

Performance Implications of Information Systems Strategy Planning within Zimbabwean Firms: a Context Approach

Ngwenya Bongani*

Faculty of Business, Solusi University, Bulawayo, Zimbabwe

*Corresponding author: nbongani@gmail.com

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Abstract Context consideration in Information Systems Strategic Planning has been premised as very important by several studies conducted in this area. However, there has not been systematic incorporation of contextual factors and the categorization of factors has not been made explicit and some factors have only been superficially examined. This study sought to examine the interrelationships amongst four domains of context and considered their influence on Information Systems Strategic Planning. The study also examined the corresponding impact of planning on business performance. For the purposes of this study, data was collected from 113 Zimbabwean companies and results revealed that the internal Information Systems context mediated the effects of environmental and organisational level variables on Information Systems Strategic Planning practice. The results further showed that Information Systems planning intensity and degree of integration with business planning was strongly influenced by managerial planning expertise, and had positive effects on business management's commitment to Information Systems as well as on Information Systems contribution to business overall performance. Results have important implications in organisational Information Systems Strategic planning and overall organisational performance.

Keywords: *information systems strategic planning, context, environment, strategy, planning expertise, commitment*

1. Introduction

Information Systems management takes a concerted effort that involves Information Systems Strategic Planning (ISSP). It is through it, that organizations can establish effective long-term use of Information Systems and ensure their support of organisational objectives. The entire process entails establishing priorities for implementation of new applications, developing policies and procedures for managing the Information Systems function and organizing Information Systems services, and construction of an overall, organization wide, information architecture to facilitate data and application integration. Several studies have been conducted and tried to improve ISSP practice within organizations by discussing planning problems, identifying factors critical to the success of planning efforts, and providing tools and methodologies for carrying out the process. Some of these studies examined the relationship between ISSP and various performance and other outcomes [20,25]. However, in contrast to those context free assessments, other studies have questioned the appropriateness of formal ISSP under varying contextual circumstances and examined a number of contextual variables for their effects on ISSP practice and its effectiveness. The approach of these studies and later on their work was mainly based on contingency theory and suggested that organizations which are unhappy with the contribution of

Information Systems to organisational performance would need to realign their ISSP to fit their context. The derivation and incorporation of contextual factors has not, however, been systematic: the categorization of factors has not been explicit and results have been mixed. It is this gap and contribution that this study sought to cover and make.

There is still lacking an empirically validated theory of ISSP in the Information Systems discipline that provides answers to some fundamental questions such as; what are the determinants of ISSP practice? Which contextual factors are important and how strong are their influences? And how important is planning to improving Information Systems performance? As it has been mentioned above the purpose of this study was to address some of these gaps. Firstly, the researcher examined the interrelationships amongst variables selected from four domains (the external environment, outside of the organization's control; the internal organization context; the internal Information Systems context, factors that characterize the internal Information Systems/Information Technology; and the managerial context, attitudes, belief systems and experience of managers responsible for making choices) and their influence on ISSP. Secondly, examined was the effect of ISSP on Information Systems performance, including consideration of the effect of business management's commitment to Information Systems.

It is appreciated that most of these empirical studies of ISSP have been conducted in developed, high-income economies, particularly in the USA, UK, Singapore,

Australia, and Canada. However, issues such as improving Information Systems strategic planning and the alignment of Information Systems with business are of late growing in importance for Information Systems executives in developing, middle income economies as well. Information Systems has fast become a strategic resource for firms in developing economies as well. It is for this reason that the focus of Information Systems management should shift from a technology-based focus to business-relationship issues. Conducting this study in Zimbabwe has provided the researcher with an opportunity to consider how to extend ISSP results from developed economies into the developing economies context.

2. Literature and Theoretical Framework

The introduction or background of this study alluded to several literature on Information Systems management and Information Systems Strategic Planning. In this section, literature that informs and derives the theoretical framework for this study was reviewed. There are key theoretical perspectives that are discerned from literature. These are the two important dimensions of ISSP practice (planning intensity and planning integration) which are affected by the internal Information Systems context (dependence on Information Systems) as well as managerial context (managerial planning expertise). The theoretical framework further considered the indirect effects of the external environment context (environmental dynamism) and internal organisational context (strategic orientation) on ISSP practice through their effects on dependence on Information Systems. According to the theoretical framework derived, ISSP was expected to

accrue planning benefits, including business commitment to Information Systems and improved Information Systems Performance. This relationship is hypothesized later in this section below.

The external environment context deals with the external factors resulting in environmental dynamism. The study premise that environmental dynamism invokes a strategic need for Information Systems in an organization. Information Systems reduces uncertainty by improving both internal and external information flow across the supply chain [22]. Different strategic orientations have different information needs; organizations will depend on their Information Systems to provide this and ensure the successful implementation of business strategy. The study further premises that a contingency relationship between context, planning and performance lies at the centre of strategic management theory [35]. Planning intervenes between context and performance and accrues benefits. The commitment of business to Information Systems, is considered an internal organisational planning benefit while the higher-order benefit of planning reflects its objective to improve the contribution of Information Systems to overall business performance. The researcher proposed the conceptual frame work from the literature above. See Figure 1 below.

The theoretical framework for this study was also influenced by upper echelons theory, which views organizations as reflections of their management team philosophy and thus an attempt to understand organisational actions and outcomes must include an assessment of the top managers responsible for making strategic decision choices.

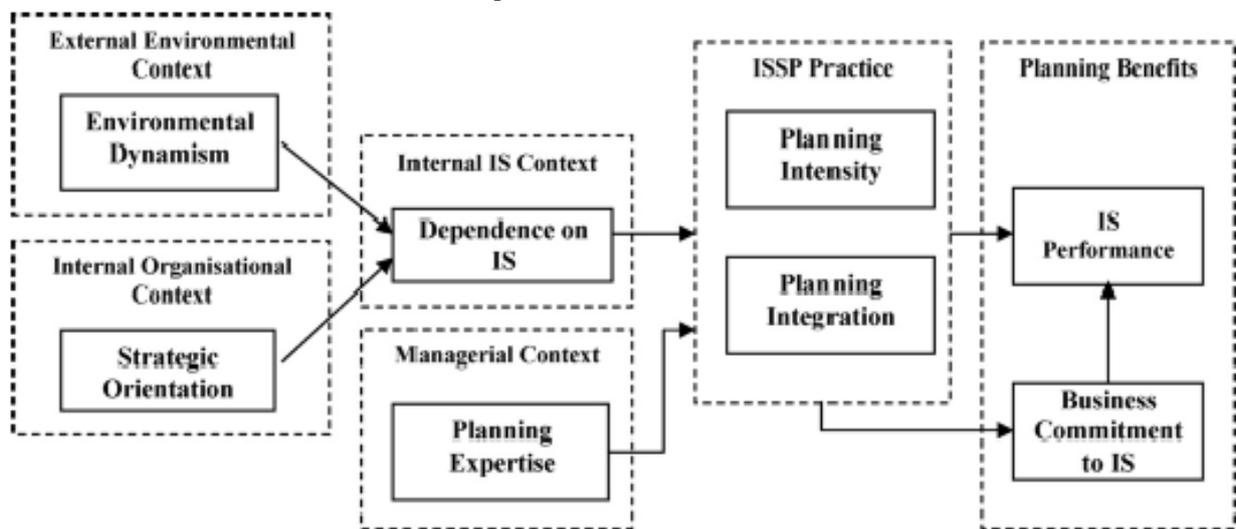


Figure 1. Conceptual model

2.2. Research Variables and Hypotheses

2.2.1. External Environmental Dynamism

All organizations operate in dynamic environments. Organizations become susceptible to external environmental dynamism if external changes occur at such a rapid pace that renders their products or services, technologies, and practices quickly become obsolete. Some prior ISSP studies, attempted to link environment

directly to ISSP practice. However, their results were inconclusive; some report that environmental uncertainty will result in less analysis during planning [27], others find that environmental uncertainty leads to increased planning comprehensiveness [28] and improved alignment with business planning [8]. Still, others have not confirmed effects [32] or have reported mixed results [18]. This study offers an alternate perspective: it proposes an intermediary linkage to ISSP through the environment's

effect on organisational dependence on Information Systems.

Organizations operating in dynamic environments need Information Technology to help them monitor the changing market needs, coordinate internal responses to change, and maintain profitability by increasing internal efficiencies [33]. In dynamic environments, Information Technology plays a critical role in helping organizations to reduce cycle times, manage inventory and improve customer satisfaction [14]. Prior studies also support the effect of environmental dynamism on Information Technology dependence. Thus:

Hypothesis 1. The greater the degree of environmental dynamism, the greater will be organisational dependence on Information Systems.

2.2.2. Business Strategic Orientation

The strategic orientation (business strategy) of an organization has generally been viewed as a factor that exerts primary influence on Information Systems use and management, despite the possible effect of other organisational factors such as size and structure. In other words it takes a planned business strategy of organisational response to the marketplace and external environment. According to Miller [16] it can be measured along the dimensions of innovation-differentiation and conservative cost control, each of which is a continuum; the first captures the extent to which an organization adopts a proactive, offensive stance, exploiting opportunities, and differentiating its products or services: these are key characteristics of prospector and differentiation [19] oriented organizations. This can be contrasted with defenders or cost leaders who devote considerable attention to cost control, exploiting efficiencies, and maintaining a defensible position in a stable product-market domain. Some studies [3,26] suggest that strategic orientation influences Information Systems use within firms and is thus an important contextual factor in the study of ISSP practice.

More conservative organizations would require systems that supported cost control and efficiencies in operations and that their information processing requirements would usually be routine; on the other hand, innovative differentiators require systems that support flexibility and diversity in operations, with requirements that vary and are dynamic, and enable fast responses to changing market conditions. Furthermore, reference [26] found that alignment between business and Information Systems is more important for the business performance of prospectors than defenders, thus illustrating greater dependence on Information Systems for prospector oriented organizations. Thus:

Hypothesis 2. The greater the degree of innovation-differentiation in an organization's strategic orientation, the greater will be organisational dependence on Information Systems.

2.2.3. Organisational Dependence on Information Systems

There are two major objectives of firms' dependence on Information Systems: i.e. operational effectiveness and strategic positioning [24]. McFarlan *et al.*, [13] suggest a strategic grid that identifies different roles played by Information Systems within organizations. They premise

that it depends on how critical Information Systems applications are related to business operations and how important Information Systems opportunities drive business strategy. Several authors concur that organisational dependence on Information Systems is the most important of all internal Information Systems context variables in the study of Information Systems management practice [2].

Organizations with a strategic dependence upon Information Systems, formal planning, carefully consider implementation, and meticulous monitoring to ensure that strategic advantages from the Information Systems are achieved [10]. Comprehensiveness in planning will be needed because ad hoc, incremental and disconnected approaches to Information Systems strategy formulation will not ensure a return on the investment [34]. Firms with a strategic role for Information Systems will also need to link Information Systems planning to the business plan. Thus:

Hypothesis 3. The greater the organisational dependence on Information Systems, the greater will be the intensity of ISSP.

Hypothesis 4. The greater the organisational dependence on Information Systems, the greater will be the degree of ISSP-BSP integration.

2.2.4. Managerial Strategic Planning Expertise

Most of the previous studies in ISSP, have limited managerial context factors to the study of the effects of Chief Information Officer Rank; e.g. [12], despite the recognition that other managerial factors may be equally important. It is for this reason that to be able to better understand the variations in ISSP practice, the theoretical framework of this study drew on the upper echelons perspective and included a managerial variable, 'planning expertise'. Adopting Hopkins and Hopkins [7], managerial planning expertise was defined in this study as managers' knowledge and expertise to successfully engage in the strategy planning process, and is considered an important managerial determinant of Information Systems planning practice.

Adequate knowledge of ISSP and availability of methodologies are critical to the selection of appropriate approaches to Information Systems planning [5]. In other words sufficiently qualified and experienced personnel involved in Information Systems planning are critical to generating a sound Information Systems plan. Without such expertise, organizations are likely to forego Information Systems planning, or outsource Information Systems planning from consultants [1]. Experience and familiarity with Information Systems planning will affect the planning team's ability to overcome a lack of available information during planning, to identify relevant variables, and to ask appropriate questions [29]. Therefore:

Hypothesis 5. The greater the planning expertise of Information Systems managers, the greater will be the intensity of ISSP.

Hypothesis 6. The greater the planning expertise of Information Systems managers, the greater will be the degree of ISSP-BSP integration.

2.2.5. Information Systems Strategy Planning

Some researchers, e.g. [15], have identified planning dimensions by conceptualizing the ISSP process in terms

of its phases; others suggest conceptualization along content and process dimensions (what gets done and how they get done). In this study, two dimensions reflecting the content and process dimensions were included: planning intensity, the emphasis placed on various strategic planning activities [21], and planning integration, to ensure alignment of Information Systems and business objectives and to create awareness amongst business managers of the strategic potential of Information Systems.

Integrated approach to Information Systems and business planning processes bring Information Systems stakeholders together and help establish their mutual understanding of the value of Information Systems and its role in the organization, resulting in increased top-management commitment to Information Systems. Planning benefits accrue from managerial participation in the planning process. Thus:

Hypothesis 7. The greater the intensity of ISSP, the greater will be the business commitment to Information Systems.

Hypothesis 8. The greater the degree of ISSP-BSP integration, the greater will be the business commitment to Information Systems.

2.2.6. Commitment to Information Systems

Information Systems planning can result in immediate internal benefits, such as improved understanding of the potential contribution and role of Information Systems and improved managerial commitment and support for Information Systems. While higher-order financial and market effectiveness benefits of planning appear later. Commitment is important in ensuring successful implementation of Information Systems objectives, and can be conceived as the feelings of business executives that Information Systems objectives are important and relevant to them, that Information Systems contributes to overall business performance, and therefore that Information Systems objectives are important [23]. According to Gerbing *et al.*, [6] planning benefits, including commitment, result from planning process characteristics such as the quantity and quality of management participation.

High commitment of the business to Information Systems is characterized by enthusiasm and positive demonstration of support for Information Systems efforts [4]. If commitment is absent, the ability of Information Systems to contribute to organisational performance will be compromised. Managerial hesitancy, negative attitudes and doubts, and delaying initiatives will adversely affect Information Systems performance, while commitment will translate into proactive cooperation [17], the provision of resources necessary for Information Systems plan implementation, and support for corresponding organisational changes. Thus:

Hypothesis 9. The greater the business commitment to Information Systems, the greater will be IS performance.

2.2.7. Information Systems Performance

Information Systems performance, also referred to as Information Technology business value, is the extent to which improvements in the operational, managerial and strategic performance of an organization can be attributed to Information Systems. This assertion is consistent with

reference [26]'s conceptualization, which focuses on "the contribution of Information Systems products" to overall organisational success, based on Premkumar and King's "contribution of Information Systems to overall organisational performance" variable.

Information systems strategic planning plays a critical role in helping firms visualize the potential contribution of Information Technology by identifying broad initiatives, specific applications and critical technologies to help the organization carry out its business strategy more effectively [9]. It also prevents wasted resources and missed opportunities. Sophisticated ISSP improves organisational use of Information Systems by focusing on an analysis of internal processes and patterns of data dispersion, and identifying strategic applications capable of providing competitive advantage [30]. Thus:

Hypothesis 10. The greater the intensity of ISSP, the greater will be Information Systems performance.

Hypothesis 11. The greater the degree of ISSP-BSP integration, the greater will be Information Systems performance.

3. Research Methodology

3.1. The Instrument

In order to conduct this empirical study a structured questionnaire with a five-point Likert type scales was constructed and administered to capture information from senior Information Systems executives of 113 companies in Zimbabwe. Multiple items from literature and theoretical framework were adopted to measure planning intensity of ISSP and ISSP-BSP integration, while dynamism measured the extent to which changes in the external business environment made the firm's unit's products/services, technologies and competitive practices quickly obsolete. Three items consistent with Miller's innovation differentiation dimension of strategic orientation measured the extent to which a firm attempted to innovate with its products/ services. Organizational dependence on Information Systems was measured in terms of the operational and strategic contribution of Information Systems to the company.

Seven items, which drew on prior measures of the McFarlan grid, were used to reflect the extent to which an organization is critically dependent on Information Systems to support its operations and the importance of Information Systems and applications under development for competitive success. A four-item scale was developed to measure planning expertise. Three items were used to measure managerial commitment to Information Systems. Information Systems performance was measured as the executive's perception of the extent to which improvements in five measures of organisational performance could be attributed to Information Systems. In the absence of objective performance measures, a perceptual measure of performance have been considered acceptable surrogates in both business planning and Information Systems planning, and have been considered generally consistent with objective measures. See Table 1 below for the objective measures of the study extracted from the instrument.

Table 1. Measures of the study's constructs

Construct	Measurement
Environmental dynamism ^a	(DYN1)Changes in the external business environment make the organisational unit's products/services quickly obsolete [16] (DYN2)Changes in the external business environment make the organisational unit's technologies quickly obsolete [16] (DYN3)Changes in the external business environment make the organisational unit's competitive practices quickly obsolete [16]
Degree of innovation-differentiation in strategic orientation ^a	(STRAT1)The organisational unit provides a variety of products or services [31] (STRAT2)The organisation unit makes frequent changes (especially additions) to products/services that it offers [16,31] (STRAT3)The organisation unit is a pioneer attempting to be first in introducing innovative products/services [31]
Planning expertise ^b	(PEXP1)Experience in information systems strategic planning (PEXP2)Familiarity with various ISSP methodologies [1] (PEXP3)Expertise in ISSP concepts [1,29] (PEXP4)Overall knowledge of ISSP [5,29]
Organisational dependence on IS ^a	(DEP1)Future systems will be vital for the organisational unit's long-term strategic objectives [13] (DEP2)Future systems will be a primary source of competitive advantage for the organisational unit [13] (DEP3)Future systems will provide the organisational unit with new business opportunities [13] (DEP4)Future systems will enable the organisational unit to compete in new ways [13] (DEP5)The organisational unit is critically dependent on current IT systems for its daily operations [13] (DEP6)Manually processing the data of critical operations to keep the business running is impossible [13] (DEP7)One hour shut down of information systems today will cause major disruption in the organisational unit [13]
ISSP planning intensity ^c	(ANAL1)Assessing the impact of future technologies on the organisation [21] (ANAL2)Exploring opportunities for competitive use of IT [15,21] (ANAL3)Analysis of current IT environment within the organisation [15,34] (ANAL4)Analysis of external business environment and competitive trends relevant to IS [15,21,34] (ANAL5)Analysis of Organisation's business strategy and identification of opportunities for use of IS to support this strategy [21,34] (ANAL6)Analysis of business processes that would benefit from IS [15,21]
ISSP-BSP integration ^d	(INTG1)The use of a steering committee consisting of IS, user and senior business management (INTG2)Senior business management involvement in ISSP [11] (INTG3)Participation of IS manager[s] in strategic business planning [11,21] (INTG4)Business units/departments regularly communicating their plans to IS management [11]
Commitment to IS ^a	(COMM1)Business executives regard the achievement of IS/IT objectives as important to organisational success [23] (COMM2)Business executives go out of their way to maintain a strong working relationship with IS managers [17] (COMM3)Business executives frequently demonstrate enthusiasm for the IS function's efforts [4]
IS performance ^e	(PERF1)Growth in the organisational unit's market share attributable to IS [20] (PERF2)Growth in the organisational unit's profitability relative to competitors attributable to IS [20] (PERF3)Improved competitive position of the organisational unit attributable to IS [20] (PERF4)Improved internal efficiency of the organisational unit's operations attributable to IS (PERF5)Improved decision making effectiveness of the organisational unit attributable to IS

^a Measured on a 5-point scale 1 = strongly disagree to 5 = strongly agree.

^b Measured on a 5-point scale 1 = very low to 5 = very high.

^c Measured on a 5-point scale 1 = very low emphasis to 5 = very high emphasis.

^d Measured on a 5-point scale 1 = not at all important to 5 = very important in your process.

^e Measured on a 5-point scale 1 = very little extent to 5 = very large extent.

3.2. Sampling

Although not necessarily representative of all Zimbabwean companies, the 113 companies were chosen because the companies were medium to large firms, and were expected to be concerned with Information Technology management issues and probably using Information Technology for strategic purposes. Consistent with other previous studies, the head of Information Systems/Information Technology within each company was the targeted respondent. In companies where the responsibility for Information Systems management practices lay in the individual business units, the questionnaire was mailed to the senior Information Systems executive of the company's primary or core business unit. The questionnaire together with the covering letter was mailed personally, where possible, to the targeted respondent.

4. Analysis of Data

Before performing the model testing the researcher conducted an initial testing for validity and reliability,

where the Principal Components Factor Analysis was carried out to assess the underlying factor structure of the scale items. This analysis was carried out on each theoretically defined construct, in order to assess its unidimensionality. For all constructs, single factors emerged, with the exception of organisational dependence on Information Systems. Two dimensions emerged reflecting its operational and strategic contributions. To facilitate subsequent analysis, composite scores were calculated for these two dimensions as the aggregate of their items weighted equally. Principal Components Factor Analysis was then rerun with all the items, which were divided a priori into three groups reflecting (1) exogenous variables (dynamism, strategic orientation and managerial planning expertise), (2) endogenous variables (dependence on Information Systems, Information Systems Strategic Planning practice, and commitment), and (3) dependent Information Systems performance construct. The factor structures supported the theoretically defined constructs. Cronbach's alpha confirmed the reliability of the scales. Results are summarized and

shown in Table 2 below. Table 2 is a summary of Table 3, Table 4, Table 5 and Table 6 below.

Table 2. The summary for the Principal Components Factors Analysis results

Principal Component Factor Grouping	Cronbach`s alpha coefficient and conclusion drawn
1. Organisational dependence on Information Systems	Strategic: There is a significant strategic dependence on information systems, with an alpha coefficient of 0.86. This indicates and confirms the reliability of the scales and hence the reliability of the total instrument. Operational: The operational dependence also reflects a significant reliability, with an alpha coefficient of 0.52.
2. Exogenous Variables – dynamism, strategic orientation and managerial planning expertise	Planning expertise: The Cronbach`s alpha coefficient of 0.92 indicates a very strong reliability of the instrument used in the study. Environmental dynamism: The alpha coefficient of 0.80 strongly confirm the reliability of the instrument. Innovation-differentiation: The alpha coefficient of 0.69 are significant.
3. Endogenous Variables – dependence on Information Systems, Information Systems Strategic Planning practice and commitment	Planning intensity: The endogenous variable-planning intensity indicates a significant alpha coefficient of 0.91. ISSP-BSP integration: The endogenous variable-ISSP-BSP integration has an alpha coefficient of 0.69. Commitment: Has an alpha coefficient of 0.78. Dependence on IS: Has an alpha coefficient of 0.60. All these Cronbach`s alpha coefficients confirm the reliability of the instrument.
4. Dependent Performance Variable	IS Performance: The Cronbach`s alpha coefficient of 0.86 is quite significant and strongly confirms the reliability of all the scales in the dependent variable section of the instrument.

Table 3. Principal Components Factors Analysis results for organisational dependence on Information Systems(varimaxrotation)

Item	Strategic	Operational
DEP1	0.61	
DEP2	0.84	
DEP3	0.89	
DEP4	0.88	
DEP5		0.72
DEP6		0.80
DEP7		0.53
Cronbach`s α	0.86	0.52

Table 4. Principal Components Factor Analysis results for exogenous variables (varimax rotation)

Item	Planning expertise	Environmental dynamism	Innovation-differentiation
PEXP1	0.91		
PEXP2	0.89		
PEXP3	0.89		
PEXP4	0.92		
DYN1		0.82	
DYN2		0.85	
DYN3		0.84	
START1			0.74
START2			0.81
START3			0.80
Cronbach`s α	0.92	0.80	0.69

Table 5. Principal Components Factor Analysis results for endogenous variables (varimax rotation)

Item	Planning intensity	ISSP-BSO integration	Commitment	Dependence on IS
ANAL1	0.72			
ANAL2	0.77			
ANAL3	0.81			
ANAL4	0.81			
ANAL5	0.90			
ANAL6	0.80			
INTG1		0.69		
INTG2		0.72		
INTG3		0.71		
INTG4		0.68		
COMM1			0.65	
COMM2			0.89	
COMM3			0.84	
Strategic				0.85
Operational				0.71
Cronbach`s α	0.91	0.69	0.78	0.60

Table 6. Principal Components Factor Analysis results for dependent performance variable

Item	IS performance
PERF1	0.84
PERF2	0.85
PERF3	0.84
PERF4	0.76
PERF5	0.71
Cronbach`s α	0.86

4.1. Model Testing

The PLS approach to Structural Equation Model was employed to test the study's 11 hypotheses. PLS-Graph ver 3.00 build 1126 was used. Structural Equation Model incorporates latent constructs and their observed indicators into the analysis but it does not provide model fit indices. Instead, statistics were used to confirm the predictive power of the model. Analysis of the model proceeded in two phases. First an analysis of the measurement model was undertaken, and then an analysis of the structural model. The measurement model represented the relationships between the latent constructs and their indicators or measures. For the organisational dependence on Information Systems construct, scores representing operational and strategic dependence were modeled.

For all other constructs, the original scale items were modeled. All constructs were in the reflective mode. Table 7 below presents results of the test.

As individual indicator reliability was established, the measurement model showed that all loadings exceeded 0.65 and were statistically significant. Scale reliability of the constructs was established by calculating Fornell and Larcker's measure of internal consistency—all were greater than 0.7. Examination of the average variance extracted (AVE) for each latent construct showed that all had AVE's in excess of 0.5 indicating that the constructs

explain more than 50% of the variance in their observed measures. Convergent validity was thus established.

Discriminant validity was also established by ensuring that the variance shared between two constructs was less than the variance shared between a construct and its indicators. This was achieved by examining the square

root of the construct’s AVE, which was greater than the correlation between that construct and other constructs in the model. See Table 8 below. This analysis satisfied requirement for reliability, convergent and discriminant validity.

Table 7. Tests of the measurement model

Construct and indicators	Item loading ^a	Internal consistency ^b	AVE ^c	SQRT of AVE ^d	Cronbach α	Mean ^e
Dynamism		0.88	0.71	0.84	0.80	2.5(0.73)
DYN1	0.84(20.8)					
DYN2	0.83(13.8)					
DYN3	0.86(16.4)					
Innovation-differentiation		0.83	0.61	0.78	0.09	3.5(0.85)
START1	0.75(8.1)					
START2	0.80(12.1)					
START3	0.81(12.5)					
Dependence on IS		0.83	0.72	0.85	0.60	3.9(0.60)
Strategic	0.85(22.4)					
Operational	0.84(19.6)					
Planning expertise		0.94	0.81	0.90	0.92	3.1(0.87)
PEXP1	0.91(38.3)					
PEXP2	0.89(39.6)					
PEXP3	0.89(35.8)					
PEXP4	0.92(52.9)					
Planning intensity		0.93	0.09	0.83	0.91	3.6(0.86)
ANAL1	0.80(19.0)					
ANAL2	0.84(23.1)					
ANAL3	0.79(18.6)					
ANAL4	0.87(37.6)					
ANAL5	0.89(41.0)					
ANAL6	0.81(22.1)					
ISSP-BSP integration		0.82	0.53	0.73	0.09	4.1(0.69)
INTG1	0.75(11.5)					
INTG2	0.78(12.9)					
INTG3	0.72(10.3)					
INTG4	0.66(6.2)					
Commitment		0.87	0.68	0.82	0.78	3.4(0.69)
COMM1	0.86(30.6)					
COMM2	0.86(22.7)					
COMM3	0.76(13.6)					
IS performance		0.90	0.64	0.80	0.86	3.2(0.70)
PERF1	0.82(19.2)					
PERF2	0.85(25.8)					
PERF3	0.85(30.1)					
PERF4	0.77(14.9)					
PERF5	0.69(10.3)					

- a. PLS item loading-bootstrapping confirmed significant t-values for all loadings, t-values in brackets.
- b. Fornell and Larcker’s internal consistency measure.
- c. Average variance extracted (AVE) used to establish convergent validity.
- d. Square root of the AVE used to establish discriminant validity.
- e. For illustrative purposes, with scale items weighted equally. Standard deviation in brackets.

Table 8. Correlations amongst the latent constructs

	Environmental dynamism	Innovation-differentiation	Dependence on IS	Planning expertise	Planning intensity	ISSP-BSP integration	Commitment to IS	IS performance
Environmental dynamism	0.84							
Innovation-differentiation	0.181	0.78						
Dependence on IS	0.328	0.415	0.85					
Planning expertise	-0.011	0.003	0.182	0.90				
Planning intensity	0.017	0.214	0.354	0.437	0.83			
ISSP-BSP integration	-0.028	0.124	0.281	0.294	0.351	0.73		
Commitment to IS	0.040	0.060	0.180	0.278	0.395	0.358	0.82	
IS performance	0.154	0.239	0.555	0.270	0.398	0.238	0.494	0.80

Diagonals elements are the square root of AVE, off diagonal elements are the correlations amongst latent variables as per PLS output. Diagonal elements should be greater than all other entries in the corresponding rows and columns of the matrix for discriminant validity to be confirmed.

The structural model represented the relationships between the model's latent constructs. The significance of the paths was determined by bootstrap resampling (500 resamples); this was used to produce standard errors for calculating t-values which are shown parentheses next to the path coefficients. Results confirmed the impact of environmental dynamism and innovation-differentiation orientation on organisational dependence on Information Systems. Paths linking dynamism and innovation-differentiation to dependence on Information Systems

were both significant and together they explained 24% of its variance. Dependence on Information Systems and managerial planning expertise explained 27% of the variance in ISSP planning intensity and 14% of the variance in ISSP-BSP integration. ISSP planning intensity and integration significantly predicted commitment, explaining 21% of its variance. Together ISSP and commitment explained just over 29% of the variance in Information Systems performance. Figure 2 below shows the results of the test of the structural model.

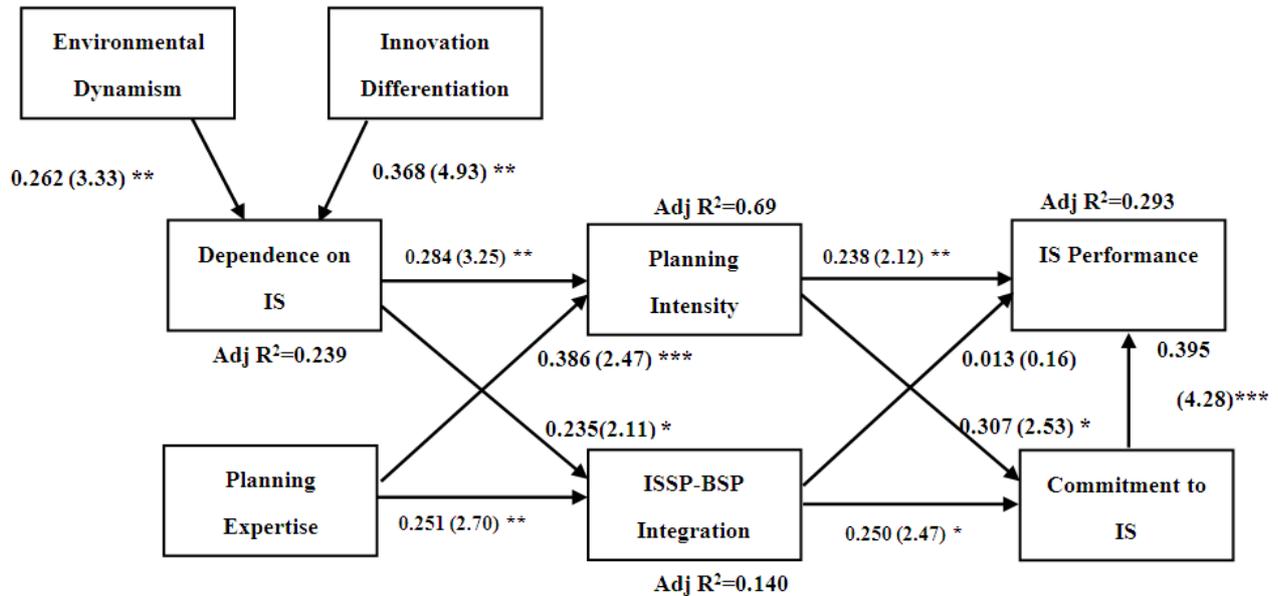


Figure 2. PLS results. ***significant at the 0.001 level, **significant at the 0.01 level, *significant at the 0.05 level

5. Conclusions and Implications for Practice

The results of this study supported Hypotheses 1–4. Together, these results may explain the inconsistencies in prior results by finding that dependence on Information Systems mediates the effects of environmental and organisational factors on ISSP suggesting that the internal Information Systems context must be appropriately matched to environmental and organisational factors, which in turn will dictate required Information Systems managerial practices, including planning. The study also overcame the general lack of tests for the effect of upper echelons by confirming Hypotheses 5 and 6. Firms in developing economies may face unique challenges related to managerial capabilities and expertise to engage in ISSP and therefore improving knowledge of strategic Information Systems management practices is likely to grow as a key Information Systems management issue. Because an incomplete and partial set of indicators of the determinism and upper echelon's based perspectives were examined, it cannot be claimed that the managerial perspective offers a better explanation than the environmental or internal characteristics determinism based perspectives. However, results suggested they should not be ignored in explaining Information Systems management practice. The relationships between ISSP, commitment, and performance may be the study's most interesting finding. Hypotheses 7–10 were supported as well. However, contrary to expectation, Hypothesis 11

found no support. ISSP-BSP integration does not have a direct effect on Information Systems performance; the relationship is fully mediated by commitment.

Commitment is an internal organisational benefit of planning that has subsequent implications for Information Systems performance. In interpreting these results it is important to note some limitations. First, data was collected from a single informant per organization and data collected was largely perceptual; it would have been better to assess environmental and organisational level variables as well as performance using more objective criteria. Furthermore, results may also have been stronger if multiple organisational respondents had been used. Second, data collected was cross-sectional, and therefore no claims about causality can be made. A longitudinal research design would provide stronger evidence for causality. Third, the study was conducted using data collected from a sample of medium to large Zimbabwean firms. Results therefore may not necessarily be generalizable to organisations in Zimbabwe outside the sample frame. As a result of these limitations the findings should be regarded as indicative of the relationships existing between context, ISSP and performance rather than conclusive.

The work confirmed that the internal Information Systems context is strongly influenced by environmental and organisational factors. These dictate the importance of Information Systems, the role it plays within the organization and the resources and attention that should be devoted to it by senior business management. Information Systems managers should develop an internal Information

Systems context appropriate to the environmental and organisational contexts. Changes in the internal Information Systems context will necessitate a corresponding change in ISSP practice. In particular, Information Systems managers should look for changes in environmental and organisational circumstances which increase information uncertainty and thus reorient the role that Information Systems will have to play within the organization. The results also suggest that sophisticated ISSP practices are more likely to prevail when Information Systems managers have more ISSP expertise. It is important that ISSP practice can be improved and appropriately matched to the context. Finally, Information Systems planning serves to improve the contribution of Information Systems to business performance by steering Information Systems efforts in the right direction. However, business managers must recognize the role they need to play in supporting the Information Systems function. Their commitment to Information Systems serves to create the necessary conditions for aiding Information Systems in improving business performance. This paper presented a study of the contextual determinants and performance implications of ISSP practice. The effects of environmental and organisational factors on ISSP were found to be mediated by the internal Information Systems context. Specifically, organisational dependence on Information Systems increased amongst those organisations that saw their environments as dynamic and their strategic success through innovation differentiation. Dependence on Information Systems is a significant determinant of ISSP planning intensity and its integration with BSP. Moreover, managerial expertise to engage in planning was a significant determinant. Planning was also found to add to Information Systems performance directly and also by improving management commitment to Information Systems' necessary conditions for aiding Information Systems in improving business performance.

References

- [1] Ang, J, and Teo,T.S.H,“CSFs and sources of assistance and expertise in strategic IS planning: a Singapore perspective”, *European Journal of Information Systems*, Volume 6 (3), 164-171, 1997.
- [2] Boynton, A.C, and Zmud, R.W, “Information technology planning in the 1990’s: directions for practice and research”, *MIS Quarterly*, Volume 11 (1), 59-71, 1987.
- [3] Das, S.R, Zahara, S.A, and Warkentin, M.E, “Integrating the content and process of strategic MIS planning with competitive strategy”, *Decision Sciences*, Volume 22 (5), 953-984, 1991.
- [4] Enns, H.G, Huff, S.L, and Golden,B.R, “How CIOs obtain peer commitment to strategic IS proposals: barriers and facilitators”, *Journal of Strategic Information Systems*, Volume 10(1), 3-14, 2001.
- [5] Galliers, R.D, “Strategic information systems planning: myths, reality and guidelines for successful implementation, in: R.D. Galliers, S.H. Baker (Eds.), *Strategic Information Management*”, Butterworth–Heinemann, Oxford, 129-147, 1994.
- [6] Gerbing, D.W, Hamilton, J.G, and Freeman, E.B,“A large scale second-order structural equation model of the influence of management participation on organizational planning benefits”, *Journal of Management* 20 (4), 859-885, 1994.
- [7] Hopkins, W.E, and Hopkins, S.A, “Strategic planning-financial performance relationships in banks: a causal examination”, *Strategic Management Journal*, Volume 18 (8), 635-652, 1997.
- [8] Kearns, G.S, Lederer, A.L, “The impact of industry contextual factors on IT focus andthe use of IT for competitive advantage”, *Information & Management*, Volume41 (7), 899-919, 2004.
- [9] Lederer,A.L, and Gardiner,V, “The process of strategic information planning”, *Journal of Strategic Information Systems*, Volume1 (2), 76-83, 1992.
- [10] Lederer, A.L, and Mendelow,A.L, “Issues in information systems management”, *Information & Management*, Volume 10 (5), 245-254, 1986.
- [11] Lederer, A.L, and Mendelow, A.L, “Co-ordination of information systems plans with business plans”, *Journal of Management Information Systems*, Volume6 (2), 5-19, 1989.
- [12] Lee, G.G, and Pai, J, “Effects of organizational context and inter-group behaviour on the success of strategic information systems planning: an empirical study”, *Behaviour and Information Technology*, Volume 22 (4), 263-280, 2003.
- [13] McFarlan, F.W, Mc Kenney, J.L.Pyburn, P, “The information archipelago-plotting a course”, *Harvard Business Review*, Volume 61(1), 45-156, 1983.
- [14] Melville, N, Kraemer,K, and Gurbaxani, V, “Information technology and organizational performance: an integrative model of IT business value”, *MIS Quarterly*, Volume 28 (2), 283-322, 2004.
- [15] Mentzas,G, “Implementing an IS strategy—a team approach”, *Long Range Planning*, Volume 30 (1), 84-95, 1997.
- [16] Miller, D, “The structural and environmental correlates of business strategy”, *Strategic Management Journal*, Volume 8 (1), 55-76, 1987.
- [17] Morgan, R.M, andHunt, S.D, “The commitment-trust theory of relationship marketing”,*Journal of Marketing*, Volume 58 (3), 20-38, 1994.
- [18] Newkirk, H.E, andLederer, A.L, “The effectiveness of strategic information systems planning under environmental uncertainty”, *Information & Management*, Volume 43, 81-50, 2006.
- [19] Porter, M.E, “Competitive Strategy: Techniques for Analyzing Industries and Competitors”, *The Free Press*, New York, 1980.
- [20] Premkumar, G, and King, W.R, “The evaluation of strategic information systems planning”, *Information & Management*, Volume 26 (6), 327-340, 1994.
- [21] Premkumar, G, and King, W.R, “Organizational characteristics and information systems planning: an empirical study”, *Information Systems Research*, Volume 5 (2), 75-109, 1994.
- [22] Premkumar, G, Ramamurthy,K, and Saunders, C.S, “Information processing view of organizations: an exploratory examination of fit in the context of interorganizational relationships”, *Journal of Management Information Systems* 22 (1), 257-294, 2005.
- [23] Reich, B.H, and Benbasat, I, “Measuring the linkage between business and information technology”, *MIS Quarterly*, 20(1), 55-81, 1996.
- [24] Rivard, S. Raymond, and L Verreault, D, “Resource-based view and competitive strategy: an integrated model of the contribution of information technology to firmperformance”, *Journal of Strategic Information Systems*, Volume 15, 29-50, 2006.
- [25] Sabherwal, R, “The relationship between information systems planning sophistication and information systems success: an empirical assessment”, *Decision Sciences*, Volume 30 (1), 137-167, 1999.
- [26] Sabherwal, R, and Chan, Y.E, “Alignment between business and IS strategies: a study of prospectors, analyzers, and defenders”, *Information Systems Research*, Volume 12 (1), 11-34, 2001.
- [27] Sabherwal, R, and King,W.R, “Decision processes for developing strategic applications of information systems: a contingency approach”, *Decision Sciences*, Volume 23 (4), 917-943, 1992.
- [28] Salmela, H, Lederer, and A.L Reponen,T, “Information systems planning in a turbulent environment”, *European Journal of Information Systems*, Volume 9 (1), 3-15, 2000.
- [29] Sambamurthy, V, Venkatraman, S, and Desanctis, G, “The design of information technology planning systems for varying organisational contexts”, *European Journal of Information Systems*, Volume 2 (1), 3-35, 1993.
- [30] Segars, A.H, and Grover, V, “Strategic information systems planning success: an investigation of the construct and its measurement”, *MIS Quarterly*, Volume 22 (2), 139-163, 1998.
- [31] Shortell, S.M, and Zajac, E.J, “Perceptual and archival measures of miles and snow’sstrategic types: a comprehensive assessment of reliability and validity”, *Academy of Management Journal*, Volume 33 (4), 817-832, 1990.

- [32] Teo, T.S.H, and. King, W.R, "Assessing the impact of integrating business planning and ISplanning", *Information & Management*, Volume 30 (6), 309-321, 1996.
- [33] Wade, M, and Hulland, J, "The resource-based view and information systems research: review, extension, and suggestions for future research", *MIS Quarterly*, Volume 28 (1), 107-142, 2004.
- [34] Ward,J, and Griffiths, P, "Strategic Planning for Information Systems", *2nd edition*, Wiley, Chic ester, 1996.
- [35] Yasai-Ardekani, M, and Haug, R.S, "Contextual determinants of strategic planning processes", *Journal of Management Studies*, Volume 34 (5), 729-767, 1997.