilitate business operations. Meanwhile, the negative effect of intellectual alignment is so low that social alignment can solve the negative effect of intellectual alignment. Therefore, agility is higher as the level of balance between intellectual alignment and social alignment increases in low environmental dynamism. On the contrary, high environmental dynamism represents a dynamic environment. It means that firms will face many unpredictable changes. A dynamic environment enhances potential pitfalls of intellectual alignment, social alignment cannot fully offset the negative impact of intellectual alignment, high intellectual alignment still has a negative impact on agility. Thus, we propose the following hypothesis:

H4: The relationship between agility and the balance of intellectual alignment and social alignment will be negatively moderated by environmental dynamism.

In a stable environment, firms do not need to face frequent changes and pursue significant new initiatives. Firms accelerate their business operations by relying on previous knowledge and routines, rather than newly created knowledge. It is unnecessary for firms to maintain the efficiency advantage brought by intellectual alignment through high level social alignment. Also, low level intellectual alignment represents business and IT strategies of firms unable to deal with external opportunities and threats. Therefore, the combination of low intellectual alignment – high social alignment does not lead to high agility in low environmental dynamism. In a dynamic environment, unpredictability increases the likelihood of divergence between IT and business strategies [14]. For firms in a dynamic environment, high level intellectual alignment will lead to inertia impeded agility. Instead, low level intellectual alignment will not lead to high negative effect. High social alignment is critical for enabling innovative responses in a dynamic environment [15]. Thus, we propose the following hypothesis:

H5: The relationship between agility and the combination of low intellectual alignment – high social alignment will be positively moderated by environmental dynamism.

4. RESEARCH METHODOLOGY

4.1 Variables measurement

Four latent variables including agility, intellectual alignment, social alignment, environmental dynamism need to be measured in this study. All items used the 7-point Likert scale format (1 = strongly disagree; 7 = strongly agree). All the measures of constructs in this study were adapted from the prior literature. In order to keep these measures consistent with our research context, we invited several IS professors, CIOs and senior business managers to evaluate the questionnaire. Following their suggestions, we made some modifications to the questionnaire. In addition, we control for the effects of firm size and firm strategy on all dependent variables.

4.2 Sample and data collection

We used survey data collected from 245 matched pairs of business and IT executive in the Chinese shipbuilding industry. After the financial crisis, the market is in an increasingly uncertain dynamic environment. In this dynamic environment, the different degrees of agility and IT usage of Chinese shipbuilding industry provide a suitable context for testing our research model. We developed two sets of questionnaires: the one for IT executives, the other for business executive. Intellectual alignment and social alignment were evaluated by both IT and business executives, but only business executives evaluated the agility and environmental dynamism, because business executives have a better understanding of the operation and external environment of firms. Table 2 presented information of the sample firms and survey respondents.

Table 2. Sample Characteristics (N=245)

	N	Percentage		N	Percentage
Sub-industry Group			Number of employees		
Shipyards	59	24%	< 1000	8	3%
ship outfitting	44	18%	1000 - 2499	79	32%
Ship coating	37	15%	2500 - 4999	99	41%
Power Equipment	20	8%	5000 - 9999	52	21%
Electric / Electronic Equipment	29	12%	> 10000	7	3%
Raw Material	28	11%	Business Executive Survey		
Other	28	11%	Chief Executive Officer	96	39%
Revenues (RMB)			SVP/VP, Business (Financial, Strategy, Operations)	127	52%
< 100 million (m)	3	1%	Other	22	9%
100 m - 500 m	84	34%	IT Executive Survey		
500 m - 1 billion (b)	108	44%	Chief Information Officer	70	28%
1 b - 10b	41	17%	SVP/VP, IT Director / IT Manager	165	68%
> 10 b	9	4%	Other	10	4%

5. DATA ANALYSIS AND RESULTS

5.1 Descriptive statistics and correlations of the variables

Table 4 presents descriptive statistics for the independent and dependent variables, including means and standard deviations. There is a positive correlation between intellectual alignment and agility, and a positive correlation between social alignment and agility. In addition, Table 4 shows that a positive correlation between intellectual alignment and social alignment. This result shows that intellectual alignment and social alignment are complementary

Table 4 Descriptive statistics and correlations of the variables

	Mean (SD)	Cronbach's α	CR	AVE	1	2	3	4	5	6
1.Size	0.498 (0.302)				**1**					
2.Strategy	1.894 (0.847)				0.007	**1**				
3.Envir	3.676(1.870)	0.932	0.932	0.881	0.108	0.007	**0.881**			
4.IA	3.939 (1.162)	0.962	0.962	0.904	0.048	0.013	0.027	**0.904**		
5.SA	4.247 (1.029)	0.968	0.969	0.968	0.035	0.109	-0.122	0.354***	**0.916**	
6.Agility	3.287 (0.892)	0.944	0.945	0.797	0.026	0.054	0.199**	0.158*	0.245***	**0.797**

Notes: 1. N = 245, *p < 0.05, **p < 0.01, ***p < 0.001; 2. Envir: Environmental dynamism, IA: Intellectual alignment, and SA: Social alignment; 3. Diagonal bold numbers are the square roots of AVE

5.2 Reliability and validity

We used SPSS 26.0 to assess the reliability and validity of the measurement. Table 4 shows that Cronbach's α and composite reliability (CR) of all variables are greater than the benchmark of 0.70, indicating good reliability. To assess the convergent validity of the measurement, we examined the average variance extracted (AVE) and the loading of all items. Table 4 shows that the AVEs of all variables are greater than the benchmark of 0.50, and the factor loadings of items are greater than the benchmark of 0.5. This result confirms a good convergent validity. The square roots of AVEs of all variables are greater than the inter-constructs correlations. This result indicates adequate discriminant validity. As shown in Table 4, two inter-construct correlations are lower than 0.60. Thus, multicollinearity is not a serious problem in our study.

5.3 Common method bias

Although we collected the data for intellectual alignment and social alignment from different respondents, paper-based survey could lead to common method variance (CMV) problems. We conducted two tests to evaluate CMV. First, in a Harman's one factor test, we identified four factors with eigenvalues greater than 1.0, which explain 79.107% of the total variance, and the first factor of the unrotated solution explains only 33.969% of the total variance, showing no indication of CMV. Second, a latent variable (common factor) was included in the measurement model. All items were made to load on both their theoretical constructs and on the common factor. However, this one with the common factor did not significantly improve the fit of the previous CFA model (ΔRMSEA = -0.009, ΔSRMR = -0.002, ΔCFI = 0.034, ΔTLI = 0.023). Taken together, there is evidence that CMV does not substantially affect our results.

5.4 Hypothesis testing

To test the hypotheses, a polynomial regression analysis was performed. Table 5 presented the parameter estimates from the polynomial regression analysis and four surface test values calculated from estimated regression coefficients. Model 1 was a baseline model, in which we only entered control variables in the regression equation. Model 2 was entered two main effect terms. In model 3, we added the quadratic terms and interaction terms. To test the moderating effect of environmental dynamism on the combination of intellectual alignment and social alignment's relationship with agility. In model 4, we added ED (environmental dynamism) as a moderator and products of the moderator with each of the original terms of model 3. The increase of R^2 from model 1 to model 2 was significant ($\Delta R^2 = 0.064$, $p < 0.001$), and a significant increase of R^2 from model 2 to model 3 ($\Delta R^2 = 0.034$, $p < 0.05$) indicate a quadratic relationship between two predictors and agility. In addition, Table 5 shows that R^2 increased by adding the interaction terms between the moderator and each of the five terms in the original polynomial regression equation ($\Delta R^2 = 0.035$,$p < 0.001$), it indicates that environmental dynamism moderates the relation between the combination of and agility. To further analyze the moderating mechanism of environmental dynamism, this study divides the sample into two subsamples based on the median of the moderating variable and then carry out a polynomial regression and a response surface analysis on the two subsamples.

Table 5. Results of polynomial regression analysis

Dependent Variables		Agility			
Model		Mode 1	Model 2	Model 3	Model 4
Constant (b_0)		3.432***	3.351***	3.427***	3.428***
Control Variables	Size	-0.076	-0.087	-0.137	-0.176
	Strategy	-0.057	-0.033	-0.012	-0.006
Independent Variable	IA (b_1)		0.062	0.006	-0.073
	SA (b_2)		0.185**	0.201***	0.201**
	IA^2 (b_3)			-0.049	-0.075

	IA × SA (b_4)			0.159**	0.155**
	SA^2 (b_5)			-0.087**	-0.104**
Moderator variable	ED				-0.069
	ED × IA				-0.091*
	ED × SA				-0.061
	ED × IA^2				-0.024
	ED × IA × SA				-0.016
	ED × SA^2				0.040
	R^2	0.004	0.068	0.102	0.211
	ΔR^2		0.064***	0.034*	0.109***
The lateral shift quantity	$(b_2-b_1) / [2*(b_3 - b_4 + b_5)]$		-0.332*		
Balance line (SA=IA)	Slope (a_1)			0.21**	
	Curvature (a_2)			0.02	
Imbalance line (SA=-IA)	Slope (a_3)			-0.20**	
	Curvature (a_4)			-0.30**	
ED		Low ED		High ED	
Constant		3.893***		3.107***	
Control Variables	Size	-0.563**		0.191	
	Strategy	-0.059		0.002	
Independent Variable	IA	0.086		-0.237**	IA
	SA	0.386**		0.091	SA
	IA^2	-0.045		-0.095	IA^2
	IA × SA	0.256*		0.092	IA × SA
	SA^2	-0.245**		-0.028	SA^2
Balance line (SA=IA)	Slope (b1+b2)	0.47**		-0.15	
	Curvature (b3+b4+b5)	-0.03		-0.03	
Imbalance line (SA=-IA)	Slope (b1-b2)	-0.30		-0.33**	
	Curvature (b3-b4+b5)	-0.55**		-0.22	

Notes: 1. *p < 0.05 **p < 0.01 ***p < 0.001. 2. All estimates are unstandardized. 3. Dependent variables are listed at the top of each column. 4. IA = Intellectual Alignment; SA = Social Alignment; ED = Environmental dynamism.

Hypothesis 1 suggests that agility is higher when intellectual alignment and social alignment are balanced compared to when intellectual alignment and social alignment are imbalanced. As shown in Table 5, the surface along the imbalance line curved downward (curvature = -0.30, p < 0.01). The surface in Fig. 2C indicates that it is an inverted U-shaped surface along the imbalance line. The results indicates that agility is higher when intellectual alignment and social alignment are balanced, and any deviation (i.e., moving to its right or left) decreases agility, thus supporting Hypothesis 1.

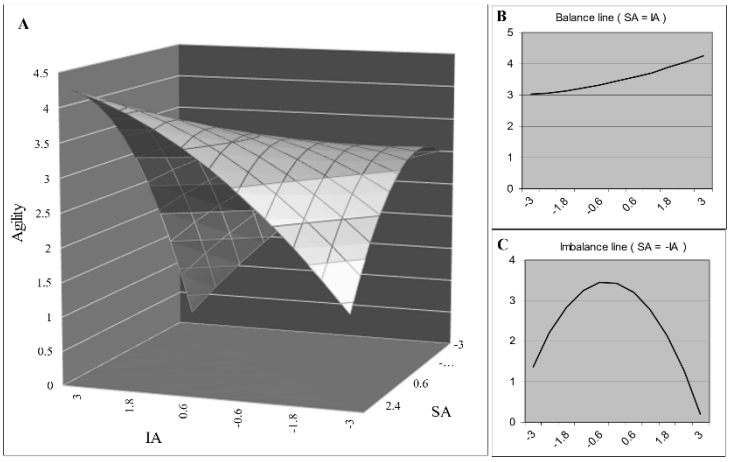


Figure 2. Response surface for agility

Hypothesis 2 suggests that agility is higher when the level of balance between intellectual alignment and social alignment is high compared to when the level of balance is low. As shown in Table 5, the slope along the balance line is significant and positive (slope=0.21, $p<0.01$), indicating that agility is higher when intellectual alignment and social alignment are both high as opposed to when both are low. Fig.2B also indicates that agility increases as the level of balance increases, thus supporting Hypothesis 2.

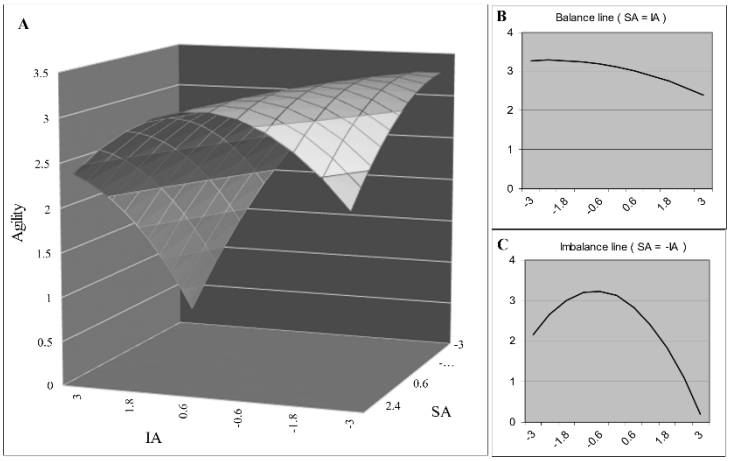


Figure 3. Response surfaces in low environmental dynamism

Hypothesis 3 suggests that agility is higher when social alignment is higher than intellectual alignment. As shown in Table 5, the lateral shift quantity= -0.332, 95% CI [-0.825, -0.023], excluding 0, and thus H3 is supported. Fig.2 also indicates that agility is higher at the front corner (IA < SA) than at the back corner (IA > SA).

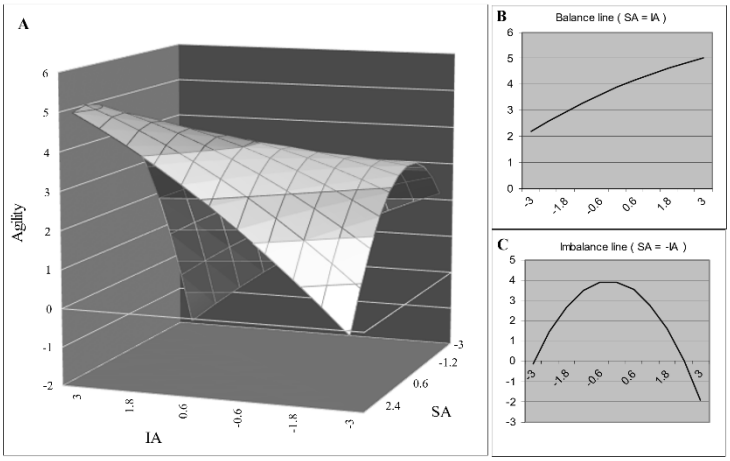


Figure 4. Response surfaces in high environmental dynamism

Hypothesis 4 suggests that compared to low environmental dynamism, the positive relationship between level of balance and agility would become negative in high environmental dynamism. As shown in Table 5, the slope along the balance line in low environmental dynamism is significant and positive (slope=-0.47, $p<0.01$), the slope along the balance line in high environmental dynamism is non-significant and negative (slope=-0.15, $p>0.05$). Fig.3B and Fig.4B demonstrate that the balance line in low environmental dynamism is upward and the balance line in high environmental dynamism is downward. The results indicate there is a positive relationship between level of balance and agility in low environmental dynamism, but a negative relationship in high environmental dynamism. Thus, Hypothesis 4 was supported.

Hypothesis 5 suggests that the relationship between agility and the combination of low intellectual alignment – high social alignment will be positively moderated by environmental dynamism. As shown in Table 5, the slope along the imbalance line in high environmental dynamism (slope =-0.30 $p<0.01$) is significant and larger than the curvature along the imbalance line in low environmental dynamism (curvature =-0.33 $p>0.05$); the curvature along the imbalance line in low environmental dynamism (curvature =-0.55 $p<0.01$) is significant and larger than the curvature along the imbalance line in high environmental dynamism (curvature =-0.22 $p>0.05$). Fig.3C and Fig.4C demonstrate that the left side of imbalance line (the combination of low intellectual alignment – high social alignment) in low environmental dynamism is lower than that in high environmental dynamism. The results indicate that the combination of low intellectual alignment – high social alignment leads to higher agility in high environmental dynamism rather than in low environmental dynamism. Thus, Hypothesis 5 was supported.

6. DISCUSSION

6.1 Theoretical implications

First, we find that the effect of different combinations of intellectual alignment and social alignment on agility is different. Specifically, the effect of the balance between intellectual alignment and social alignment is higher than the imbalance combination on agility. When intellectual alignment and social alignment are balanced, agility is higher as the level of balance improves. If intellectual alignment and social alignment are imbalanced, agility is higher when social alignment is higher than intellectual alignment rather than when intellectual alignment is higher than social alignment. We have a full understanding of the complex joint effects of intellectual alignment and social alignment.

Second, we find that the relationship between agility and the combination of intellectual alignment and social alignment will be moderated by environmental dynamism. Specifically, the relationship between agility and the balance of intellectual alignment and social alignment will be negatively moderated by environmental dynamism, and the relationship between agility and the combination of low intellectual alignment and high social alignment will be positively moderated by environmental dynamism. Our findings advance our understanding of the conditional effect of intellectual alignment by explicitly specifying environmental dynamism as an important boundary condition to assess how intellectual alignment influences agility.

6.2 Practical implications

First, our findings provide guidance for the allocation of limited firm resource between intellectual alignment and social alignment to achieve the desired levels of firm agility. At first, firms should strive for the balance between intellectual alignment and social alignment rather than imbalance. When intellectual alignment and social alignment are balanced, managers require to invest sustainably to achieve a significant boost from the original positing of balance between intellectual alignment and social alignment at high levels. If firms failed to achieve the balance, more resources should be devoted to intellectual alignment rather than social alignment.

Second, this study is of great practical significance to guide firms in the context of globalization how to deal with the dynamic and changing competitive environment. Specifically, in stable environments, firms should commit more resources to improving the level of balance between intellectual alignment and social alignment. In dynamic environments, firms should avoid the costs of maintaining intellectual alignment and commit more resources to building social alignment.

6.3 Limitations and future research

The sample of this paper is still cross-sectional data, it can not explain the dynamic causal relationship between IT alignment and agility. In the future, panel data can be used to study the causal relationships between them. A longitudinal study can enrich our understanding by offering information on the causal relationships between independent and dependent variables.

ACKNOWLEDGEMENT

This research was supported by the National Natural Science Foundation of China under Grant 71971101 and the Postgraduate Research & Practice Innovation Program of Jiangsu Province under Grant SJCX21_1735。

REFERENCES

[1] Park Y, El Sawy O A, Fiss P. (2017). The role of business intelligence and communication technologies in organizational agility: a configurational approach. Journal of the association for information systems, 18(9): 648-686.

[2] Kappelman L, et al. (2021). The 2020 SIM IT Issues and Trends Study. MIS Quarterly Executive, 20(1): 69-107.

[3] Liang H, Wang N, Xue Y, et al. (2017). Unraveling the Alignment Paradox: How Does Business—IT Alignment Shape Organizational Agility? Information Systems Research, 28(4): 863-879.

[4] Reich B H, Benbasat I. (2000). Factors that influence the social dimension of alignment between business and information technology objectives. MIS quarterly, 28(1): 81-113.

[5] Tallon P P, Queiroz M, Coltman T, et al. (2019). Information technology and the search for organizational agility: A systematic review with future research possibilities. The Journal of Strategic Information Systems, 28(2): 218-237.

[6] Tallon P P, Pinsonneault A. (2011). Competing Perspectives on the Link Between Strategic Information Technology Alignment and Organizational Agility: Insights From a Mediation Model. Mis Quarterly, 35(2): 463-486.

[7] Bradley R V, Pratt R M, Byrd T A, et al. (2012). Enterprise architecture, IT effectiveness and the mediating role of IT alignment in US hospitals. Information Systems Journal, 22(2): 97-127.

[8] Gerow J E, Grover V, Thatcher J, et al. (2014). Looking Toward the Future of IT–Business Strategic Alignment through the Past. MIS quarterly, 38(4): 1159-1186.

[9] Gerow J E, Grover V, Thatcher J. (2016). Alignment's nomological network: Theory and evaluation. Information & Management, 53(5): 541-553.

[10] Wagner H-T, Beimborn D, Weitzel T. (2014). How social capital among information technology and business units drives operational alignment and IT business value. Journal of Management Information Systems, 31(1): 241-272.

[11] Farr J. (2004), Social capital: A conceptual history. Political theory, 32(1): 6-33.

[12] Chau D C, Ngai E W, Gerow J E, et al. (2020). The Effect of Business–IT Strategic Alignment and IT Governance on Firm Performance: A Moderated Polynomial Regression Analysis. Management Information Systems Quarterly, 44(4): 1679-1703.

[13] Lu Y, Ramamurthy K. (2011). Understanding the link between information technology capability and organizational agility: An empirical examination. MIS quarterly, 35(4): 931-954.

[14] Sabherwal R, Sabherwal S, Havakhor T, et al. (2019). How does strategic alignment affect firm performance? The roles of information technology investment and environmental uncertainty. MIS Quarterly, 43(2): 453-474.

[15] Karahanna E, Preston D S. (2013). The effect of social capital of the relationship between the CIO and top management team on firm performance. Journal of Management Information Systems, 30(1): 15-56.