

Information Processing Needs and Capabilities of B2B Systems in Book Publishing Industry

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Abstract—This research applied the framework of information processing theory to investigate whether the information processing capabilities and the uncertainties from information processing needs can affect the B2B system performance of the book publishing companies. According to the findings of our empirical study, reduction of the demand uncertainty generally can improve the B2B system performances of cost saving, operational efficiency, satisfaction, and new business opportunity. Meanwhile, we also found that companies with low uncertainty on the factor of supply have better B2B system performances of turnover and market share than the ones with high uncertainty. However, the uncertainty factors of best-selling books, firm investment, and partner investment may not have significant impacts on the B2B system performances. From the perspective of information processing capabilities, enhancement of purchasing/sales/reconciliation functions is critical to the B2B systems if the performances of cost saving, turnover, and satisfaction are the most serious concerns of book publishing companies. On the other hand, the information processing capabilities of procurement/distribution and enquiries have no significant effects on the B2B system performances. Our results can help book publishing industry not only to evaluate where to start the reduction of uncertainties based on the needs of B2B information processing but also to prioritize the investments of B2B system capabilities in a performance-driven environment.

Index Terms—B2B system, information processing capability, information processing need

I. INTRODUCTION

In today's dynamic business environment, enterprise has to efficiently handle diversified needs of organizational tasks from the processing of information. How to match company's information processing capabilities with the needs for information processing is thus important to the design of organizational information structure from the perspectives of information processing theory [8]. This match is especially critical to the book

publishing industry because there is a high degree of uncertainty on information processing needs between business-to-business (B2B) participants such as publishers, printing houses and bookstores. This partnership uncertainty together with the complexity of channel diversification causes the media industry having relatively low e-maturity than the industries of banking, electronics, ICT services, insurance, and transport. According to the report of European Commission [7], only half of the media companies have adopted systems of electronic procurement. Besides, three-fourths of the investigated media companies were making less than 10% of their total sales online. Because the book publishing industry faces daunting challenges in the digital age, the enhancement of their e-maturity plays a strategic role to keep organizations remained competitive and viable.

To further understand the reasons why book publishing companies are hesitated about the implementation of electronic systems, this study adopted the information processing theory to evaluate whether the information processing needs and capabilities have significant impacts on B2B system performances for book publishing companies. As B2B commerce has evolved as a central platform of supply chain in recent years [17], agile companies are looking for the applications of B2B systems to exchange transaction information between business partners. While the capabilities of B2B systems may help companies to reduce the costs, cycle time, paper work, and manual errors during the processes of B2B transactions [1], complicated resource integrations and cross-company processes of B2B systems [14] may result in buyer-supplier mistrust or poor return on capital [13]. From the perspectives of information processing theory, companies can make efficient decisions with the data provided by their information systems if the information processing needs and capabilities can be balanced [9]. Although this theory has been applied to explain the information processing behaviors of supply chain

management systems and enterprise resource planning systems [9][14], there is lack of research using similar viewpoint to analyze the B2B systems of book publishing industry. Hence, two major hypotheses are proposed in section 2 of this paper to investigate the roles of information processing needs and capabilities on B2B system performances. The methodology and data collection methods used in this study are then addressed in section 3. We discuss the empirical findings of our proposed hypotheses in section 4 and conclude our research in section 5. Our results can help book publishing industry not only to evaluate where to start the reduction of uncertainties based on the needs of B2B information processing, but also to prioritize the investments of B2B system capabilities in a performance-driven environment.

II. HYPOTHESES

According to the information processing theory, uncertainties are the causes of information processing needs. The increase of the uncertainties for decision making generally raises the needs for information processing. Hence, companies should manage their business uncertainties through appropriate information processing mechanism for quality decision making [9]. According to the research of Premkumar, Ramamurthy, and Saunders [16], the uncertainties regarding information processing needs include environmental uncertainty and partnership uncertainty. While the environmental uncertainty is caused by the changing and complex surrounding of business, the partnership uncertainty depends on the level of trust and communication. To evaluate the dimensions of environmental uncertainty, this study considered the factors of demand, supply, and best-selling books in book publishing industry. The uncertainty from demand describes the gap of demand forecasting among publishers, printing houses, and bookstores. Because the demand forecasts are usually estimated by experienced managers without reliable historical data, the demand uncertainty leads to the needs of information processing. Meanwhile, supply uncertainty represents “the dynamism in the supply market in terms of availability of supplies, stability of the suppliers, consistency in quality, and prices” [16]. The impact of best-selling books on B2B partners is another important environmental uncertainty of book publishing industry. Companies are difficult to control book inventory and cash flow due to unpredictable selling period and trend of best-selling books. On the other hand, factors of trust, firm investment, and supplier investment are the major concerns of partnership uncertainty examined in this study. Because inter-organizational relationships between partners can affect the degree of trust in supply chain [12], the reduction of trust uncertainty can eliminate the needs of monitoring supply chain partners because each party can conform to other’s expectation with confidence [2]. To deal with the uncertainties of negotiations and transactions with B2B partners, intra-investments and inter-investments regarding infrastructure and process

reengineering can also help the improvement of information processing quality [16]. Because the implementation of B2B systems is supposed to reduce the above mentioned uncertainties for efficient system performances, the first major hypothesis (H1) proposed in this study is:

H1: Book publishing companies with lower uncertainties regarding information processing needs can have better B2B system performances than the ones with higher uncertainties.

Another important perspective of information processing theory is the capabilities of information processing. Balancing a functional fit between system capabilities and organizational needs is possibly the primary determinant of benefits from organization-wide applications of information technology [18]. To obtain the needed information processing capabilities, companies may invest in information systems or create lateral relations [15]. Because the creation of lateral relations involves with the discussion of organizational structure, this study only focuses on the functions of B2B systems for the analysis of information processing capabilities. Generally speaking, the key functions of B2B systems include e-cataloging, e-public bidding, e-transactions, e-collaboration, e-procurement, internet-based financial services, delivery and logistics, procurement, private negotiation, workflow management, collaborative project management, and outsourcing services [1]. Accordingly, the features of B2B systems in this study are classified into three major categories: (1) purchasing/sales/reconciliation, (2) procurement/distribution, and (3) enquiry. Although cost saving may be the only tangible benefits of B2B system implementation, other intangible advantages such as supplier relationships, quality of systems, efficiency of B2B transactions, and employee satisfaction may not be easily assessed [5]. There is also lack of researches addressing how B2B system capabilities affect business performance in book publishing industry. Therefore, the second major hypothesis (H2) of this study is to evaluate the role of B2B system capabilities on business performance. That is,

H2: Book publishing companies with higher information processing capabilities of B2B systems can perform better than the ones with lower capabilities.

The hypothesis H1 and H2 provide different aspects of information processing theory for book publishing companies. For example, companies should look for the reduction of uncertainties if hypothesis H1 is supported from data. Because this study categorized uncertainties into the factors of demand, supply, best-selling books, trust, firm investment, and partner investment, we further explored which factor of uncertainty significantly affects B2B system performances. Meanwhile, book publishing companies can understand which B2B function is critical to business performance from the findings of hypothesis

H2. Because we classified the information processing capabilities into the factors of purchasing/sales/reconciliation, procurement/ distribution, and enquiry, capabilities of B2B system should be invested first if they are found to be significantly associated with business performance.

III. DATA COLLECTION AND METHODOLOGY

To collect data for our hypothesis testing, a questionnaire was designed to measure the factors for the dimensions of environmental uncertainty, partnership uncertainty and information processing capabilities. Table I summarizes the measurements and their corresponding references for the factors of environmental uncertainties regarding information processing needs. For example, variables of sales uncertainty (X₁₁), forecast uncertainty (X₁₂), and data complexity (X₁₃) were used to measure the factor of demand uncertainty (C₁) [3]. Meanwhile, we adopted the measurements of service variability (X₂₁), sales variability (X₂₂), and supply variability (X₂₃) for the factor of supply uncertainty (C₂) [4]. To evaluate the factor of best-selling books (C₃), variables of revenue impact (X₃₁) and inventory control (X₃₂) [4] were considered. Questionnaire participants were asked to use a seven-point Likert rating scale, which ranges from strongly disagree (1) to strongly agree (7), to evaluate the above measurements for each factor.

TABLE I. MEASUREMENTS FOR THE FACTORS OF ENVIRONMENTAL UNCERTAINTIES

Factors	Measures	Reference Sources
Demand (C ₁)	Sales uncertainty (X ₁₁)	Buvik & John [2]
	Forecast uncertainty (X ₁₂)	
	Data complexity (X ₁₃)	
Supply (C ₂)	Service variability (X ₂₁)	Cannon & Perreault [4]
	Sales variability (X ₂₂)	
	Supply variability (X ₂₃)	
Best-selling books (C ₃)	Revenue impact (X ₃₁)	
	Inventory control (X ₃₂)	

From the perspective of partnership uncertainty, variables of integrity and commitment of partners (X₄₁), data authenticity between partners (X₄₂), information sharing between partners (X₄₃), contract fulfillment of partners (X₄₄), and process consistency between partners (X₄₅) were applied to examine the factor of trust (C₄) [11]. Indicators of infrastructure investment (X₅₁) and process reengineering (X₅₂) were adopted to measure the factor of firm investment (C₅), while the variables of infrastructure investment from partners (X₆₁) and process reengineering from partners (X₆₂) were used to measure the dimension of partner investment (C₆) [2][3]. Table II summarizes the above descriptions. Similarly, seven-point Likert scale was also used to measure the factors of partnership uncertainty.

TABLE II. MEASUREMENTS FOR THE FACTORS OF PARTNERSHIP UNCERTAINTIES

Factors	Measures	Reference Sources
Trust (C ₄)	Integrity & commitment of partners (X ₄₁)	Hart & Saunders [11]
	Data authenticity between partners (X ₄₂)	
	Information sharing between partners (X ₄₃)	
	Contract fulfillment of partners (X ₄₄)	
	Process consistency between partners (X ₄₅)	
Firm investment (C ₅)	Infrastructure investment (X ₅₁)	Bensaou & Venkatraman [2]
	Process reengineering (X ₅₂)	
Partner investment (C ₆)	Infrastructure investment from partners (X ₆₁)	Buvik & John [3]
	Process reengineering from partners (X ₆₂)	

To reflect the practical demands of information processing capabilities for B2B systems, this study collected the experts' suggestions from the book publishing companies and summarized 9 measurements for the dimension of information processing capabilities, which include the variables of inquiry/quotation (X₇₁), purchase/return (X₇₂), sales information (X₇₃), reconciliation (X₇₄), inventory information (X₈₁), procurement (X₈₂), logistics/distribution (X₈₃), delivery schedule (X₉₁), and catalog/book information (X₉₂) (see Table III). We also adopted the indicators of satisfaction, corporate image, partnership, new business opportunity, cost saving, turnover, market share, and operational efficiency to evaluate the performance of B2B systems [5]. These indicators were also evaluated by a seven-point Likert scale ranging from strongly dissatisfied (1) to strongly satisfied (7).

TABLE III. MEASUREMENTS FOR THE FACTORS OF INFORMATION PROCESSING CAPABILITIES

Factors	Measures
Purchasing/Sales/Reconciliation (C ₇)	Inquiry/Quotation (X ₇₁)
	Purchase/Return (X ₇₂)
	Sales information (X ₇₃)
	Reconciliation (X ₇₄)
Procurement/Distribution (C ₈)	Inventory information (X ₈₁)
	Procurement (X ₈₂)
	Logistics/Distribution (X ₈₃)
Enquiry (C ₉)	Delivery schedule (X ₉₁)
	Catalog/Book information (X ₉₂)

Before the analysis of hypothesis tests, statistics of Kaiser-Meyer-Olkin (KMO) and Cronbach's α were calculated to examine the sampling adequacy and internal consistency of each dimension (environmental

uncertainty, partnership uncertainty, and information processing capabilities). Acceptable minimums for KMO statistic and coefficient α are 0.5 and 0.6 respectively. Then the approach of principal component analysis was applied upon each factor listed in Table I, II and III. An orthogonal linear transformation is used in principal component analysis to convert a set of data of possibly correlated variables into principal components through the eigenvector analysis of either the covariance or correlation matrix. Accordingly, the first principal component was calculated such that it explains the greatest variance in the set of observations. Meanwhile, component loadings of variables for each factor were computed to see the correlations between variables and their corresponding factor. To confirm that measurement variables identified a priori are represented by a particular factor, component loadings should be 0.5 or higher. Those variables with low loadings may be eliminated from their pre-assigned factor [10]. Based on the evaluation of component loadings, principal component scores that represent the transformation of the data set into the new coordinate spaces defined by the principal components were also calculated for each factor. Companies are said to have high uncertainty on the factors of uncertainty regarding information processing needs if their principal component scores of factors are positive. On the other hand, companies having negative principal component scores on the factors of uncertainty regarding information processing needs were classified as the group of low-uncertainty. Accordingly, companies were categorized into high-uncertainty group and low-uncertainty group for the factors of demand, supply, best-selling books, trust, firm investments, and partner investments. Similarly, companies with positive principal component scores on the factors of information processing capabilities were classified as high-capability group, while companies with negative scores were categorized as low-capability group.

To check whether there are performance differences between low-uncertainty group and high-uncertainty group or between low-capability group and high-capability group, the approach of independent-sample t-test were adopted to examine our proposed hypotheses. Levene's test for equality of variances was also checked to evaluate whether the evaluated groups have equal sample variance. Results of Levene's tests help us to determine which approach of independent-sample t-test is suitable for our sample data. Significant t-statistics of hypothesis tests in this study indicate that lower uncertainty regarding information processing needs or higher system supporting capability on information capability can yield better performance from B2B systems.

IV. EMPIRICAL FINDINGS

To test the hypotheses proposed in section 2, empirical study was conducted against the companies of book publishing industry in Taiwan. A total of 175 questionnaires were distributed to the companies listed on the memberships of the Chinese Book Marketing

Development Association. To qualify for further analysis, companies should have implemented B2B information system for at least one year. After one month of data collection, we received a total of 100 responses with 57.1% response rate. Returned questionnaires were first examined their suitability for principal component analysis. Table IV summarizes the analysis results of sampling adequacy, internal consistency, and cumulative percentage of variance for the dimension of environmental uncertainty, partnership uncertainty, and information processing capabilities. As all of the KMO values exceed 0.5, principal component analysis is applicable for our samples. The Cronbach's α of these dimensions also indicate the internal consistency of our observations because all of the statistics are higher than 0.6. In addition, Kaiser's rule was applied to retrieve 3 components for each risk dimension. Because the cumulative percentage of variance are greater than 60% for all of the dimensions, derived components have sufficient explanation power for each presumed dimension.

TABLE IV. ANALYSIS OF SAMPLING ADEQUACY, INTERNAL CONSISTENCY, AND CUMULATIVE % OF VARIANCE

Dimension	KMO	Cronbach's α	Component Count	Cumulative % of Variance
Environmental uncertainty	0.652	0.770	3	71.538 %
Partnership uncertainty	0.620	0.832	3	77.121 %
Information Processing Capabilities	0.665	0.640	3	66.392%

The next important step of principal component analysis is to calculate the component loadings for each factor. Table V shows the results of component loadings of measurement variables. Because all of the component loadings are larger than the acceptance level of 0.5, our proposed factors can be appropriately represented by measurement variables. If managers look for directions of uncertainty reduction for each uncertainty factor, measurement variable with the highest loading is usually the first consideration. For the example of supply factor, companies can start with the solutions of uncertainty reduction for service variability because this variable has the highest component loading 0.890 under the factor of supply uncertainty. In addition, feature of sales information is the most important issue regarding the factor of C_7 because it has the highest component loading 0.921. Furthermore, we also computed companies' principal component scores for each factor. Companies with positive principal component scores on uncertainty factors were classified as high-uncertainty group, while companies with negative scores were categorized as low-uncertainty group. Besides, book publishing companies were also classified into high-capability and low-capability group according to the values of component loadings for each factor of information processing capability.

TABLE V. RESULTS OF COMPONENT LOADINGS

Dimension	Factor	Measurement Variables	Component Loading
Environmental Uncertainty	C ₁	X ₁₁	0.850
		X ₁₂	0.894
		X ₁₃	0.674
	C ₂	X ₂₁	0.890
		X ₂₂	0.593
		X ₂₃	0.711
	C ₃	X ₃₁	0.857
		X ₃₂	0.628
		X ₄₁	0.745
Partnership Uncertainty	C ₄	X ₄₂	0.828
		X ₄₃	0.793
		X ₄₄	0.722
	C ₅	X ₄₅	0.785
		X ₅₁	0.931
		X ₅₂	0.894
Information Processing Capabilities	C ₆	X ₆₁	0.831
		X ₆₂	0.940
	C ₇	X ₇₁	0.598
		X ₇₂	0.881
		X ₇₃	0.921
	C ₈	X ₇₄	0.858
		X ₈₁	0.559
		X ₈₂	0.915
		X ₈₃	0.904
C ₉	X ₉₁	0.687	
	X ₉₂	0.750	

For the convenience of discussion, the performance indicators are separated into internal performance indicators (cost saving, turnover, and operational efficiency) and external performance indicators (satisfaction, corporate image, partnership, new business opportunity, and market share). Hence hypotheses H1 and H2 can be divided into 3 and 5 sub-hypotheses for internal performance indicators and external performance indicators respectively. In the following discussion regarding hypotheses tests, we only list the results with significant t statistics by employing a 0.1 criterion of statistical significance.

Let's start with the findings of hypothesis H1 test regarding internal performance indicators. Table VI summarizes the results of hypothesis H1 tests based on Levene's test for equality of variances and independent-sample t-test. For the performance of cost saving regarding B2B systems, only the factor of demand has significant effects on performance. Because the F statistic (12.922) of Levene's test for the demand factor is significant, the variances of low-uncertainty companies and high-uncertainty companies are not equal for the demand factor. By using the unequal variance approach of independent-sample t-test, the positive and significant t statistic 1.663 implies that the book publishing companies with low uncertainty on demand factor generally have better performance of cost saving from their B2B systems than the ones with high uncertainty. For the performance of turnover regarding B2B systems, positive and significant t statistic (1.725) implies that the book

publishing companies with low uncertainty on supply factor generally have better performance of turnover from their B2B systems than the ones with high uncertainty. Furthermore, our findings indicate that the book publishing companies with low uncertainty on demand factor generally have better performance of operational efficiency from their B2B systems than the ones with high uncertainty because the t-test statistic of demand factor is significantly positive (1.817). But lower the uncertainty on best-selling books may not increase the performance of operational efficiency because its t-statistic (-2.121) is negatively significant. In short, only the factor of demand uncertainty can positively affect the performance of cost saving and operational efficiency. Besides, the B2B system performance of turnover can be positively influenced by the factor of supply uncertainty.

TABLE VI. RESULTS OF HYPOTHESIS H1 TESTS FOR INTERNAL PERFORMANCE INDICATORS

Performance	Factor	F	Sig.	t-test	p-value
Cost saving	H1 Demand	12.922	0.001	1.663	0.100
Turnover	H1 Supply	0.278	0.599	1.725	0.088
Operational efficiency	H1 Demand	5.443	0.022	1.817	0.072
	H1 Best-selling books	4.784	0.031	-2.121	0.036

To understand the relationships between information processing capabilities and internal performance indicators, findings of hypothesis H2 test regarding internal performance indicators are summarized in Table VII. For the performance of cost saving regarding B2B systems, the F statistics of 0.794 and 0.101 indicate that the variances of low-capability companies and high-capability companies can be considered equal for the factors of purchasing/sales/reconciliation and procurement/distribution. By using the equal variance approach of independent-sample t-test, only the factor of purchasing/sales/reconciliation has positive and significant t-statistic (1.840). It implies that companies with high capability on the factor of purchasing/sales/reconciliation generally perform better on cost saving than the ones with low capability. However, negative t-test statistic of -1.811 for the factor of procurement/distribution indicates that B2B system performance on cost saving may not be increased with higher capability on the function of procurement/distribution. For the performance of turnover, hypothesis H2 is also supported for the factor of purchasing/sales/reconciliation because its t-test statistic 1.709 is positively significant. But book publishing companies with higher information processing capabilities of procurement/distribution cannot perform better than the ones with lower capabilities. Similarly, hypothesis H2 regarding the performance of operational efficiency is not supported for the factor of procurement/distribution because of the negatively significant t-test statistic (-3.361). Accordingly, only the factor of purchasing/sales/reconciliation has positive and significant impact on the internal performances of cost saving and turnover.

TABLE VII. RESULTS OF HYPOTHESIS H2 TESTS FOR INTERNAL PERFORMANCE INDICATORS

Performance		Factor	F	Sig.	t-test	P-value
Cost saving	H2	Purchasing /Sales /Reconciliation	0.794	0.375	1.840	0.070
		Procurement /Distribution	0.101	0.751	-1.811	0.073
Turnover	H2	Purchasing /Sales /Reconciliation	0.403	0.527	1.709	0.091
		Procurement /Distribution	1.099	0.297	-2.684	0.009
Operational efficiency	H2	Procurement /Distribution	0.014	0.907	-3.361	0.001

Next, the findings of hypothesis H1 tests for external performance indicators are illustrated in Table VIII. Because we adopted 5 external performance indicators for B2B systems, our proposed hypothesis H1 can be divided into 5 sub-hypotheses. According to our analysis results, the book publishing companies with low uncertainty on demand factor generally have better B2B system performances of satisfaction and new business opportunity than the ones with high uncertainty because the corresponding t-statistics (3.401 and 2.496) are positively significant. Similarly, the findings of equal variance approach of independent-sample t-tests indicate that lower uncertainty on trust factor can yield better performances of corporate image and partnership from B2B systems. Meanwhile, book publishing companies with low uncertainty on the factor of supply generally perform better than the companies with high uncertainty. However, reducing the uncertainty factor of best-selling books cannot increase the performance of partnership because of its negatively significant t-test statistic -1.715. In short, the uncertainty factors of best-selling books, firm investment, and partnership investment do not have influential and positive impacts on the external performance indicators.

TABLE VIII. RESULTS OF HYPOTHESIS H1 TESTS FOR EXTERNAL PERFORMANCE INDICATORS

Performance		Factor	F	Sig.	t-test	P-value
Satisfaction	H1	Demand	5.745	0.018	3.401	0.001
Corporate image	H1	Trust	0.002	0.967	1.759	0.082
Partnership	H1	Best-selling books	1.344	0.249	-1.715	0.090
		Trust	0.009	0.926	2.184	0.031
New business opportunity	H1	Demand	1.363	0.246	2.496	0.014
Market share	H1	Supply	0.058	0.810	3.341	0.001

Finally, the findings of hypothesis H2 tests regarding external performance indicators are summarized in Table IX. Because only the t statistic for the hypothesis test regarding the performance of satisfaction and the capability factor of purchasing/sales/reconciliation is positive and significant, book publishing companies with high capability on purchasing/ sales/reconciliation usually

have better performance of satisfaction than the ones with low capability. On the other hand, the information processing capability factors of procurement/distribution and enquiry have no positive and significant impacts on the external performance indicators.

TABLE IX. RESULTS OF HYPOTHESIS H2 TESTS FOR EXTERNAL PERFORMANCE INDICATORS

Performance		Factor	F	Sig.	t-test	P-value
Satisfaction	H2	Purchasing /Sales /Reconciliation	4.784	0.031	3.207	0.002
Corporate image	H2	Procurement /Distribution	0.072	0.788	-2.998	0.003
Partnership	H2	Procurement /Distribution	0.315	0.576	-1.880	0.063
Market share	H2	Procurement /Distribution	0.106	0.746	-2.219	0.029

V. CONCLUSIONS

This research applied the framework of information processing theory to evaluate the information processing needs and capabilities of B2B systems in book publishing industry. Two major hypotheses were proposed to understand the roles of uncertainties and information processing capability on the performance of B2B systems. To evaluate the dimensions of environmental uncertainty, this study considered the factors of demand, supply, and best-selling books. Meanwhile, the factors of trust, firm investment, and supplier investment are the major concerns of partnership uncertainty in this study. Information processing capabilities of B2B systems were also categorized into enquiry, procurement/distribution, and purchasing/sales/reconciliation. According to the findings of our empirical study, uncertainty reduction of the demand factor generally can improve the performances of cost saving, operational efficiency, satisfaction, and new business opportunity. Because the variable of forecast uncertainty has the highest component loading on demand factor, manager should try to use related tools to enhance the reliability of demand forecast. Meanwhile, we also found that companies with low uncertainty on the factor of supply can have better performances of turnover and market share from B2B systems than the ones with high uncertainty. Managers should find suitable ways to reduce the divergence of book supply service because the measurement of service variability has the highest component loading. However, our investigation shows that the uncertainty reduction of best-selling books does not help the business performances from B2B systems. Hence, best-selling books may not be an important uncertainty factor for the needs of information processing. In short, the uncertainty factors of best-selling books, firm investment, and partner investment may not be the major concerns for the information processing needs of B2B systems.

On the other hand, our proposed second hypothesis is generally not supported from our empirical study except the function of purchasing/sales/reconciliation. If the

performances of cost saving, turnover, and satisfaction are the most serious concerns of book publishing companies, purchasing/sales/reconciliation is the most critical function of B2B systems. Among the functions of purchasing/sales/reconciliation, sales information is the most important feature to improve because it has the highest component loading. However, the information processing capabilities of procurement/distribution and enquiries have no significant effects on B2B system performances. Our research provides a practical mechanism for book publishing companies to evaluate where to decrease the uncertainty factors and to improve information processing capabilities in a performance-driven environment. Future research may test our proposed hypotheses in the other countries to see whether the findings of this study are universally applicable. Other methodology such as structural equation modeling may be applied to see how to balance the information processing needs and capabilities for better system performance.

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