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THE IMPACT OF TOP MANAGEMENT SUPPORT ON THE PERCEIVED IS VALUE – SHOULD WE FOCUS ON THE PARTNERSHIP?

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Abstract

Presenting the value of IS to business managers is an important challenge in the business-IS relationship. Despite several contemporary advantages of IS that are based on the digital innovations and social media, these advantages are not easily utilized if top management does not perceive the business value in IS. The purpose of this paper is thus to examine to which extent top management support contributes to the increased perceived value of IS and simultaneously to examine whether partnership relation between top managers and IS personnel contributes more. Based on the literature review and several interviews with top managers and IS managers a model for increasing perceived value of IS has been proposed with the intention to justify the importance of each factor. The model has been empirically tested with structural equation modelling using the data from 221 IS managers. Based on the research findings, suggestions for top managers and IS managers are presented.

Keywords: perceived IS value, IS manager, top management support, business-IS partnership

1.0 Introduction

Presenting the value of information systems (IS) to business departments and particularly to top management is a daunting challenge. Regardless of several contemporary advantages of IS that are mainly based on digital innovations and social media, the latter will be hardly fully utilized unless top management perceive the business value in IS. Thus, it is important to examine factors that are influencing the perceived value of IS.

Several attempts have been made to improve the relationship between IS personnel and business managers (Milis, Fairchild, Smits, & Ribbers, 2008). It has been already shown that one of the most important factors of successful IS implementation is top

management support (Byrd & Davidson, 2003; Ranganathan & Kannabiran, 2004). It has also been presented how to obtain that support (Indihar Štemberger, Manfreda, & Kovačič, 2011); however it is still only vaguely answered whether top management support is sufficient reason for recognizing the improved efficiency because of IS and even more whether it is a sufficient reason for recognizing business value in IS.

Examining the influence of IS on the business value has been a main challenge for researchers in the last few decades (Luo, Fan, & Zhang, 2012; Piccoli & Ives, 2005; Wagner & Weitzel, 2007). It has been claimed that IS contributes to organisational performance by being part of an overall system that improves the creation of economic value (Piccoli & Ives, 2005), however the research on how to improve the business value of IS in the eyes of top management is still missing.

Despite the well-known fact that the relationship between top management and IS personnel is crucial for successful IS implementation; it is often not adequate in many companies (Nord, Nord, Cormack, & Cater-Steel, 2007). Although there were several different opinions in the past on the measures that are needed to establish effective relationships, they have become much more uniform in recent times since authors recently mainly focus on the mutual knowledge of both top managers and IS professionals in order to obtain top management support (Byrd & Turner, 2001; Green, 1989; Indihar Štemberger, et al., 2011; Ranganathan & Kannabiran, 2004; Wade & Parent, 2001 59).

Since top management support to IS is generally identified merely as understanding the importance of IS, supporting initiatives of IS personnel and participating in projects of IS activities (Ragu-Nathan, Apigian, Ragu-Nathan, & Tu, 2004), the research should move beyond top management support towards a special form of business-IS relationship, namely a partnership relation since a partnership has been recommended decades ago for companies in order to attract valuable customers, increase profits (Teng, 2003) and obtain a collaborative advantage (Kanter, 1994). More specifically, it has been recommended for companies to obtain similar gains that are generally linked to measure business value of IS.

The purpose of this paper is thus to present that top management support and partnership relation between top managers and IS personnel are both important factors of the perceived IS value, however the main intention is to examine which factor contributes more to the increased perceived value of IS, and therefore to justify the importance of each factor.

The paper is divided into four main parts. In the first part the theoretical background on the business-IS partnership, top management support and perceived value of IS are examined. Second, the research methodology is described. Third, the data analysis and the results are presented. At the end, concluding remarks with further research opportunities are outlined.

2.0 Literature review

2.1 Perceived value of IS

Studying the influence of IT on the business value has been a main challenge for researchers in the last few decades (Luo, et al., 2012; Piccoli & Ives, 2005; Wagner & Weitzel, 2007). It has been suggested that presenting the importance of investing in information technology and systems is a particularly important contribution of the IS discipline (Agarwal & Lucas Jr, 2005). The focus of the IS strategy should thus be on creating business value (Philip, 2007). Furthermore, IS should be an essential component of the strategy since only technology itself does contribute to organisational performance (Piccoli & Ives, 2005).

It has been argued that IS enables business process reengineering, strategic alliances and competitive advantages (Avison, Cuthbertson, & Powell, 1999), and therefore IS can present its value to the organisation (McKeen & Smith, 1996). Nevertheless, IS creates business value as it enables organisations to perform their functional activities better compared to their competitors (Luo, et al., 2012).

However, it has been claimed that the opportunities for obtaining strategic advantages from IS and IT are disappearing, since companies with the largest IT investment rarely perform the best financial results. Therefore, many companies will have to examine how to invest in IT and to manage their systems (Carr, 2003). Similarly, it

has been found that (Henriksen & Rukanova, 2011) infrastructure technologies are not strategically important and are treated more as a commodity. However, on the other hand, the argument of IT as commodity was also criticized (Hackathorn, 2003).

2.2   Top management support

Top management support is generally identified as supporting initiatives of IS personnel and participating in IS implementation projects (Ragu-Nathan, et al., 2004). It has been claimed that lack of top management support to IS personnel causes that resources are allocated to projects that are perceived as important by top management (Kappelman, McKeeman, & Zhang, 2006). Top management support is thus one of the most important success factors for successful IS projects (Young & Jordan, 2008). Furthermore, it has also been shown that top management support contributes to the increase in IS project performance (Parolia, Goodman, Li, & Jiang, 2007).

Achieve top management support is not self-evident. It is important that top management has adequate IS knowledge and provides enough resources for IS project implementation (Ranganathan & Kannabiran, 2004), while IS managers should have enough business knowledge and skills (Indihar Štemberger, et al., 2011). Responsible top management thus has an important role since only considering the strategic role of IS and its integration into business processes leads to comparative advantages, while technology itself is not a sufficient factor of successful IS implementation (Dhillon, 2008). However, IS manager should present IS as a strategic resource and as a source of delivering value to the organisation (Earl & Feeney, 1994). The responsible IS manager should therefore establish efficient relationships with other managers.

According to these findings and based on our previous research the following hypothesis is proposed: (H1) Top management support has a positive influence on the perceived value of IS.

2.3   Business-IS partnership

Partnership in the business-IS context was already mentioned in the early 1990s when it was suggested that different approaches should be applied in companies to overcome different difficulties like managing project risk, utilising partnerships, and establishing global infrastructure (Ives, Jarvenpaa, & Mason, 1993).

In the management discipline the term partnership describes the relations between companies or organisations. It has been recommended that companies form partnerships with the intention to create better products, attract more valuable customers and increase profits (Teng, 2003). Organisations that manage alliances effectively should therefore obtain additional collaborative advantages (Kanter, 1994).

The term partnership is generally not used in IS disciplines. Researchers have been more focusing on the business-IS alignment as an enabler of strategic competitive advantage providing increased efficiency (Luftman & Brier, 1999). It has been already claimed that understanding shared domain knowledge is the factor with the strongest influence on the business-IS alignment while communication between IS and business executives has also an important role (Reich & Benbasat, 2000), yet the focus was merely on the alignment part.

However, there have been some attempts to define the term partnership in connection with the business-IT relationship. In the business-IT relationship the term partnership has been used as a state that enables easier adopting of IT solution (Tian, Wang, Chen, & Johansson, 2010). Furthermore, this research is one of the few studies that presented measures for defining business-IT partnership, namely mutual understanding, mutual trust, mutual involvement and conflict resolution. The research presented an attempt to define partnership; however, the definition and measures of a business-IT partnership only focused on the mutual understandings.

It has also been claimed that (Chen, 2010) partnership relates to the mutually perceived contribution of IS and business, which includes the role of IS in strategic business planning and sharing both the rewards and risks between IS and business functions. However, the research referred more to the maturity of the partnership rather than the business-IS partnership in general with the construct variables based on the strategic alignment model (Luftman, 2000; Sledgianowski, Luftman, & Reilly, 2006).

The term partnership related to business-IS context has also been used in research expressing principles of good IS governance (Chris, 2005). It has been claimed that appropriate IS governance is an enterprise-wide partnership between business and IS

where both sides have appropriate decision rights and accountabilities. In this paper additional items were included to measure the partnership relation, based on the research examining the partnership relations between non-governmental development organisations (Malena, 1995).

It has been shown in the research (Tuten & Urban, 2001) examining factors that present value in the partnership relationship and therefore motivating managers to form a business partnership that several categories exists, namely a desire for lower costs, providing increased services, enhancing competitive advantage, improving organisational performance and increasing the quality of products and services. These items were presented as important criteria based on the Mohr and Spekman's model (Mohr & Spekman, 1994), since they present the expectations that each potential partner has in the particular partnering relationship (Tuten & Urban, 2001).

According to these findings the following hypothesis is proposed: (H2) Business-IS partnership has a positive influence on the perceived value of IS.

2.4   Model conceptualization

Figure below illustrates the relation between the proposed hypotheses, namely that both top management support and business-IS partnership have an influence on the perceived value of IS.
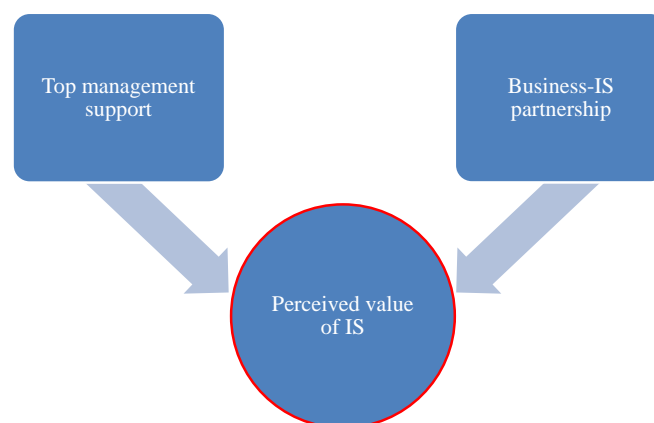

Figure 1: Conceptual model of the partnership relation

To test the proposed hypotheses, three constructs were thus defined, namely: (1) top management support; (2) business-IS partnership and (3) perceived value of IS. The

first two constructs in the model presents exogenous latent variables, while the third construct presents endogenous latent variable.

3.0   Research methodology

3.1   Research instrument

The research question was empirically tested using data from Slovenian companies. A special questionnaires was developed for IS department managers. The questionnaire was, among other indicators that are not relevant for this research, composed of 4 items measuring the perceived value of IS. Further, 6 items were used to measure the top management support to IS and lastly 11 items were used to measure partnership relation. The named items were measured using a structured questionnaire with 7-point Likert scales.

To ensure the content validity the questionnaire was built on the basis of previous findings in the literature (Byrd & Davidson, 2003; Ward & Mitchell, 2004) and earlier research (Groznik, Kovačič, Jaklič, & Indihar Štemberger, 2001; Indihar Štemberger, et al., 2011), while partnership was measured by 11 variables identified in the previous research (Brinkerhoff, 2002; Luftman, 2000; Teng, 2003). Pretesting was done in 2010 using ten semi-structured interviews with selected IS managers that were later also included in the study.

3.2   Data collection

The data collection started in 2011. The entry criteria for including a company in the research were to have at least 50 employees and net sales revenue of more than EUR 8,800,000. Accordingly, 1,495 companies were eligible to participate in the study, and consequently all IS managers in these companies were invited to participate. Companies where no one was formally involved in IS were excluded from further analysis.

A total of 221 CIOs agreed to participate, representing a 14.8% response rate. The respondent companies constitute a representative sample of Slovenian medium and large companies. The profile of the respondents is shown in Table 1.

		Share in %
Type of organisation	Public organisation	18.4
	Private organisation	81.6
Position of CIO	Member of management board	12.7
	Directly subordinated to the top management	60.5
	Indirectly subordinated to the top management	26.8
Ownership	Mainly state ownership	22.7
	Minor state ownership	5.6
	Private domestic ownership	52.8
	Private foreign ownership	19.0

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Table 1: Profile of respondents

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4.0 Data analysis and results

An exploratory factor analysis and a principal axis factoring extraction method with a Varimax rotation was used to examine whether the questionnaire items measure the defined model. The results of the factor loadings are presented in Table 2.

Variable	Label	Factor (KMO = 0.935)		
		1	2	3
imp1	IS enables quality services	.305	.193	**.683**
imp2	IS enables operations with lower costs	.258	.016	**.757**
imp3	IS enables successful business performance	.116	.214	**.804**
imp4	IS enables competitive advantages	.215	.228	**.852**
sup1	Top management is aware of the importance of the IS	.324	**.729**	.289
sup2	Top management is actively involved in IS planning	.137	**.818**	.218
sup3	Top management has sufficient knowledge of the IS	.211	**.814**	.097
sup4	Top management provide sufficient resources to IS	.391	**.614**	.054
sup5	Top management supports the initiatives of IS	.417	**.711**	.103
sup6	Top management recognises the merits to IS personnel	.390	**.708**	.180
part1	Independent IS personnel	**.678**	.231	.257
part2	Top management relies on IS personnel	**.670**	.087	.337
part3	Top management respects the work of IS personnel	**.776**	.461	.167
part4	Top management trusts IS personnel	**.829**	.269	.164
part5	Mutual reliance	**.859**	.235	.190
part6	Involvement in the company's development	**.669**	.422	.337
part7	Aligned objectives	**.655**	.397	.325
part8	Long-term cooperation	**.762**	.364	.210
part9	Commitment to a good relationship	**.853**	.309	.160
part10	Open and honest communication	**.817**	.310	.174
part11	Involvement in formulating business strategies	**.541**	.458	.213

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Table 2: Rotated Component Matrix

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As it is evident from the table, Factor 1 represents a partnership relation, while Factor 2 consists of several items measuring the support and therefore present top management support to IS. Factor 3 consists of several advantages that IS may enable and therefore present the perceived value of IS.

All item loaded on each factor with the loadings greater than 0.50. The limit of 0.45 may be appropriate considering the guidelines for identifying significant factor loadings; however values greater than 0.50 are desired while loadings of 0.30 to 0.40 are rarely acceptable (Hair, Anderson, Tatham, & Black, 1998). Therefore, all three factors are in accordance with the defined constructs.

To empirically verify the proposed hypotheses Structural Equation Modelling (SEM) method with LISREL 8.51 was used. SEM as a confirmatory method is used to verify that the hypothetical relations between the latent variables and relationships between the latent and manifest variables are aligned with the obtained empirical data (Diamantopoulos & Siguaw, 2000).

4.1   Overall model fit assessment

The model fit was examined before interpreting the results, since it signifies the consistency of a hypothesised model and the data (Diamantopoulos & Siguaw, 2000). There is no agreement yet on the overall model fit index (Hayduk, 1996), and therefore in Table 3 fit indices that are generally used with the reference values (where applicable) are presented.

Fit indices	Model value	Reference Value	Overall Model fit
χ^2	636.568	not applicable	N/A
P value for χ^2	0.000	>0.05	No
χ^2/df	3.422	<5.00	Yes
Standardised RMR	0.062	<0.10	Yes
RMSEA	0.107	<0.10 (0.08)	Acceptable
ECVI	3.460	<ECVI saturated (2.20) <ECVI independence (59.50)	N/A
AIC	726.568	<AIC saturated (462.00) <AIC independence (12495.48)	N/A
NFI	0.950	>0.90	Yes
NNFI	0.960	>0.90	Yes
CFI	0.965	>0.90	Yes
GFI	0.776	>0.90	No
IFI	0.965	>0.90	Yes

Table 3: Fit indices for the partnership model

The indices in Table 3 Table 1indicate a good overall model fit, except two indices, namely the p-value for χ^2 statistics and goodness-of-fit index (GFI). However, this does not contradict to good overall model fit, since in the large samples the χ^2 statistic is often significant even though the model has a good fit (James, Mulaik, & Brett, 1982; Marsh, Balla, & McDonald, 1988), particularly when sample size exceeds 200 respondents (Hair, et al., 1998). Therefore, χ^2 statistics in comparison with degrees of freedom is used to test the model (Diamantopoulos & Siguaw, 2000). A model fit is achieved when the ratio between the χ^2 statistics and degrees of freedom is lower than 5 (Wheaton, Muthen, Alwin, & Summers, 1977). Another index that is below the reference value in the table is GFI which also depends on the sample size (Marsh, et al., 1988).

The next index in the table is the standardised RMR, where values below 0.08 are indicators of a good fit (Hu & Bentler, 1998). The recommended values for the root mean square error of approximation (RMSEA) vary. A reference value for a good model fit is below 0.08 (Jarvenpaa, Tractinsky, & Vitale, 2000).

The ECVI index focuses on overall error and there is no reference value for it. The same is true for Akaike's information criterion index. The values of last indices in the table, namely normed fit index (NFI), non-normed fit index (NNFI), comparative fit index (CFI) and incremental fit index (IFI) should be close to 1, since values above 0.90 present a good fit (Jöreskog & Sörbom, 1993).

It has been claimed that the $\chi2$ per degree of freedom, comparative fit index (CFI,) and non-normed fit index (NNFI) are generally used to assess the model fit (Koufteros, 1999). Considering indices above and limitations behind these indices the model presented in the Figure 2 has a good overall fit.

The Figure shows the path diagram with the completely standardised parameter estimates using a maximum likelihood method.
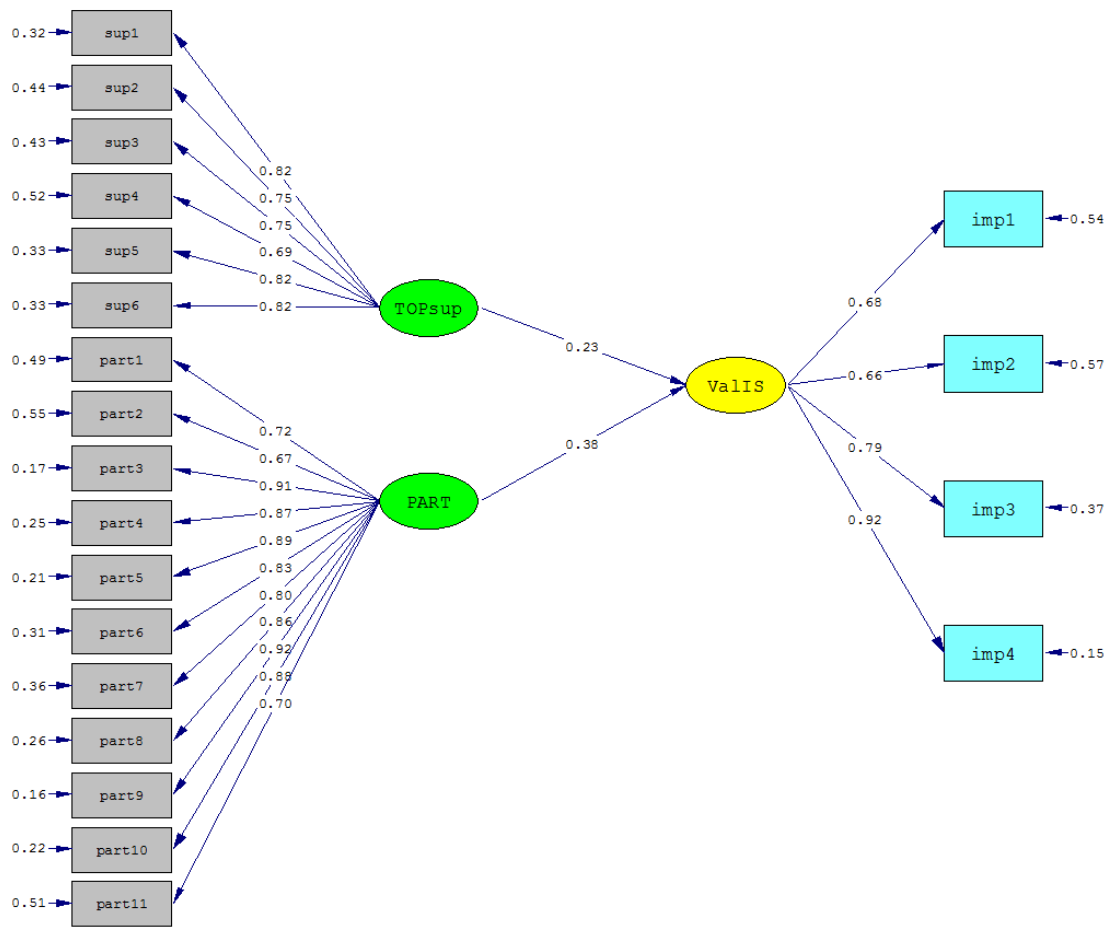
Figure 2: Path diagram for the partnership model

4.2   Assessing the measurement model

Assessment of the measurement model refers to determining the validity and reliability of the measures that are used to represent the latent variables. Validity is achieved when the relationship between each latent variable and its indicators are significantly different from zero.

In Table 4 indicators with Lisrel estimates and t-values are presented. Given that all t-values exceed 2.58, the relations are significantly different from zero and therefore, the construct validity is achieved.

Latent Variable	Indicator	Estimate	t-value	Completely standardised loadings	R^2
ValIS	imp1	0.599	10.483	0.677	0.459
	imp2	0.606	10.105	0.658	0.433
	imp3	0.836	12.826	0.792	0.627
	imp4	0.996	15.305	0.922	0.850
TOPsup	sup1	1.200	14.273	0.824	0.680
	sup2	1.259	12.328	0.746	0.557
	sup3	1.166	12.490	0.753	0.567
	sup4	0.988	11.156	0.694	0.482
	sup5	1.118	14.170	0.821	0.673
	sup6	1.264	14.084	0.817	0.668
PART	part1	0.891	11.900	0.716	0.513
	part2	0.697	10.867	0.669	0.447
	part3	1.210	17.094	0.909	0.826
	part4	1.014	15.755	0.866	0.750
	part5	1.217	16.522	0.891	0.794
	part6	1.114	14.706	0.829	0.687
	part7	1.071	13.873	0.798	0.636
	part8	1.100	15.646	0.862	0.743
	part9	1.234	17.289	0.915	0.837
	part10	1.213	16.259	0.883	0.779
	part11	1.122	11.476	0.697	0.486

Table 4: Validity and reliability assessment

Further, completely standardised loadings are also presented to make possible comparing the validity of different indicators. Enabling competitive advantages is thus the most valid indicator for the perceived value of IS, while top management awareness of the IS importance is the most valid indicator for top management support. Similarly, commitment to a good relationship is the most valid indicator for business-IS partnership relation. The second part of assessing the measurement model refers to reliability, which is examined by squared multiple correlations (R^2). They present the share of variance in an indicator that is explained by its latent variable. In the presented model, there are merely five indicators with R^2 around 0.4, while all other indicators range from 0.51 to 0.85.

4.3   Assessment of the structural model

Assessment of the structural model fit refers mainly to the significance of the estimated coefficients in the structural part of the model (Hair, et al., 1998) and to examining whether the data support the theoretical relationships in the conceptualisation model (Diamantopoulos & Siguaw, 2000).

In the presented model both signs of parameters in the structural model are consistent with the hypothesised relationships between the latent variables. Further, the influence of TOPsup on ValIS is statistically significant at the 0.05 significance level, while the influence of PART is significant at the 0.001 level. Considering the relative impact of the estimated parameters in the structural model, the impact of PART on ValIS is considerably larger comparing to the impact of TOPsup on ValIS since the standardized effect of PART on ValIS is 0.384, while the standardized effect of topSUP on ValIS is 0.226. Lastly, the R^2 for ValIS is relatively high, namely 0.332 indicating that the independent latent variables (topSUP and PART) explain 33% of the variance in the ValIS latent variable.

Considering the overall model fit, the measurement model fit and the structural model fit, the confirmatory analysis has verified both hypothesis and confirmed the different impact size of top management support and business-IS partnership on the perceived value of IS.

5.0   Discussion

5.1. Findings and implications

The research showed that top management support and business-IS partnership positively influence on the perceived value of IS. Furthermore, it has been shown that the influence of business-IS partnership is considerably larger comparing to the influence of the top management support.

The finding indicate that IS managers and business managers should focus on emphasising open and honest communication, respecting the work of IS personnel, emphasising mutual reliance and commitment to a good relationship since these are the most influential items of business-partnership. However other items as aligned objectives, long-term cooperation, involvement of IS manager in formulating business strategies, trusting IS personnel and involving IS personnel in the company's development also present an important measures of business-IS partnership, and thus should not be neglected.

The research has thus succeeded in explaining that top management support and business-IS partnership as well have an important influence on the perceived IS value and also that this influence is considerably different. Focusing merely on the top management support as it is mostly done in different studies (Caldeira & Ward, 2002; Ragu-Nathan, et al., 2004; Young & Jordan, 2008) causes that several important factors that have particularly important effect on the perceived IS value are missed.

5.2. Research limitations

The study results do not present the situation of specific industrial sector, although the purpose of this paper was to confirm the hypotheses in general and not as applied to a specific industrial sector. Moreover, the research focused on the IS management side merely. Furthermore, the research did not explain how to obtain top management support or how to obtain partnership relation, since the focus of the research was in comparing different constructs and examining their influence on the perceived value of IS. Nevertheless, explaining how to obtain top management support was already examined in details in previous research (Indihar Štemberger, et al., 2011).

The research has indicated that further study on business-IS partnership is justified, since it has an important influence on the perceived value of IS. Further research is thus needed to examine how to achieve partnership relation between top management and IS personnel in companies and to present factors that contribute to the better understanding in the business-IS relationship. Nevertheless, the research investigating the relationship between partnership and top management support should also ease the understanding of the business-IS relationship and important factors in it.

6.0   Conclusion

Presenting IS value to business managers is a daunting challenge. Despite several advantages of IS in the contemporary world, namely establishing new services or methods of work that are based on digital innovations and social media, the latter may not be fully utilized if top management does not perceive the business value in IS. Therefore, the research focused on the factors that have an influence on the perceived value of IS.

The results has shown that both top management support and business-IS partnership have important and positive influence on the perceived value of IS in the companies. However the influence of business-IS partnership on the perceived value of IS overcome the influence of the top management support. Therefore, the focus of IS managers, business managers and particularly top management should be in striving for efficient relationship between business and IS since it has large impact on the perceived value of IS.

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