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Strategizing Information Systems: An Empirical Analysis of IT Alignment and Success in SMEs

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Abstract: IT investment is a crucial issue as it does not only influence the performance in Small-Medium Enterprises (SMEs) but it also helps executives to align business strategy with organizational performance. Admittedly, though, there is ineffective use of Information Systems (IS) due to a lack of strategic planning and of formal processes resulting in executives' failure to develop IS plans and achieve long-term sustainability. Therefore, the purpose of this paper is to examine the phases of Strategic Information Systems Planning (SISP) process that contribute to a greater extent of success so that guidelines regarding the implementation of the process in SMEs can be provided. Data was collected by 160 IS executives in Greek SMEs during February and May 2017. Multivariate Regression Analysis was applied on the detailed items of the SISP process and success constructs. The results of this survey present that managers should be aware of the strategic use of IS planning so as to increase competitive advantage. Senior executives should choose the appropriate IT infrastructure (related to their business strategy and organizational structure), so as to align business strategy with organizational structure. The findings of this paper could help IS executives concentrate their efforts on business objectives and recognize the great value of the planning process on their business.

Keywords: strategic information systems planning; success; IT strategy; alignment; performance; SMEs

1. Introduction

Managers have to develop Information Systems (IS) that support business strategy and accommodate decision making so as to increase competitive advantage, as their businesses have to deal with environmental uncertainty and complexity [1–4]. Yet, they are obliged to re-examine their internal business environment if they wish to increase their performance and achieve a competitive advantage, as new competitive challenges and requirements are raised due to the growth of international business. IS could be a source of sustainable competitive advantage on the condition that IT strategy is aligned with the business' one. This is the reason why many companies have spent resources with the aim of increasing their competitive advantage by examining their internal processes [5–14]. This challenge is crucial for all businesses, especially the Small-Medium Enterprises (SMEs).

SMEs have already been acting in a complex environment where uncertainty is increased and market characteristics have completely changed, since the current financial crisis has negatively affected plenty of their activities. It is not only difficulties from a financial perspective though, but also their relative lack of technological, managerial, and human capabilities that may limit their ability to overcome the crisis [15–17]. Another factor that negatively affects SMEs is the lack of strategic planning. So, formal processes in SMEs related to strategic management and information handling are required, in order to help managers to focus on strategies, structures, and processes that help them enhance firm performance. Therefore, IT investment is a crucial issue as it not only influences the business performance but also helps executives to align business strategy with organizational performance.

These formal processes could be developed in complex environments by the use of standardized rules and procedures that boost the minimization of environmental uncertainty and create economic consistency [3,18–24].

Studies on strategic alignment in SMEs investigate some of the same topics as those of research conducted with larger firms, the SME's uniqueness requires investigation on their own, though. Without doubt, SMEs represent a distinct group of firms where the size and their resource constraints have a noticeable effect on aligning factors and outcomes [25,26]. Advances in IT lead to increasing levels of technology adoption and use in SMEs and technology is pushed further and further into their processes and operations, as shown by management literature. As IT is now used by many competitors and suppliers in their operations, it is necessary that executives and researchers be aware of how the alignment of business and IT impacts firms [26–28]. For all the above stated reasons the purpose of this paper is to indicate all the phases of Strategic Information Systems Planning (SISP) process that contribute to a greater extent of IS planning success as well as to provide IT managers with recommendations in terms of their implementation. Questionnaires to 160 IS executives in Greek SMEs were used to collect data in order to examine which are the most significant phases for them and which need to improve so as to produce effective IS plans. Multivariate Regression analysis was applied in order to analyze data.

The structure of this paper is as follows: First there is a brief introduction and the theoretical background regarding the SISP follows after. Section 3 describes the methodology, Section 4 the results of the survey while Section 5 discusses these results and concludes the paper.

2. Theoretical Background

The concept of alignment is traditionally defined as the extent of fit between IT and business strategy. According to several studies a positive relationship between alignment and performance do exist [3,5,26]. In terms of that relationship it is argued that SMEs can use a range of different paths so that a great extent of alignment can be achieved based on their capabilities and market position. Thus, a more extensive planning would support planners understand the impact of the environment better and, consequently, better respond to it, which makes this planning a more effective one. Here comes a dilemma, though. If too many efforts will be made by managers, potential conflicts could be raised among team members, while on the other hand, if time investment in the process is avoided, IS plans could turn out to be inefficient, leading to unachieved goals. Consequently, the assessment of the process is of the most importance so that any unsatisfactory result will be reduced [29,30]. The fact that IS strategy has been studied as a homogenous topic is unfortunate. Limited studies have been delving into comparing the state of relevance between planning and alignment. However, the relationship between the strategic planning of IS and the success, alongside with the obstacles that managers face in large companies have been examined by previous researchers [31–35].

Alignment is the ability to formulate business strategy using IS techniques and methodologies, already used to support organizations to identify potential opportunities so as to develop it with greater competitiveness, that the concept of SISP has been associated with [36]. It has been regarded as an integrated process containing specific phases, which represent the components of the planning process. These phases are the identification of the key planning issues, the analysis of internal and external environment, the analysis of strategic alternatives, the formulation and the implementation of strategic planning.

The first phase of the process includes activities such as the identification of key planning issues and objectives, the development of the planning team and the encouragement of top management to participate in the process. In the second phase CIOs conduct a situation analysis in order to collect data regarding current business systems, current organizational systems, current information systems, external environment and external IT environment. The third phase of the process refers to the identification of important IT objectives, opportunities for improvement and high-level IT strategies. In Strategy Formulation IS executives identify new business processes, new IT architectures, specific

new projects and priorities for new projects. In the last phase, IT managers define change management approaches and action plans and they evaluate them [25,31–33,37–44].

It has been shown by management literature that results on the concentration of senior executives on strategy conception and strategy implementation do exist. IT managers do not invest time on strategic awareness and situation analysis, though. As a result, the implemented plans end up being neither effective nor successful, and consequently, they do not meet business' objectives. Yet, some managers tend to concentrate only on the implementation of the process which can lead to shorter SISP horizons but not to alignment of strategic goals with IT ones. Due to limited IT budget, senior executives do not pay attention to strategic objectives such as how IS can increase business value and they simply focus on the horizon of the project and the decrease of the cost [2,32,33,39–43,45–49].

Strategic awareness means concentrating on the planning process of gaining appropriate knowledge about competitors, resources customers and regulations, and it is through careful organization of the teams that this knowledge could be achieved. It is essential that there should be top management commitment so that greater organizational confidence and continual financial support for the process could be provided. Hence:

H1: Strategic Awareness positively affects SISP success.

Managers should pay attention to the implementation of situational analysis with greater meticulousness so that they can apply strategy conception and strategy implementation planning with greater agility in the future. What could planners do, is to analyze their current business and organizational systems, the IS and both the business' and external IT environment. In this way they can align IT strategy with business strategy and the output of the planning process can be significantly improved, excluding of course, the increased time and cost needed for the process. Understanding the environment, executives can determine important IT objectives and opportunities for improvement and evaluate them to define high-level IT strategies in their business' strategy conception [31].

H2: Situation Analysis positively affects SISP success.

It was concluded by researchers who had examined the relationship of SISP phases and success, that IS executives focused their efforts on the strategic conception phase. Theoretically, this phase, with recognition and assessment of opportunities would provide more realistic alternatives. The organizations would be enabled to align IT and business objectives by their recognition, and consequently that would create better alternatives and choices that would support better results [32,33,37,39,42]. Despite their focusing on that phase, though, planners cannot identify the suitable alternative strategies and subsequently their efforts do not positively influence SISP success, and they cannot achieve business objectives. Hence:

H3: Strategy Conception positively affects SISP success.

The lack of participation and the failure to apply strategic IS plans are the most common problems which have been raised during the SISP process. As executives cannot be committed to the plan, the members of the team have difficulties in implementing the IS strategy. So, it is better prioritization that would result in higher likelihood of implementation and greater chances of meeting their objectives. Yet, as shown by the existing research, executives tend to focus on the implementation of IS strategy because they consider it to be so difficult a process as they ignore its formulation [25,32,38,39,42]. Hence:

H4: Strategy Formulation positively affects SISP success.

H5: Strategy Implementation positively affects SISP success.

The definition of the SISP success, according to relevant literature is "the degree to which the objectives of SISP process are achieved" [48]. The concept of success has traditionally been viewed as a four dimensional one namely alignment, analysis, cooperation, and capabilities. The first one refers to the executives understanding of how to use IS in order to support business strategy and to identify opportunities that can support the strategic direction of the firm. It also includes variables such as the alignment of IT strategy with the strategic plan of the organization, the education of top managers with regards to the importance of IT and the adaption of technology to strategic change [25,32,33,39,41,50,51]. The second one is solely preoccupied with the generation of new ideas on

how to reengineer business process through IT [52]. At this point the understanding of both information needs through subunits, and the dispersion of data, application and other technologies throughout the firm so that a blueprint which will improve organizational processes could be developed, are all considered extremely important issues. Through all these processes managers can understand how the organizations actually operate. In this way, they can evaluate internal business needs along with the capability of IS to meet these needs [25,32,33,39,41,50,51].

The third dimension is about the ability of managers to develop clear guidelines of managerial responsibility for plan implementation and to identify potential sources of resistance to IS plans. It also refers to the managers' ability to support open lines of communication with other departments of the business so that they can achieve a general level of agreement regarding the risks/tradeoffs among system projects and avoid the overlapping development of major systems. Finally, the last dimension includes a list of capabilities, such as the ability to identify key problem areas, the ability to anticipate surprises and crises, the flexibility when it comes to adapting to anticipated changes as well as the ability to gain cooperation among user groups for IS plans [25,32,33,39,41,50,51].

3. Methodology

A field survey was developed for IS executives. The instrument used five-point Likert-scales to operationalize two constructs: SISP phases and success. The SISP process constructs measured the extent to which the organization conducted the five planning phases and their tasks. The success constructs measured using four dimensions, named: alignment, analysis, cooperation, and capabilities. The questionnaire was based on previous surveys that examine the relationship between SISP phases and success [31–33,38]. Table 1 presents the definitions for SISP phases and success. Tables A1 and A2 present the questionnaire of the survey.

Table 1. Variables and definitions.

Variables	Definitions
Strategic Awareness	This phase includes activities such as the identification of key planning issues and objectives, the development of the planning team and the encouragement of top management to participate in the process.
Situation Analysis	This phase includes an analysis of current business systems, current organizational systems, current information systems, external environment, and external IT environment.
Strategy Conception	This phase of the process refers to the identification of important IT objectives, opportunities for improvement and high-level IT strategies.
Strategy Formulation	In this phase IS executives identify new business processes, new IT architectures, specific new projects and priorities for new projects.
Strategy Implementation	In this phase, IT managers define change management approaches and action plans and they evaluate them.
Success	The degree to which the objectives of SISP process are achieved

Four executives were asked to participate in a pilot test. The survey was completed and commented on the content, length and overall appearance of the instrument by each one of them. Then a sample of IS executives in Greece was selected from the Icap list [32,33]. The Icap list includes the SMEs in Greece. It was used in order to contact the IS executive of each one in order to collect data. SMEs meet the following criteria: The number of employees was 20–50 and the turnover did not exceed 50 million euro. The population of Greek SMEs that meet these criteria was 3000.

Since Greek SMEs have been negatively affected by the financial crisis, they tend to try to align their business and IT strategy in an attempt to compete in the current uncertain environment and increase their growth while being innovative at the same time [53–55]. Although Greek SMEs focus on their long-term sustainability, they do not develop strategic planning [56,57]. On top of that lack of strategic planning and of formal processes, Greek SMEs use IS ineffectively as they fail to align business and IT strategy. Greece, specifically, is a country where there are much more SMEs in comparison with other European countries and the financial crisis has a negative impact on the majority of them [50,51].

In Greece the majority of firms consist of 20–50 employees and there are many family firms also consisting of 5–10 employees. As the existing studies have examined the impact of SISP process in large firms, it would be helpful to examine how Greek SMEs that try to be competitive using IT can implement the SISP process in order to increase success. For all the above-mentioned reasons it was considered that in order to examine the effectiveness of the SISP process and its success, data were collected during the financial crisis [53,58]. The final survey was sent to 1246 IS executives who provided contact details and a total of 160 completed and returned it. The structure of business activity of these 160 firms was IT, business services, agriculture, and retail. Multivariate Regression Analysis was used to implement data analysis [59,60]. The survey design was based on previous similar studies that conducted with IT managers in 167 firms that are included in lists [32,33,47].

4. Results

The internal consistency and reliability, calculated via Cronbach's alpha, ranged from 0.746 to 0.918, exceeding the minimally required 0.70 level [32]. Table 2 shows the Cronbach's alpha coefficient for all variables. Furthermore, the unidimensionality hypothesis was verified using a X^2 test and adjunct fit indexes. X^2 for the model including the 5 SISP phases was 131.733, CFI was 0.966 > 0.90 and $p < 0.01$. X^2 for the model including the success variables was 227.674, CFI was 0.934 > 0.90 and $p < 0.001$. Table 3 presents the basic characteristics of dependent and independent variables as explained in the previous sections. As can be seen in Table 3, respondents score on average (success) 3.61 on a scale of 1–5 with a standard deviation of 0.88. A standard Pearson correlation analysis was conducted and tested on two-tailed significance. Table 3 shows similar significant results of the two-tailed zero-order and partial correlation analyses.

Table 2. Reliability analysis of the questionnaire items.

Variables	No. of Items	Cronbach a
Strategic Awareness	4	0.753
Situation Analysis	5	0.746
Strategy Conception	4	0.812
Strategy Formulation	4	0.784
Strategy Implementation Planning	4	0.789
Success	27	0.918

Table 3. Descriptive Statistics.

Variables	N	Mean	Std. Dev.	Zero-Order Correlation	Partial Correlations
Independent variables					
Strategic Awareness	160	3.66	0.83	0.623	0.038
Situation Analysis	160	3.73	0.69	0.596	0.113
Strategy Conception	160	3.70	0.81	0.703**	0.270**
Strategy Formulation	160	3.53	0.80	0.660*	0.178*
Strategy Implementation Planning	160	3.31	0.90	0.688***	0.306***
Dependent variable					
Success	160	3.48	0.64		

Table 4 presents the results of Pearson's correlation analysis that was performed in order to determine the degree and nature (direct or inverse) of the relationship between variables.

Table 4. Correlation matrix.

	Strategic Awareness	Situation Analysis	Strategy Conception	Strategy Formulation	Strategy Implementation Planning	Success
Strategic Awareness	1	0.717	0.677	0.644	0.666	0.623
Situation Analysis	0.717	1	0.635	0.566	0.598	0.596
Strategy Conception	0.677	0.635	1	0.719	0.650	0.703
Strategy Formulation	0.644	0.566	0.719	1	0.641	0.660
Strategy Implementation Planning	0.666	0.598	0.650	0.641	1	0.688
Success						1

The normal P-P and scatter plots (Figure 1) showed that data is normally distributed (i.e., all residuals cluster around the 'line'), complies with the assumptions of homogeneity of variance (i.e., homo-scedasticity) and linearity. Residual errors are in fact evenly distributed and not related to the value of the predicted value, suggesting that the relationship is, in fact, linear and the variance of y for each value of x is the same, this confirming the homoscedasticity assumption [61]. Univariate outliers were checked for using z-scores and all values were within acceptable range. In succession, multivariate outliers were checked using Mahalanobis and Cook's distances. No influential outliers were detected. Multicollinearity was checked using variance inflation factors (VIF).
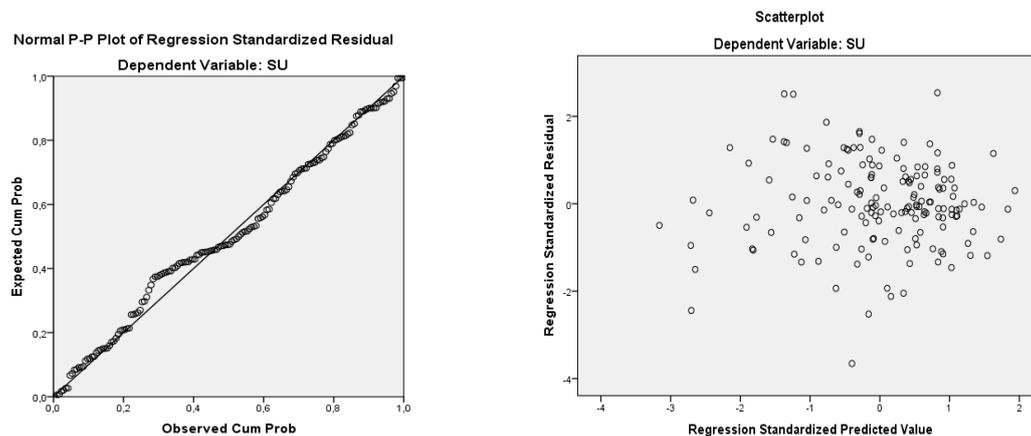

Figure 1. Normal P-P plot of regression standardized residual and residual scatter plot.

Table 5 also presents the summary indicators of R, R^2, adjusted R^2, Durbin-Watson indicator and the standard deviation error of the regression. The R^2 and adjusted R^2 values of 0.612 and 0.599 indicate that about 60% of the variance in success is explained by the explanatory variables. Thus, the regression model predicts success well, since the explanatory power of the regression is higher than 50%. The results of ANOVA regression analysis in Table 6 also allow corroboration of the good prediction capacity of the regression model. The F statistic is 48.591 with 160 degrees of freedom (6 from the regression and 154 from residuals) and the whole regression is significant at the 0.000 level.

Table 5. Model summary indicators.

R	R^2	Adjusted R^2	Estimate Standard Error	Durbin-Watson
0.782	0.612	0.599	0.407	1.955

Table 6. ANOVA statistics of regression.

Model		Sum of Square	Df	Mean Square	F	Sig.
1	Regression	40.250	6	8.050	48.591	0.000
	Residual	25.512	154	0.166		
	Total	65.762	160			

The regression coefficients and the results of hypothesis testing are presented in Table 7 and in Figure 2. The path coefficient between Strategic Awareness and Success was positive but not statistically significant (β = 0.40, $p > 0.05$). Thus, H1 was not supported. There was a significant positive relationship among Situation Analysis and Success but not statistically significant (β = 0.107, $p > 0.05$). Thus, H2 was not supported. There was a significant positive relationship among Strategy Conception (β = 0.287, $p < 0.01$), Strategy Formulation (β = 0.176, $p < 0.01$), and Success, supporting H2, H3 and H4. This indicates that a higher level of Strategy Conception and Strategy Formulation can increase SISP Success. There was also a positive relationship between Strategy Implementation Planning and Success (β = 0.298, $p < 0.001$); thus, H5 was supported.

Table 7. Regression analysis between independent variables (Strategic Awareness, Situation Analysis, Strategy Conception, Strategy Formulation, Strategy Implementation Planning) and dependent variable (Success). *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

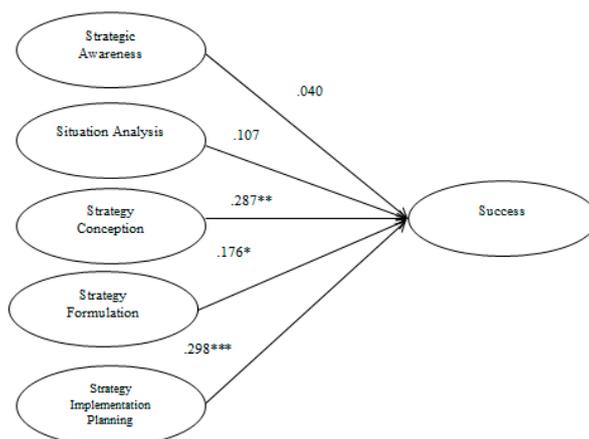| Model	β	t-Value	VIF
Strategic Awareness	0.40	0.476	2.805
Situation Analysis	0.107	1.407	2.299
Strategy Conception	0.287	3.487	2.699
Strategy Formulation	0.176	2.251	2.419
Strategy Implementation Planning	0.298	3.984	2.226

Figure 2. Results for direct effects.

5. Discussion

As indicated by the results IS executives are unaware of the analysis of IT environment and of how to evaluate opportunities for IS development. This crucial finding confirms that senior executives in SMEs do not invest in emergent technologies such as Artificial Intelligence, Internet of Things or Cloud Computing and they cannot, therefore, fit with the strategic, structural and environmental dynamics. This finding is also impeded by the fact that managers do not focus on organizing the planning team. It is imperative that employees who will participate in the development of IS should have both IT and cooperation skills as well as motivation to develop effective IS. The findings were associated with lack of management support and of clear guidelines about the IS development. IS executives should be able to define priorities, increase the cooperation among the IS team and provide guidelines in order to support the effectiveness of IS plans aligning them with business plans. Based on these findings H1 was not supported.

Companies have already been developing IS at an increasing rate, in respond to anticipated changes in business environment. That being said, senior executives do not formulate IS strategies and priorities, therefore cannot anticipate risks and crises. They also cannot identify problem areas, so they cannot redesign business processes. They developed IS, based on the existing business processes

that cannot be aligned with IS objectives. This finding supports that H3 and H4 do not show such a strong relationship between strategy conception and strategy formulation with success. Furthermore, it confirms that the negative consequences that SMEs face are due to the lack of strategic planning [5,26].

It is indicated by the results of this survey that when managers pay attention to implementing situation analysis with greater meticulousness, they will be able to apply strategy conception and strategy implementation with greater agility than before. What can planners do so as to align IT strategy with business strategy is to analyze the current business and organizational systems, the IS as well as both the business and the external IT environment. In this way, the output of the planning process can be significantly improved with the exception of time and cost needed for the process. As soon as the environment is understood by the executives, they can determine important IT objectives and opportunities for improvement and they can evaluate them so as to define high-level IT strategies in their business strategy conception. Based on these findings H1 was not supported. These findings have also been supported by previous researchers [62–66].

6. Conclusions

This paper examined the phases that contribute to a greater extent of IS planning and provided IT managers with recommendations regarding the implementation of the SISP process. The research hypothesis that IS executives are not aware of how to analyze the external IT environment and how to evaluate opportunities for IS development, is supported by the results. This is a crucial finding as it confirms that senior executives in SMEs do not invest in emergent technologies and are unable to fit with the strategic, situational and environmental dynamics. Another obstacle of crucial importance is the fact that managers do not focus on organizing the planning team. It is therefore recommended that employees have IT and cooperation skills as well as motivation, when they participate in the development of IS.

In response to anticipated changes in business environment companies have been developing IS at an increasing rate. As IT is a crucial budget item in most businesses, it has been an important issue for managers. Despite all those factors, senior executives do not formulate IT strategies and priorities and as a result, fail to anticipate risks and crises. Managers should be aware of the strategic use of IS planning so as to increase competitive advantage from a managerial perspective. Thus, senior executives should choose the appropriate IT infrastructure (related to their business strategy and organizational structure), so as to align business strategy with organizational structure.

The findings of this survey indicate that IT managers do not formulate IT strategies and priorities, so they cannot anticipate risks and crises. Executives cannot identify problem areas because they do not redesign business processes. New IS are based on the existing business processes and they cannot meet IS objectives. This finding confirms the negative consequences that SMEs face due to the lack of strategic planning because managers focus only on the implementation of the existing strategy ignoring the need to define IT objectives and strategy. This paper contributes to IS executives' awareness of SISP phases. IS executives should be knowledgeable about the five phases and they should not ignore the tasks of each one because this might be an obstacle which presents the organization from achieving its planning goals and thus from realizing greater value. They can focus on the tasks of strategic planning process and align business strategy with IT in order to increase firm's performance.

Understanding these phases could help IS executives concentrate their efforts on business's objectives and recognize the great value of the planning process upon their business. It is suggested by this paper that IT appears to play an important role when it comes to improving the alignment between IT strategy and organizational structure. Finally, the findings could be of great help to IS executives in Greek SMEs who do not concentrate on strategic planning during the development of IS but only focus on technical issues. They could understand the significance of the SISP process when it comes to formulating and implementing IS strategy which will be aligned with business objectives and increase the success in SMEs.

This study has some limitations. First of all, the survey was conducted only in Greece so future researchers could expand the sample of this survey using SMEs in other countries and compare the results. Second, the sample of this study consists of SMEs. Future researchers could examine the relationship between the SISP process and success in large firms and examine and compare the results of this study with relative ones from large companies. Third, in this study, all hypotheses were not supported. Future researchers could investigate why these hypotheses were not supported. Apparently, future researchers could use different methodologies for data analysis such as cluster analysis, to compare the difference among organizations in different sectors during the implementation of the SISP process. Finally, future researchers could expand the existing model using factors related to business performance such as typical control variables e.g., firm size, age, sector, region, and managerial characteristics. They could also measure the financial performance of SMEs in order to examine the impact of SISP on profitability.

Appendix A

Table A1. SISP Process Items.

Please mark the number to indicate the extent to which the organization conducted each of the following five phases and their related tasks during its SISP efforts:	
1. Strategic Awareness • Determining key planning issues • Defining planning objectives • Organizing the planning team(s) • Obtaining top management commitment	1: No extent 5: Great extent
2. Situation Analysis • Analyzing current business systems • Analyzing current organizational systems • Analyzing current information systems • Analyzing the current external business environment • Analyzing the current external IT environment	1: No extent 5: Great extent
3. Strategy Conception • Identifying major IT objectives • Identifying opportunities for improvement • Evaluating opportunities for improvement • Identifying high level IT strategies	1: No extent 5: Great extent
4. Strategy Formulation • Identifying new business processes • Identifying new IT architectures • Identifying specific new projects • Identifying priorities for new projects	1: No extent 5: Great extent
5. Strategy Implementation Planning • Defining change management approach • Defining action plan • Evaluating action plan • Defining follow-up and control procedures	1: No extent 5: Great extent

Table A2. SISP Success Items.

Please mark the number to indicate the extent to which the organization fulfilled each of the following objectives of alignment, analysis, and cooperation from its SISP efforts:	
1. Alignment • Understanding the strategic priorities of top management • Aligning IS strategies with the strategic plan of the organization • Adapting the goals/objectives of IS to changing goals/objectives of the organization • Maintaining a mutual understanding with top management on the role of IS in supporting strategy • Identifying IT-related opportunities to support the strategic direction of the firm • Educating top management on the importance of IT • Adapting technology to strategic change • Assessing the strategic importance of emerging technologies	1: Entirely unfulfilled 5: Entirely fulfilled
2. Analysis • Understanding the information needs of organizational subunits • Identifying opportunities for internal improvement in business processes through IT • Improved understanding of how the organization actually operates • Development of a 'blueprint' which structures organizational processes • Monitoring of internal business needs and the capability of IS to meet those needs • Maintaining an understanding of changing organizational processes and procedures • Generating new ideas to reengineer business processes through IT • Understanding the dispersion of data, applications, and other technologies throughout the firm	
3. Cooperation • Avoiding the overlapping development of major systems • Achieving a general level of agreement regarding the risks/tradeoffs among system projects • Establishing a uniform basis for prioritizing projects • Maintaining open lines of communication with other departments • Coordinating the development efforts of various organizational subunits • Identifying and resolving potential sources of resistance to IS plans • Developing clear guidelines of managerial responsibility for plan implementation	

Table A2. *Cont.*

Please indicate the extent to which the following SISP capabilities improved over time within the firm	
- Ability to identify key problem areas - Ability to identify new business opportunities - Ability to align IS strategy with organizational strategy - Ability to anticipate surprises and crises - Ability to understand the business and its information needs - Flexibility to adapt to unanticipated changes - Ability to gain cooperation among user groups for IS plans	1: Much improvement 5: Much deterioration

References

1. Merali, Y.; Papadopoulos, T.; Nadkarni, T. Information systems strategy: Past, present, future? *J. Strateg. Inf. Syst.* **2012**, *21*, 125–153. [CrossRef]

2. Zubovic, A.; Pita, Z.; Khan, S. A Framework for Investigating the Impact of Information Systems Capability on Strategic Information Systems Planning Outcomes. In Proceedings of the 18th Pacific Asia Conference on Information Systems, Chengdu, China, 24–28 June 2014; pp. 1–12.

3. Queiroz, M. Mixed results in strategic IT alignment research: A synthesis and empirical study. *Eur. J. Inf. Syst.* **2017**, *26*, 21–36. [CrossRef]

4. Themistocleous, M.; Irani, Z.; O'Keefe, R.M. ERP and application integration: Exploratory survey. *Bus. Process Manag. J.* **2001**, *7*, 195–204. [CrossRef]

5. Chatzoglou, P.D.; Diamantidis, A.D.; Vraimaki, E.; Vranakis, S.K.; Kourtidis, D.A. Aligning IT, strategic orientation and organizational structure. *Bus. Process Manag. J.* **2011**, *17*, 663–687. [CrossRef]

6. Johnson, A.M.; Lederer, A.L. IS strategy and IS contribution: CEO and CIO perspectives. *Inf. Syst. Manag.* **2013**, *30*, 306–318. [CrossRef]

7. Wolf, C.; Floyd, S.W. Strategic planning research: Toward a theory-driven agenda. *J. Manag.* **2017**, *43*, 1754–1788. [CrossRef]

8. Chan, Y.E.; Reich, B.H. IT alignment: What have we learned? *J. Inf. Technol.* **2007**, *22*, 297–315. [CrossRef]

9. Ghani, E.K.; Yasin, S.A.M.; Ali, M.M. Examining enterprise resource planning post implementation and employees' performance in small and medium enterprises using delone and mclean's information system success model. *Int. J. Financ. Res.* **2019**, *10*, 153–169. [CrossRef]

10. Chereau, P.; Meschi, P.X. The performance implications of the strategy–business model fit. *J. Small Bus. Enterp. Dev.* **2019**, *26*, 441–463. [CrossRef]

11. Bouncken, R.B.; Fredrich, V.; Kraus, S. Configurations of firm-level value capture in coopetition. *Long Range Plan.* **2019**. [CrossRef]

12. O'Dwyer, M.; Gilmore, A. Value and alliance capability and the formation of strategic alliances in SMEs: The impact of customer orientation and resource optimisation. *J. Bus. Res.* **2018**, *87*, 58–68. [CrossRef]

13. Polak, P.; Masquelier, F.; Michalski, G. Towards treasury 4.0/The evolving role of corporate treasury management for 2020. *Manag. J. Contemp. Manag. Issues* **2018**, *23*, 189–197. [CrossRef]

14. Blendinger, G.; Michalski, G. Long-term competitiveness based on value added measures as part of highly professionalized corporate governance management of German DAX 30 corporations. *J. Compet.* **2018**, *10*, 5–20. [CrossRef]

15. Giannacourou, M.; Kantaraki, M.; Christopoulou, V. The Perception of Crisis by Greek SMEs and its Impact on Managerial Practices. *Procedia-Soc. Behav. Sci.* **2015**, *175*, 546–551. [CrossRef]

16. Kitsios, F.; Kamariotou, M. Strategic IT alignment: Business performance during financial crisis. In *Advances in Applied Economic Research, Springer Proceedings in Business and Economics*; Tsounis, N., Vlachvei, A., Eds.; Springer: Berlin, Germany, 2017; pp. 503–525.

17. Bourletidis, K.; Triantafyllopoulos, Y. SMEs survival in time of crisis: Strategies, tactics and commercial success stories. *Procedia-Soc. Behav. Sci.* **2014**, *148*, 639–644. [CrossRef]

18. Ullah, A.; Lai, R. A systematic review of business and information technology alignment. *ACM Trans. Manag. Inf. Syst.* **2013**, *4*, 1–30. [CrossRef]

19. Drechsler, A.; Weißschädel, S. An IT strategy development framework for small and medium enterprises. *Inf. Syst. E-Bus. Manag.* **2018**, *16*, 93–124. [CrossRef]

20. Morabito, V.; Themistocleous, M.; Serrano, A. A survey on integrated IS and competitive advantage. *J. Enterp. Inf. Manag.* **2010**, *23*, 201–214. [CrossRef]

21. Themistocleous, M.; Chen, H. Investigating the integration of SMEs' information systems: An exploratory case study. *Int. J. Inf. Technol. Manag.* **2004**, *3*, 208–234. [CrossRef]

22. Silva, A.R.D.; Ferreira, F.A.; Carayannis, E.G.; Ferreira, J.J. Measuring SMEs' Propensity for Open Innovation Using Cognitive Mapping and MCDA. *IEEE Trans. Eng. Manag.* **2019**, *99*, 1–12. [CrossRef]

23. Balasubramanian, K.; Selladurai, V. Contemporary ERP solution to Indian small and medium scale enterprises through constructive performance metrics. *Int. J. Bus. Excell.* **2018**, *15*, 445–466. [CrossRef]

24. Bi, R.; Davison, R.M.; Smyrnios, K.X. E-business and fast growth SMEs. *Small Bus. Econ.* **2017**, *48*, 559–576. [CrossRef]

25. Kamariotou, M.; Kitsios, F. Critical Factors of Strategic Information Systems Planning Phases in SMEs. In *Information Systems, EMCIS 2018, Springer LNBIP 341*; Themistocleous, M., Rupino da Cunha, P., Eds.; Springer Nature: Berlin, Germany, 2019; pp. 503–517.

26. Street, C.T.; Gallupe, B.; Baker, J. Strategic Alignment in SMEs: Strengthening Theoretical Foundations. *Commun. Assoc. Inf. Syst.* **2017**, *40*, 420–442. [CrossRef]

27. Spinelli, R.; Dyerson, R.; Harindranath, G. IT readiness in small firms. *J. Small Bus. Enterp. Dev.* **2013**, *20*, 807–823. [CrossRef]

28. L'Écuyer, F.; Raymond, L.; Fabi, B.; Uwizeyemungu, S. Strategic alignment of IT and human resources management in manufacturing SMEs. *Empl. Relat.* **2019**, *41*, 830–850. [CrossRef]

29. Kappelman, L.; Johnson, V.; Torres, R.; Maurer, C.; McLean, E. A study of information systems issues, practices, and leadership in Europe. *Eur. J. Inf. Syst.* **2019**, *28*, 26–42. [CrossRef]

30. Grimmer, L.; Grimmer, M.; Mortimer, G. The more things change the more they stay the same: A replicated study of small retail firm resources. *J. Retail. Consum. Serv.* **2018**, *44*, 54–63. [CrossRef]

31. Mirchandani, D.A.; Lederer, A.L. "Less is More:" Information Systems Planning in an Uncertain Environment. *Inf. Syst. Manag.* **2014**, *29*, 13–25. [CrossRef]

32. Newkirk, H.E.; Lederer, A.L.; Srinivasan, C. Strategic information systems planning: Too little or too much? *J. Strateg. Inf. Syst.* **2003**, *12*, 201–228. [CrossRef]

33. Newkirk, H.E.; Lederer, A.L. The effectiveness of strategic information systems planning under environmental uncertainty. *Inf. Manag.* **2006**, *43*, 481–501. [CrossRef]

34. Kitsios, F.; Kamariotou, M. Information Systems Strategy and Strategy-as-Practice: Planning Evaluation in SMEs. In Proceedings of the Americas Conference on Information Systems (AMCIS2019), Cancun, Mexico, 15–17 August 2019; pp. 1–10.

35. Kamariotou, M.; Kitsios, F. Strategic Planning and Information Systems Success: Evaluation in Greek SMEs. In Proceedings of the 21st IEEE Conference on Business Informatics (CBI2019), Moscow, Russia, 15–17 July 2019; pp. 204–211.

36. Peppard, J.; Ward, J. Beyond strategic information systems: Towards an IS capability. *J. Strateg. Inf. Syst.* **2004**, *13*, 167–194. [CrossRef]

37. Brown, I. Strategic Information Systems Planning: Comparing Espoused Beliefs with Practice. In Proceedings of the 18th European Conference on Information Systems, Pretoria, South Africa, 4–6 June 2010; pp. 1–12.

38. Brown, I.T.J. Testing and Extending Theory in Strategic Information Systems Planning Through Literature Analysis. *Inf. Resour. Manag. J.* **2004**, *17*, 20–48. [CrossRef]

39. Kamariotou, M.; Kitsios, F. An Empirical Evaluation of Strategic Information Systems Planning Phases in SMEs: Determinants of Effectiveness. In Proceedings of the 6th International Symposium and 28th National Conference on Operational Research, Thessaloniki, Greece, 8–10 June 2017; pp. 67–72.

40. Kamariotou, M.; Kitsios, F. Information Systems Phases and Firm Performance: A conceptual Framework. In *Strategic Innovative Marketing. Springer Proceedings in Business and Economics*; Kavoura, A., Sakas, D., Tomaras, P., Eds.; Springer: Berlin, Germany, 2017; pp. 553–560.

41. Kamariotou, M.; Kitsios, F. Strategic Information Systems Planning: SMEs Performance outcomes. In Proceedings of the 5th International Symposium and 27th National Conference on Operation Research, Athens, Greece, 9–11 June 2016; pp. 153–157.

42. Kitsios, F.; Kamariotou, M. Decision Support Systems and Strategic Planning: Information Technology and SMEs Performance. *Int. J. Decis. Support Syst.* **2018**, *3*, 53–70. [CrossRef]

43. Maharaj, S.; Brown, I. The impact of shared domain knowledge on strategic information systems planning and alignment: Original research. *S. Afr. J. Inf. Manag.* **2015**, *17*, 1–12. [CrossRef]

44. Mentzas, G. Implementing an IS Strategy—A Team Approach. *Long Range Plan.* **1997**, *30*, 84–95. [CrossRef]

45. Kamariotou, M.; Kitsios, F. Strategic Information Systems Planning. In *Encyclopedia of Information Science and Technology*; Chapter 78; Mehdi, K.-P., Ed.; IGI Global Publishing: Hershey, PA, USA, 2018; pp. 912–922.

46. Lederer, A.L.; Sethi, V. Key prescriptions for strategic information systems planning. *J. Manag. Inf. Syst.* **1996**, *13*, 35–62. [CrossRef]

47. Newkirk, H.E.; Lederer, A.L.; Johnson, A.M. Rapid business and IT change: Drivers for strategic information systems planning? *Eur. J. Inf. Syst.* **2008**, *17*, 198–218. [CrossRef]

48. Pai, J.C. An empirical study of the relationship between knowledge sharing and IS/IT strategic planning (ISSP). *Manag. Decis.* **2006**, *44*, 105–122. [CrossRef]

49. Ali, R.H.R.M.; Mohamad, R.; Talib, Y.Y.A.; Abdullah, A. The roles of top management and users in strategic IS planning: A perspective of SMEs. *Int. J. Inf. Syst. Proj. Manag.* **2018**, *6*, 61–80.

50. Kamariotou, M.; Kitsios, F. Information Systems Planning and Success in SMEs: Strategizing for IS. In *BIS 2019, Springer LNBIP 353*; Chapter 31; Abramowicz, W., Corchuelo, R., Eds.; Springer Nature: Berlin, Germany, 2019; pp. 397–406.

51. Kamariotou, M.; Kitsios, F. Information Systems Planning and Business Strategy: Implications for Planning Effectiveness. In Proceedings of the 8th International Symposium & 30th National Conference on Operational Research, Patras, Greece, 16–18 May 2019; pp. 58–62.

52. Kitsios, F.; Kamariotou, M. Business Strategy Modelling based on Enterprise Architecture: A State of the Art Review. *Bus. Process Manag. J.* **2019**, *25*, 606–624. [CrossRef]

53. Tsoukatos, E.; Psimarni-Voulgaris, F.; Lemonakis, C.; Vassakis, K. The impact of R&D and information technology on innovation performance of Greek SMEs. *Glob. Bus. Econ. Rev.* **2017**, *19*, 521–535.

54. Mitsos, B.; Kontogeorgos, A.; Beligiannis, G.N. Information systems and software used by food businesses in Western Greece. *Int. J. Bus. Contin. Risk Manag.* **2019**, *9*, 153–170. [CrossRef]

55. Mitsos, B.; Beligiannis, G.N. An overview of food businesses in the Western Greece and the extent to which they use information systems. *Int. J. Sustain. Agric. Manag. Inform.* **2018**, *4*, 23–32.

56. Siakas, K.; Naaranoja, M.; Vlachakis, S.; Siakas, E. Family businesses in the new economy: How to survive and develop in times of financial crisis. *Procedia Econ. Financ.* **2014**, *9*, 331–341. [CrossRef]

57. van de Wetering, R.; Mikalef, P.; Pateli, A. Strategic Alignment Between IT Flexibility and Dynamic Capabilities: An Empirical Investigation. *Int. J. It/Bus. Alignment Gov. (IJITBAG)* **2018**, *9*, 1–20. [CrossRef]

58. Chatzoglou, P.; Chatzoudes, D.; Fragidis, L.; Symeonidis, S. Examining the Critical Success Factors for ERP Implementation: An Explanatory Study Conducted in SMEs. In *Information Technology for Management: New Ideas and Real Solutions. ISM 2016, AITM 2016. Lecture Notes in Business Information Processing*; Ziemba, E., Ed.; Springer Nature: Berlin, Germany, 2017; Volume 277, pp. 179–201.

59. Blažková, I.; Dvouletý, O. Investigating the differences in entrepreneurial success through the firm-specific factors: Microeconomic evidence from the Czech food industry. *J. Entrep. Emerg. Econ.* **2019**, *11*, 154–176. [CrossRef]

60. Wach, D.; Stephan, U.; Gorgievski, M. More than money: Developing an integrative multi-factorial measure of entrepreneurial success. *Int. Small Bus. J.* **2016**, *34*, 1098–1121. [CrossRef]

61. Kachigan, S.K. *Multivariate Statistical Analysis: A Conceptual Introduction*, 2nd ed.; Radius Press: Santa Fe, NM, USA, 1991.

62. Kitsios, F.; Kamariotou, M. Decision Support Systems and Business Strategy: A conceptual framework for Strategic Information Systems Planning. In Proceedings of the 6th IEEE International Conference on IT Convergence and Security (ICITCS2016), Prague, Czech Republic, 26–29 September 2016; pp. 149–153.

63. Arvidsson, V.; Holmström, J.; Lyytinen, K. Information systems use as strategy practice: A multi-dimensional view of strategic information system implementation and use. *J. Strateg. Inf. Syst.* **2014**, *23*, 45–61. [CrossRef]

64. Burgelman, R.A.; Floyd, S.W.; Laamanen, T.; Mantere, S.; Vaara, E.; Whittington, R. Strategy processes and practices: Dialogues and intersections. *Strateg. Manag. J.* **2018**, *39*, 531–558. [CrossRef]

65. Chen, D.Q.; Mocker, M.; Preston, D.S.; Teubner, A. Information systems strategy: Reconceptualization, measurement, and implications. *MIS Q.* **2010**, *34*, 233–259. [CrossRef]

66. Marabelli, M.; Galliers, R.D. A reflection on information systems strategizing: The role of power and everyday practices. *Inf. Syst. J.* **2017**, *27*, 347–366. [CrossRef]