APPENDIX I. A SUMMARY OF PRIOR ISBV LITERATURE REVIEWS (N=18)

Citation	Review period (sample size)	Key findings/contributions
Kauffman and Weill (1989)	1975-1988 (13 empirical studies)	- Microeconomic theory is the most adopted theory base. - Research differs in the use of cross-sectional and longitudinal data. - Contextual factors need to be better investigated. - Time lags are not well studied.
Brynjolfsson (1993)	1986-1991 (17 empirical studies)	- Shortfalls in IS productivity are due to deficiencies in measurement and methodology: (1) mismeasurement of inputs and outputs, (2) lags due to learning and adjustment, (3) redistribution and dissipation of profits, (4) mismanagement of information and technology
Brynjolfsson and Yang (1996)	1982-1995 (46 empirical studies)	- While earlier studies failed to identify ISBV at the economy level, recent studies reported more promising results. - The firm-level analysis helps to control many problems from aggregation. - ISBV is better observed for studies that used larger and more recent datasets. - Lags due to learning and adjustment are not well addressed.
Chan (2000)	1993-1998 (38 empirical studies published in CACM, ISR, JMIS, or MISQ)	- Secondary data analysis is the most dominant research method. - Having more balanced perspectives of ISBV are required, such as combinations of organization and non-organization level analyses and hard/objective and soft/subjective measures. - Future research should emphasize theory generation and reduce the reliance on isolated, input-output "black box" approaches.
Dehning and Richardson (2002)	1996-2001 (31 empirical studies)	- The relation between IS spending and accounting performance is tenuous. - Strategic IS use is the least-developed area that examines the relation between IS and performance. - Contextual factors are critical in understanding the relation between IS investments and performance. - A process-oriented framework is developed to guide future research in the evaluation of IS investments.
Dedrick et al. (2003)	1985-2002 (34 empirical studies)	- The productivity paradox, as first formulated, has been effectively refuted. - At both the firm and the country level, greater IS investment is associated with greater productivity growth. - Complementary organizational resources can explain the wide range of ISBV among different organizations at the firm level. - IS is not simply a tool for automating existing processes but is, more importantly, an enabler of organizational changes that can lead to additional productivity gains.
Kohli and Devaraj (2003)	1990-2000 (66 empirical papers)	- Sample size, data source (firm-level or secondary), and industry in which the study is conducted influence the strength of firm performance improvements. - The choice of the dependent variable(s), the type of statistical analysis conducted, and whether the study adopted a cross-sectional or longitudinal design influence the outcome.
Melville et al. (2004)	Up to 2002 (202 papers)	- The extent and dimensions of ISBV are dependent upon internal and external factors, including complementary organizational resources of the firm and its trading partners and the competitive and macro environment.
Piccoli and Ives (2005)	1981-2003 (117 papers published in information systems, strategic management, and marketing journals)	- A model is presented showing how and why the IS-dependent strategic initiatives' characteristics enable sustained competitive advantage and how the determinants of sustainability are developed and strengthened over time. - Four determinants of sustainability of IS strategic initiatives are: (1) IS resources barrier (IS assets and IS capabilities), (2) Complementary resources barrier, such as organizational structure, governance, or access to distribution channels, (3) IS project barrier (technology characteristics and implementation process), (4) Preemption barrier (switching costs and value system structural characteristics).
Chau et al. (2007)	1993–2005 (41 papers from PACIS), and 2000–2005 (49 papers from ECIS)	- There is a general shift from using objective measures to perceptual (subjective) measures. - The majority of studies on ISBV were conducted at the firm level. - The most popular method in ISBV research is the survey.
Wan et al. (2007)	1996-2006 (96 paper that referenced Brynjolfsson and Hitt's (1996) paper)	- The majority of studies on ISBV studies were conducted at the firm level. - Original paradox has largely been resolved thanks to more sophisticated and refined data sources, a shift in the level of analysis towards the firm level, and a refocus on the IS management.

Citation	Review period (sample size)	Key findings/contributions
Kohli and Grover (2008)	-not explained	- A critical mass of studies demonstrate a relationship between IS and some aspect of firm value, whether it be financial (e.g., ROI), intermediate (e.g., process-related), or affective (e.g., perception-related). - Four major themes for future research are outlined, describing what we need to know, as (1) IS-based co-creation of value, (2) IS-embeddedness, (3) information mindset, and (4) value expansion.
Pare et al. (2008)	1991-2005 (124 empirical papers published in MISQ and ISR)	- Experiments, case studies, and questionnaire surveys account for 74% of all research papers. - IS impacts are still dominated by deterministic imperatives using variance models, and relatively little use is made of mixed analysis levels.
Liang et al. (2010)	1990-2009 (42 empirical papers adopted RBV)	- The mediated model that includes organizational capabilities as mediators between organizational resources and firm performance can better explain the value of IS than the direct-effect model without organizational capabilities. - Technology resources can improve efficiency performance but may not enhance financial performance directly. - Internal capabilities affect performance, but it is external capabilities that affect financial performance
Lim et al. (2011)	1990-2010 (44 empirical papers)	- The relationship between IS investment and performance varies, depending on how both financial performance and IS investment are measured. - The relationship between IS investment and performance is often stronger in studies that employ accounting measures rather than market measures of firm performance. - The relationship is stronger when IS investment is measured as IS strategy or spending rather than IS capability.
Masli et al. (2011)	2000-2011 (>50 empirical papers)	- Researchers should seek alternate business value measures closely related to the types of IS investment in question. - Researchers should develop new measures of both IS investment and IS capability. - Researchers should examine the link between IS and other business resources/ processes in a variety of contexts. - Researchers should reconsider IS strategic roles and find better measures of IS alignment.
Schryen (2013)	1989-2012 (>200 empirical papers)	- Key limitations of ISBV research are based on IS business value's ambiguity and fuzziness, the neglected disaggregation of IS investments, and the unexplained process of creating internal and competitive value. - ISBV field is dominated by empirical studies and econometric approaches, the ex-post perspective, the adoption of variance theories in contrast to process theories, a firm-level perspective, the analysis of firm performance in terms of productivity, market performance, and accounting performance, and the consideration of the complementary influence of contextual factors and lag effects.
Sabherwal and Jeyaraj (2015)	1990-2013 (265 empirical papers)	- ISBV increases when the study does not consider IS investment, does not use profitability measure of value, and employs primary data sources, fewer IS-related antecedents, and larger sample size. - Considerations of IS alignment, IS adoption and use, and inter-organizational IS strengthen the relationship between IS investment on performance, whereas the focus on environmental theories dampens the same relationship. - The use of productivity measures of value, the number of dependent variables, the economic region, the consideration of IS assets and IS infrastructure or capability, and IS sophistication do not affect ISBV. - ISBV increases over time with IS progress.

APPENDIX II. SUMMARY OF ISBV LITERATURE REVIEW

Authors	*Journal*	*Theory[1]*	*Industry sector*	*Country*	*Method-Data[2]*	*Path (significance)[3]*	*Contextual factors[4]*	*Measuring value*	*Operationalization[5]*	*Type of relations*	*Time lag (year)*	*Path mark*
(Floyd & Wooldridge, 1990)	Journal of Management Information Systems	No Theory	Financial	USA	C-P; 68 Bank CEOs	ISU→ACP (+,Sig)		Objective	ACP (ROA)	Direct	N	4
(Weill, 1992)	Information Systems Research	No Theory	Manufacturing	USA	L-S; 33 firms, 1982-1987	ISD→ISI (+,Sig); ISI→ACP (+,n.sig)		Objective	ISD (Prior firm performance), ACP (ROA, Labor, % change in labor, GINS)	Direct	N	1, 4
(Mahmood & Mann, 1993a)	Accounting, Management and Information Technologies	No Theory	Multi	USA	C-S; 100 firms, IDG's ComputerWorld and Compact DISCLOSURE database, 1990	ISI→ACP (+,sig)		Objective	ISI (IS Budget); ACP (ROI, ROS, SBYE, SBYTA, MBA)	Direct	N	4
(Mahmood & Mann, 1993b)	Journal of Management Information Systems	No Theory	Multi	USA	C-S; IDG's ComputerWorld, Compact DISCLOSURE database, 1989	ISI→ACP (+,M)		Objective	ISI (IS budget as a percentage of revenue, value of an organization's IS as a percentage of revenue, Percentage of IS budget spent on staff, Percentage of IS budget spent on training IS staff, Number of PCs and terminals as a percentage of total employees); ACP (ROI, ROS, GINR, SBYTA, SBYE, MBA)	Direct	N	4
(Mahmood, 1993)	European Journal of Information Systems	Microeconomic Theory, System Theory	Multi	USA	C-S; 80 firms, IDG's ComputerWorld, 1988	ISI→ACP (+,M)		Objective	ISI (IS budget (% revenue), IS value (% revenue), IS budget (staff), IS budget (training), PCs per employee); ACP (ROS, ROI, MBA, SBYE, SBYTA, GINR)	Direct	N	4
(Kelley, 1994)	Management Science	No Theory	Manufacturing	USA	C-P; 1612 observations from a survey of production managers in 1987	ISC→OPC (+,Sig)	ConV: IS (IS type)	Objective	ISC (programmable versus conventional machines); OPC (production hours per unit)	Indirect	N	2, 5
(Barua et al., 1995)	Information Systems Research	Production Theory	Manufacturing	Multi-national	L-S; 60 strategic business units (SBU) belonged to 20 large firms, Strategic Planning Institute (SPI) Cambridge, 1979-1983	ISI→ACP (+,M); ISI→HYP (+,M)	ConV: I (market growth, opportunity cost of capital, new competitors' products, purchase amount of users, R&D intensity), C (prime rate change, GNP change for manufacturing sector)	Objective	ISI (IS capital); ACP (MS, ROA); HYP (TIT, Capacity utilization, New products, Relative quality)	Direct	N	4, 5
(Brown et al., 1995)	Journal of Management Information Systems	No Theory	Multi	USA	C-S; 35 firms, Wiseman's approach to identifying SIS companies and Compustat, 1982-1986	ISU→ACP (+,M)		Objective	ISU (SIS use); ACP (ROA, ROS, Asset turnover, TIT, Accounts receivables turnover, SBYE, RPE,GINS)	Direct	N	4
(Kivijärvi & Saarinen, 1995)	Information and Management	No Theory	Multi	Finland	C-P; 200 IT managers of the largest companies	ISI→HYP (+,M)	ConV: F (size, financial strategies), I (industry sector)	Objective	ISI (IS costs/net sales, IS costs/employee, IS costs/office worker); HYP (growth, profitability, funding position)	Direct	N	4, 5
(Kwon & Stoneman, 1995)	Economics of Innovation and New Technology	Production Theory	Multi	UK	L-S; 217 firms, CURDS and Lotus Datastream, 1981–1990	ISU→ACP (+,Sig)		Objective	ISU (technology adoption); ACP (Output, EVA)	Direct	N	4
(Lichtenberg, 1995)	Economics of Innovation and New Technology	No Theory	Multi	USA	L-S; 1700 observations, IDG's ComputerWorld and IW, 1988-1991	ISI→ACP (+,Sig)		Objective	ISI (computer capital stock); ACP (Revenue)	Direct	N	4
(Lubbe, 1995)	Journal of Information Technology	No Theory	Financial	South Africa	C-P; 12 firms	ISI→ACP (+,Sig)		Objective	ISI (IS expenditure ratio); ACP (OPEXP)	Direct	N	4

Authors	*Journal*	*Theory[1]*	*Industry sector*	*Country*	*Method-Data[2]*	*Path (significance)[3]*	*Contextual factors[4]*	*Measuring value*	*Operationalization[5]*	*Type of relations*	*Time lag (year)*	*Path mark*
(Mukhopadhyay et al., 1995)	MIS Quarterly: Management Information Systems	No Theory	Manufacturing	USA	L-S; 9 firms, 1981-1990	ISI→ACP (+,Sig)		Objective	ISI (EDI %); ACP (TIT)	Direct	N	4
(Brynjolfsson & Hitt, 1996)	Management Science	No Theory	Multi	USA	L-S; 367 large firms, IDG's ComputerWorld, and Compustat, 1988-1992	a: ISI→ACP (+,Sig); b: ISI→ACP (+,Sig)	ConV: F (ROE, size)	Objective	a: ISI (MV of central processors plus the value of PCs and terminals); b: ISI (Total IS Budget times percentage of IS Budget devoted to labor expense); ACP (Sales)	Direct	N	4, 5
(Hitt & Brynjolfsson, 1996)	MIS Quarterly: Management Information Systems	Production Theory	Multi	USA	L-S; 370 firms, IDG's ComputerWorld and Compustat, 1988-1992	ISI→ACP (+,M)	ConV: F (IS stock per employee, capital intensity, leverage, market share, GINS)	Objective	ISI (IS stock (computer capital plus three times IS labor)); ACP (ROA, ROE, total return, EVA)	Direct	N	4, 5
(Peffers & dos Santos, 1996)	IEEE Transactions on Engineering Management	No Theory	Multi	USA	C-S; 2534 banks, Federal Deposit Insurance Corporation (FDIC), 1975	ISI→ACP (+,M)	ConV: F (growth, cost strategy, retail focus, structure, size)	Subjective	ISI (ATM); ACP (Performance, MS)	Direct	N	4, 5
(Rai et al., 1996)	Omega	No Theory	Multi	USA	L-S; 205 firms from Compustat and IW, 1992-1993	ISI→ACP (+,M)	ModV: F (sales per IS employee, income per IS employee); ConV: F (size), I (industry sector)	Objective	ISI (capital and operating budget of IS); ACP (ROA, ROE, MS, Sales)	Direct	N	4, 5
(Rogers et al., 1996)	Logistics and Transportation Review	No Theory	Warehousing	USA	C-P; 292 firms	ISU→HYP (+,n.sig)		Subjective	ISU (15 IS tools such as EDI, expert systems); HYP (Cycle time reduction, Productivity improvements, Reduced waste, Reduced costs, Reliability of service, Customer satisfaction, Quality improvements)	Direct	N	4
(S. Mitra & Chaya, 1996)	Journal of Management Information Systems	No Theory	Multi	USA	L-S; 448 firms, IDG's ComputerWorld and Compustat, 1988-1992.	ISI→ACP (+,sig)	ConV: I (industry sector)	Objective	ISI (IS budget as a percentage of sales); ACP (COG/S, SGA/S)	Direct	N	4, 5
(Marshall & Byrd, 1997)	Omega	No Theory	Multi	USA	L-S; 350 firms, IDG's ComputerWorld, 1989-1991	ISI→ACP (+,M)		Objective	ISI (PCSEMP (ratio of number of PCs and terminals to employees), BUDBYTRA (ratio of IS budget spent on IS staff training to total IS budget), ISVALBYREV (ratio of the processor value to revenue), BUDBYREV (ratio of IS budget to revenue)); ACP (SBYE, SBYTA, ROS, ROI, MBA)	Direct	Y (2-4)	4, 6
(Powell & Dent-Micallef, 1997)	Strategic Management Journal	RBV	Retail	USA	C-P; 65 top-level managers	ISC→HYP (+,Sig); ISC→HYP (+,n.sig); ISC→HYP (+,n.sig)		Subjective	ISC (human resources); ISC (business resources); ISC (technology resources); ACP (financial performance, GINS, profitability)	Direct	N	4
(Prattipati & Mensah, 1997)	Information and Management	No Theory	Multi	USA	C-S; 100 firms, IDG's ComputerWorld, 1994	ISI→ACP (+,M)			ISI (IS budget, % of the budget on new development, % of the budget on client-server apps, % of budget spent outside IS department, IS employees, PCs, Network); ACP (management productivity)	Direct	N	4
(Siegel, 1997)	Review of Economics and Statistics	No Theory	Manufacturing	USA	L-S; 293 firms, 1972-1987	ISI→ACP (+,Sig)		Objective	ISI (computer expenditure to industry revenue); ACP (Productivity growth)	Direct	N	4
(Francalanci & Galal, 1998)	MIS Quarterly: Management Information Systems	No Theory	Financial	USA	L-S; 52 insurance companies from LOMA and Compustat, 1982-1995	ISI→ACP (+,M)		Objective	ISI (IS expenditures); ACP (Operating expense to premium income, RPE)	Direct	N	4
(Grover et al., 1998)	Information and Management	No Theory	Multi	USA	C-P; 313 IS executives	ISU→ACP (+,Sig)		Subjective	ISU (11 IS tools such as EDI, email, expert system); ACP (Perceived productivity improvement)	Direct	N	4

Authors	*Journal*	*Theory[1]*	*Industry sector*	*Country*	*Method-Data[2]*	*Path (significance)[3]*	*Contextual factors[4]*	*Measuring value*	*Operationalization[5]*	*Type of relations*	*Time lag (year)*	*Path mark*
(Kar Yan Tam, 1998)	IEEE Transactions on Engineering Management	Production Theory	Multi	Multi-national	L-S; 88 firms from Asian Computer Directory (ACD), the financial databases PACAP and Global Vantage (GV), and publications from the Asian Development Bank (ADB), 1983-1991	ISI→ACP (+,M)		Objective	ISI (computer capital); ACP (Revenue)	Direct	N	4
(Mcguckin et al., 1998)	Economics of Innovation and New Technology	Production Theory	Manufacturing	USA	C-S; 6917 plants from the 1988 and 6122 from the 1993 Census of Manufacturers and the Annual Survey of Manufacturers	ISU→ACP (+,Sig)		Objective	ISU (17 IS tools such as design and engineering, fabrication and machinery, and communications and control); ACP (Labor Productivity)	Direct	N	4
(Tam, 1998)	Information Systems Research	No Theory	Multi	Multi-national	L-S; 38 firms from Hong Kong, 26 from Singapore, 24 from Malaysia, 18 from Taiwan, Asian Computer Directory; PACAP and Global Vantage, 1983-1991	ISI→ACP (+,M)	ConV: F (size)	Objective	ISI (IS capital value); ACP (Total Shareholder Return, ROE, ROA, ROS)	Direct	Y (1)	4, 5, 6
(Teo & Wong, 1998)	Omega	IS Success Model	Retail	Singapore	C-P; 1455 companies	ISI→HYP (+,M)	ConV: F (size)	Subjective	ISI (IS expenditure to business turnover ratio); HYP (Improved productivity, competitiveness)	Direct	N	4, 5
(Anandhi S Bharadwaj et al., 1999)	Management Science	No Theory	Multi	USA	L-S; 631 firms, IW and Compustat, 1989-1993	ISI→MAP (+,Sig)	ConV: F (market share, advertising expenditure, R&D expenditure, diversification, size), I (industry concentration, industry capital intensity, industry average Tobin's q, regulation)	Objective	ISI (IS expenditure ratio); MAP (Tobin's q)	Direct	N	4, 5
(Johannessen et al., 1999)	Information Management and Computer Security	Production Theory	Multi	Norway	C-P; 200 CEOs in small firms	ISU→ACP (+,M)		Subjective	ISU (13 IS tools); ACP (productivity)	Direct	N	4
(Koski, 1999)	Research Policy	No Theory	Electronics	Finland	L-S; 15 firms, Federation of Finnish Electrical and Electronics Industry, 1994–1996.	ISU→ACP (+,n.sig)		Objective	ISU (IS for Sales and marketing, Seeking business partners, etc.); ACP (Labor productivity, Total factor productivity, Revenues)	Direct	N	4
(Lee, 1999)	Journal of Productivity Analysis	Production Theory	Multi	UK	L-S; 60 SBUs from Strategic Planning Institute (SPI), 1978-1984	ISI→ACP (+,Sig)		Objective	ISI (IS capital); ACP (Productivity)	Direct	N	4
(Lehr & Lichtenberg, 1999)	Canadian Journal of Economics	No Theory	Multi	USA	L-S; 757 firms, Enterprise Survey (Census Bureau), Auxiliary Establishment Survey (Census Bureau), Computer Intelligence InJocorp, Compustat, 1977-1993	ISI→ACP (+,n.sig)	ConV: F (R&D intensity, R&D employment)	Objective	ISI (IS% as the share of computers in total capital); ACP (Inventory/Sales, Sales)	Direct	N	4, 5
(Li & Ye, 1999)	Information and Management	RBV	Multi	USA	L-S; 216 firms, IW and Compustat, 1992-1994	ISI→ACP (+,n.sig)	ModV: F (strategy, CIO/CEO arrangement), I (environmental dynamism); ConV: F (size, leverage), I (environmental munificence),	Objective	ACP (ROA, ROS)	Direct	N	4, 5

Authors	*Journal*	*Theory[1]*	*Industry sector*	*Country*	*Method-Data[2]*	*Path (significance)[3]*	*Contextual factors[4]*	*Measuring value*	*Operationalization[5]*	*Type of relations*	*Time lag (year)*	*Path mark*
(A.S. Bharadwaj, 2000)	MIS Quarterly: Management Information Systems	RBV	Multi	USA	L-S; 149 firms, IW, IDG's ComputerWorld and Compustat, 1991-1994	ISC→ACP (+,M)	ConV: F (size), I (industry sector)	Objective	ISC (IW500 ranking); ACP (ROA, ROS, OI/A, OI/S, OI/E)	Direct	N	4, 5
(B. Lee & Menon, 2000)	Journal of Management Information Systems	No Theory	Healthcare	USA	L-S; 83 hospitals, Washington State Department of Health (WADOH) hospital data, 1976-1994	ISC→HYP (+,n.sig); ISC→HYP (+,n.sig)		Objective	ISC (IS staff)	Direct	N	4
(Devaraj & Kohli, 2000)	Journal of Management Information Systems	No Theory	Healthcare	USA	L-S; 8 hospitals data for 3 years	ISI→HYP (+,M); a: ISC→ACP (+,M); b: ISC→ACP (+,M); ISI→OPC (+,n.sig)	ConV: F (Service index, Labor intensity, Medicare, Medicaid, Outpatient mix, Per-capita income)	Objective	a: ISC (IS support assets); b: ISC (IS staff); OPC (customer satisfaction); HYP (net patient revenue per day, net patient revenue per admission, mortality rate)	Direct and indirect	Y (2-4 months)	2, 4, 5, 6
(Menon & Lee, 2000)	Decision Support Systems	Production Theory	Healthcare	USA	L-S; 54 hospitals, 1976-1994	ISI→HYP (+,Sig)		Objective	ISI (IS capital, Medical IS capital); HYP (Adjusted patient days)	Direct	N	4
(Sircar et al., 2000)	Journal of Management Information Systems	No Theory	Multi	USA	L-S; 624 firms, IDC, Compustat and Moody, 1988-1993	ISI→HYP (+,M); ISC→HYP (+,sig)	ConV: F (size), I (industry sector)	Objective	ISI (IS budget, Budget for IS staff divided by IS budget, Budget for IS staff training divided by IS budget); ISC (IS staff); HYP (Annual gross revenues, Total net assets, Average daily stock closing price during year, Outstanding common shares, Total stockholders' equity, TNI)	Direct	N	4, 5
(Stratopoulos & Dehning, 2000)	Information and Management	No Theory	Multi	USA	L-S; 71 firms, CWP100 list for 1993, Compustat, 1988-1997	ISC→ACP (+,M)	ConV: F (size), I (industry sector)	Objective	ISC (CWP100 ranking); ACP (Profitability measures (GINS, Gross profit margin, operating profit margin, Net profit margin, ROA, ROE, ROI) and Efficiency measures (Fixed assets turnover, Total assets turnover, TIT))	Direct	Y (1-9)	4, 5, 6
(Tallon et al., 2000)	Journal of Management Information Systems	No Theory	Multi	Multi-national	C-P; 304 executives	ISC→MPC (+,Sig); ISC→OPC (+,Sig)			ISC (IS strategic alignment); OPC (Supplier relations, production and operations, product and service enhancement, sales and marketing, customer relations); MPC (process planning and support)	Indirect	N	2
(Andersen & Segars, 2001)	Information and Management	No Theory	Textile and apparel	USA	L&C-P&S; 91 CIOs' survey and Compustat data, 1992-1998	ISU→ACP (+,n.sig)	ConV: F (organizational change)	Objective	ISU (use of electronic mail service, computerized data transmission, own telecommunication networks, fiber distributed data interfaces, client servers); ACP (Net profit margin, Operating margin, ROA, Adjusted cash flow margin)	Direct	Y (3)	4, 5, 6
(Bergeron et al., 2001)	Omega	No Theory	Multi	Canada	C-P; 110 top-level managers of small firms	ISC→ACP (+,Sig)		Subjective	ISC (Strategic IS management); ACP (Profitability, GINS, Financial resources)	Direct	N	4
(Hu & Plant, 2001)	Information Resources Management Journal (IRMJ)	No Theory	Multi	USA	L-S; 56 firms for 1990-1993, 62 firms for 1991-1994, 42 firms for 1992-1995	ISD→ISI (+,Sig); ISI→ACP (+,n.sig)		Objective	ISD (Prior firm performance), ACP (GINS, OPEXP, productivity, profitability)	Direct	Y (1)	1, 4, 6
(Shin, 2001)	European Journal of Information Systems	No Theory	Multi	USA	L-S; 312 observations, Compustat and IDG's ComputerWorld, 1988-1992	ISI→ACP (+,n.sig)	ConV: F (vertical integration, diversification)	Objective	ISI (IS intensity); ACP (Net profit, ROA, ROE)	Direct	Y (1)	4, 5, 6
(Hitt et al., 2002)	Journal of Management Information Systems	No Theory	Multi	USA	L-S; Compustat and license agreements for the SAP R/3 system sold by SAP America, 1986-1998	ISU→ACP (+,Sig)	ConV: F (size), I (industry sector)	Objective	ISU (ERP implementation); ACP (MV, EVA, COGS, Sales, Output, Pretax income)	Direct	N	4, 5

Authors	*Journal*	*Theory[1]*	*Industry sector*	*Country*	*Method-Data[2]*	*Path (significance)[3]*	*Contextual factors[4]*	*Measuring value*	*Operationalization[5]*	*Type of relations*	*Time lag (year)*	*Path mark*
(Ross, 2002)	International Journal of Physical Distribution and Logistics Management	No Theory	Manufacturing	USA	C-S; 51 firms, IW and Compustat, 1999	ISI→ACP (+,M)		Objective	ISI (IS budget to salaries); ACP (revenue, ROA, OI)	Direct	N	4
(Shao & Lin, 2002)	Information and Management	Production Theory	Multi	USA	L-S; 370 firms and 1115 observations, IDG's ComputerWorld, 1988-1992	ISI→ACP (+,sig)		Objective	ISI (IS hardware value + IS staff expenses); ACP (EVA)	Direct	N	4
(Zhu & Kraemer, 2002)	Information Systems Research	RBV	Manufacturing	USA	L&C-P&S; 260 firms data from publicly available data, Harte-Hanks database of computer equipment, and Compustat	ISC→ACP (+,M)	ModV: F (e-commerce capability, high tech and traditional manufacturing method); ConV: F (size), I (industry sector)	Objective	ISC (LAN, PC, IS intensity); ACP (RPE, profit margin, COGS, TIT)	Direct	N	4, 5
(Byrd & Davidson, 2003)	Information and Management	No Theory	Multi	USA	C-P; 225 IT managers	ISC→OPC (+,Sig); OPC→ACP (+,Sig)		Subjective	ISC (IS department technical quality); OPC (SC performance); ACP (ROE, ROI, MS)	Direct and indirect	N	2, 3
(Devaraj & Kohli, 2003)	Management Science	No Theory	Healthcare	USA	L-S; 8 hospitals data for 3 years	ISU→HYP (+,Sig)	ConV: F (Medicare, Medicaid, casemix, patient income, number of employees (FTE), age, outpatients)	Objective	ISU (reports processing (CPU) time, number of records accessed); HYP (mortality, revenue per admission, revenue per day)	Direct	Y (2 months)	4, 5, 6
(Drennan & McColl-Kennedy, 2003)	Journal of Services Marketing	No Theory	Service	Australia	C-P; 262 health and retail relevant respondents	ISU→OPC (+,Sig)		Subjective	ISU (email, searching, ordering, paying activities); OPC (perceived improvements innovativeness, and usefulness in the performance);	Indirect	N	2
(Peslak, 2003)	Journal of Computer Information Systems	No Theory	Multi	USA	L-S; Compustat, IDG's ComputerWorld, IW, 1989-1999	ISI→HYP (+,M)		Objective	ISI (IS budget); HYP (ROA, ROE, ROI, Tobin's q)	Direct	N	4
(Santhanam & Hartono, 2003)	MIS Quarterly: Management Information Systems	RBV	Multi	USA	L-S; 149 firms, IW and Compustat, 1991-1994	ISC→ACP (+,sig)	ConV: I (industry sector)	Objective	ISC (IW500 ranking); ACP (average profit ratios, average cost ratios)	Direct	Y (1-2)	4, 5, 6
(Tippins & Sohi, 2003)	Strategic Management Journal	RBV	Manufacturing	USA	C-P; 271 executives	ISC→HYP (+,sig); ISC→MPC (+,n.sig); MPC→HYP (+,n.sig)	ConV: F (size, market share)	Subjective	ISC (IS knowledge, IS operations, IS objects (assets)); MPC (organizational learning); HYP (Customer retention, GINS, Profitability, ROI)	Direct and indirect	N	2, 3, 4, 5
(Barua et al., 2004)	MIS Quarterly: Management Information Systems	RBV	Multi	USA	C-P; 1076 firms	ISC→ACP (+,Sig)		Objective	ISC (IS capability (customers), IS capability (suppliers)); ACP (Improvement in financial performance attributable to net-enabled business value)	Direct	N	4
(Bergeron et al., 2004)	Information and Management	No Theory	Multi	Canada	C-P; 110 top-level managers of SMEs	ISC→ACP (+,Sig)		Subjective	ISC (IS planning and control, IS acquisition and implementation); ACP (Profitability, Growth)	Direct	N	4
(Doms et al., 2004)	Economics of Innovation and New Technology	No Theory	Retail	USA	L-S; Census Bureau surveys and Assets and Expenditures Survey, 1992-1997	ISI→ACP (+,sig)	ConV: F (size), I (Industry sector)	Objective	ISI (IS share of total investment); ACP (Labor productivity)	Direct	N	4, 5
(Kim & Davidson, 2004)	Managerial Finance	No Theory	Financial	South Korea	L-S; 201 banks, Business Statistics in Korean Banking Industry and financial statements, 1990-1998	ISI→ACP (+,M)	ConV: F (total assets, interest spread between loan and deposit, equity ratio, number of branches)	Objective	ISI (IS expenditures); ACP (Profit, Total expenses, Payroll expense, Operating expense, MS of deposits, MS of loans, Total revenue)	Direct	N	4, 5
(M. Ko & Osei-Bryson, 2004)	Information and Software Technology	Production Theory	Healthcare	USA	L-S; 1130 observations, Washington State	ISI→HYP (+,M)	ModV: F (Non-IS Capital; Non-IS Labor)	Objective	ISI (IS capital plus medical IS capital plus three times IS labor); HYP (Adjusted Patient Days)	Direct	N	4, 5

Authors	*Journal*	*Theory[1]*	*Industry sector*	*Country*	*Method-Data[2]*	*Path (significance)[3]*	*Contextual factors[4]*	*Measuring value*	*Operationalization[5]*	*Type of relations*	*Time lag (year)*	*Path mark*
					Department of Health (DOH), 1976-1994							
(Morikawa, 2004)	Small Business Economics	No Theory	Multi	Japan	C-S; 5245 SMEs survey of Corporate Management Activities conducted in 1998	ISU→ACP (+,M)	ConV: F (size), I (industry sector)	Objective	ISU (Computer usage); ACP (Profitability)	Direct	N	4, 5
(Myung Ko & Osei-Bryson, 2004)	Information Systems Journal	Production Theory	Healthcare	USA	L-S; 63 hospitals, 1975-1994	ISI→HYP (+,Sig)		Objective	ISI (IS Capital, Medical IS Capital); HYP (Adjusted Patient Days)	Direct	N	4
(Osei-Bryson & Ko, 2004)	Information and Management	Production Theory	Multi	USA	L-S; 1248 observations, IDG's ComputerWorld, Compustat, 1988-1992	ISI→ACP (+,M)	ConV: F (Non-IS labor; non-IS capital), I (industry sector)	Objective	ISI (IS capital plus three times IS labor); ACP (EVA)	Direct	N	4, 5
(Rajiv Kohli & Devaraj, 2004)	Decision Support Systems	No Theory	Healthcare	USA	L-S; 8 HCHS member organizations data across 36 monthly periods	ISU→ACP (+,Sig)	ConV: F (Ratio of outpatient revenue to total revenue)	Objective	ISU (DSS); ACP (Reimbursement rate)	Direct	Y (1-3)	4, 5, 6
(Sriram & Stump, 2004)	Omega	No Theory	Multi	USA	C-P; 318 members of the National Association of Purchasing Management (NAPM)	a: ISD→ISI (+,sig); b: ISD →ISI (+,sig); ISI→OPC (+,n.sig)		Subjective	a: ISD (Competitive environment), b: ISD (Quality orientation), ISI (Purchasing related ISI); OPC (purchasing related process performance)	Indirect	N	1, 2
(Zhu, 2004)	Journal of Management Information Systems	RBV	Retail	USA	L&C-P&S; 114 retailers data from publicly available data, Harte-Hanks database of computer equipment, and Compustat	ISC→ACP (+,M)	ModV: F (e-commerce capability); ConV: F (size, high/low tech firm), I (Industry sector)	Objective	ISC (LAN, PC, MIPS, IS stock, IS intensity); ACP (Profit margin, COGS, TIT)	Direct	N	4, 5
(Arvanitis, 2005)	Economics of Innovation and New Technology	No Theory	Multi	Swiss	C-P; 1382 firms	ISU→ACP (+,Sig)		Objective	ISU (Internet and Intranet use); ACP (SBYE)	Direct	N	4
(G. D. Bhatt & Grover, 2005)	Journal of Management Information Systems	RBV, Theory of competitive advantage	Manufacturing	USA	C-P; 202 CIOs	ISD→ISC (+,sig); ISC→HYP (+,M)	ConV: F (size)	Subjective	ISD (Organizational Learning Orientation), ISC (IS infrastructure, IS business experience, Relationship infrastructure); HYP (Competitive advantage)	Direct	N	1, 4, 5
(Hempell, 2005)	Economics of Innovation and New Technology	No Theory	Multi	Germany	L-S; 1222 firms and 5107 observations from Mannheim Innovation Panel in Services(MIP-S), 1994-1999	ISI→ACP (+,Sig)	ConV: F (size), I (industry sector)	Objective	ISI (IS capital); ACP (EVA)	Direct	N	4, 5
(Huang, 2005)	Journal of Productivity Analysis	No Theory	Financial	Taiwan	L&C-P&S; 35 banks from Taiwan Economic Journal's (TEJ) financial database and survey, 1996–2003	ISI→ACP (+,n.sig); ISC→ACP (+,n.sig)		Objective	ISI (IS capital); ISC (computer employees); ACP (output)	Direct	N	4
(Jen Huang & Ju Liu, 2005)	Journal of Intellectual Capital	Theory of complementarities	Multi	Taiwan	C-S; 297 firms, Nation-wide survey conducted by the Ministry of Economic Affairs and Institute for Information Industry of Taiwan in 2003	ISI→ACP (+,n.sig)	ConV: F (size, capital structure, GINS), I (industry sector)	Objective	ISI (IS intensity); ACP (ROA, ROS)	Direct	N	4, 5
(Kraemer et al., 2005)	Information Society	Theory on international management, Theory of business strategy	Establishments	Multi-national	C-P; 2139 firms, survey in 10 countries (Brazil, China, Denmark, France, Germany, Japan, Mexico, Singapore, Taiwan, and the United States), 2002	ISU→HYP (+,M)	ConV: F (size, age), I (industry sector), C (location)	Subjective	ISU (e-commerce); HYP (Efficiency, Coordination, Market)	Direct	N	4, 5
(Li, 2005)	International Journal of Production Research	No Theory	Manufacturing	China	C-P; 197 firms, 2000	ISU→HYP (+,Sig)		Subjective	ISU (computer-aided design, Computer-aided manufacturing, MRPII/ERP, Production planning systems); HYP (Product quality wins market share, Introduction of	Direct	N	4

Authors	*Journal*	*Theory[1]*	*Industry sector*	*Country*	*Method-Data[2]*	*Path (significance)[3]*	*Contextual factors[4]*	*Measuring value*	*Operationalization[5]*	*Type of relations*	*Time lag (year)*	*Path mark*
									the new product to market has speeded up, New markets have been developed)			
(Ravichandran et al., 2005)	Journal of Management Information Systems	RBV	Multi	USA	C-P; 129 IT managers	ISC→MPC (+,Sig); MPC→HYP (+,Sig)	ConV: F (size, age), I (industry IS intensity)	Mixed	ISC (IS planning sophistication, systems development capability, IS support maturity, IS operations capability); MPC (IS support for core competencies as IS support for market-access competencies, IS support for integrity-related competencies, IS support for functionality-related competencies); HYP (objective (ROS, ROA, GINS), subjective (market-based performance, operating performance))	Direct and indirect	N	2, 3, 5
(Ray et al., 2005)	MIS Quarterly: Management Information Systems	RBV, Theory of complementarities	Financial	USA	C-P; 72 life and health insurance industry managers, 2000	ISI→OPC (N,M); ISU→OPC (N,M); ISC→OPC (N,M)	ModV: F (shared Knowledge); ConV: F (service climate)	Subjective	ISI (Annual IS Budget per employee); ISU (generic technologies); ISC (Technical IS Skills); OPC (customer service outcomes)	Indirect	N	2, 5
(Sabyasachi Mitra, 2005)	Journal of Management Information Systems	No Theory	Multi	USA	L-S; 262 firms, Compustat and IDG's ComputerWorld, 1988-1992	ISD (Financial slack)→ISI (M,M); ISI→HYP (+,M)	ModV: F (growth level); ConV: F (Size, free cash available to the firm)	Objective	ISI (IS operation expenses and It infrastructure expenses); HYP (OPEXP, Revenue, Tobin's q)	Direct	Y (3-7)	1, 4, 5, 6
(Anderson et al., 2006)	Management Science	No Theory	Multi	USA	L-S; 731 firms, 1999-2003	ISI→MAP (+,Sig)	ConV: F (size)	Objective	ISI (Y2K investment divided by net sales revenue); MAP (MV)	Direct	Y (3)	4, 5, 6
(Anthony Byrd et al., 2006)	Information and Management	No Theory	Manufacturing	USA	C-P; 84 Plant and IT managers	ISI→ACP (+,Sig)	ModV: F (IS and business strategy alignment)	Subjective	ISI (IS expenditure per employee); ACP (Profit per employee, RPE)	Direct	N	4, 5
(Banker et al., 2006)	MIS Quarterly: Management Information Systems	DC	Manufacturing	USA	C-P; 1077 firms	ISU→OPC (+,Sig)	ConV: F (size, age), I (industry sector)	Subjective	ISU (Resource Planning Systems (RPS), Operations Management Systems (OMS), Electronic Data Interchange (EDI) applications); OPC (Just-in-Time (JIT) Manufacturing, Customer & Supplier Participation programs)	Indirect	N	2, 5
(Chowdhury, 2006)	Journal of International Development	No Theory	Multi	Kenya, Tanzania	C-P; 300 SMEs	ISI→ACP (+,M)	ConV: F (size), I (industry sector), C (location)	Subjective	ISI (IS capital to total capital); ACP (IRR, labor intensity, productivity)	Direct	N	4, 5
(Dehning et al., 2006)	International Journal of Accounting Information Systems	No Theory	Multi	USA	L-S; 1071 observations, IW, Compustat; the Institutional Brokers Estimation System, 1992–1997	ISI→MAP (+,sig)	ConV: F (R&D expenditures, intangible assets, size, earnings forecastability, GINS)	Objective	ISI (total annual IS expenditures scaled by Sales); MAP (MV)	Direct	N	4, 5
(Duh et al., 2006)	Information and Management	No Theory	Multi	USA	C-P; 296 CFOs	ISU→HYP (+,Sig)		Subjective	ISU (types and functions of the IS software in use); HYP (Long-run profitability, GINR, employee morale, job satisfaction, and commitment, financial strength (liquidity and ability to raise financial resources), public image and goodwill, innovativeness, continuous improvement, overall performance)	Direct	N	4
(El-Mashaleh et al., 2006)	Journal of Construction Engineering and Management	No Theory	Construction	USA	C-P; 74 industry practitioners	ISU→OPC (+,M)		Subjective	ISU (extent of IS application); OPC (Schedule performance, Cost performance, Customer satisfaction, Safety performance, Profit);	Indirect	N	2

Authors	*Journal*	*Theory[1]*	*Industry sector*	*Country*	*Method-Data[2]*	*Path (significance)[3]*	*Contextual factors[4]*	*Measuring value*	*Operationalization[5]*	*Type of relations*	*Time lag (year)*	*Path mark*
(F. Wu et al., 2006)	Industrial Marketing Management	RBV	Multi	USA	C-P; 264 managers, Council of Supply Chain Management Professionals (CSCMP)	ISU→OPC (+,Sig); OPC→ACP (+,Sig)	ConV: F (size)		; OPC (SC capabilities); ACP (Profitability, ROI, OCF)	Direct and indirect	N	2, 3, 5
(Lin & Tseng, 2006)	Industrial Management and Data Systems	No Theory	Multi	Taiwan	C-P; 119 CIOs	ISC→HYP (+,n.sig)		Subjective	ISC (Supply organization discussion, Integration overall technology, Internet and EDI, Maintain and working of data); HYP (competitiveness, MS, financial performance, new product success)	Direct	N	4
(Mashal, 2006)	Journal of Information Technology Case and Application Research	Production Theory	Financial	Jordan	L-S; Arab Bank annual reports, 1985-2004	ISI→ACP (+,n.sig)		Objective	ISI (IS capital, IS labor expenses); ACP (ROA, ROE, TNI, output)	Direct	N	4
(Namchul Shin, 2006)	Decision Support Systems	No Theory	Multi	USA	L-S; 317 firms from IW and Compustat for 1995-1997	ISI→ACP (+,M)	ConV: F (diversification, R&D intensity), I (industry sector)	Objective	ISI (IS budgets by selling and general administrative expenses); ACP (Gross margin, ROA, ROE)	Direct	N	4, 5
(Rai et al., 2006)	MIS Quarterly: Management Information Systems	No Theory	Manufacturing, Retail	USA	C-P; 432 logistics managers	ISC→OPC (+,Sig); OPC→HYP (+,Sig)	ConV: F (size), I (consumer demand predictability)	Subjective	ISC (IS infrastructure integration); OPC (SC process integration); HYP (Operational excellence, Customer relations, GINR)	Direct and indirect	N	2, 3, 5
(S. Lee & Kim, 2006)	Information Resources Management Journal	No Theory	Multi	USA	L-S; 81 firms, IT investment data from IW (1991-1997) and financial data from Forbes magazine (1995-1997)	ISI→ACP (+,Sig)	ConV: I (Industry sector)	Objective	ISI (annual IS budget); ACP (ROC, ROE, profit margin, EPS growth, GINS)	Direct	Y (1-2)	4, 5, 6
(S.-M. Huang et al., 2006)	European Journal of Operational Research	RBV	Multi	Taiwan	C-P; 155 top-level managers	ISC→ACP (+,n.sig)		Objective	ISC (IS infrastructure); ACP (ROA, ROS)	Direct	N	4
(Sánchez et al., 2006)	Technovation	No Theory	Multi	Spain	C-P&S; 464 IT managers and 'Sistema Anual de Balances Ibe´ricos' (SABI) database	ISI→ACP (+,Sig)	ConV: F (R&D intensity, IS training level of IS employees, IS training level of non-IS employees), I (Industry sector)	Objective	ISI (IS capital); ACP (Output/labor)	Direct	N	4, 5
(Sánchez-Rodríguez et al., 2006)	International Journal of Operations and Production Management	No Theory	Manufacturing	Spain	C-P; 442 quality managers	ISU→HYP (+,Sig)		Subjective	ISU (IS for top management, IS for customer relations, IS for supplier relations, IS for workforce management, IS for product design, IS for process flow, IS for quality); HYP (Operational performance, quality performance)	Direct	N	4
(Tanriverdi, 2006)	MIS Quarterly: Management Information Systems	RBV, Theory of complementarities	Multi	USA	C-P; 356 top-level managers	ISC→MAP (+,Sig)	ModV: F (diversification); ConV: F (size, prior performance), I (industry sector)	Objective	ISC (strategy-making processes, IS relationship management processes, IS human resource management processes, IS infrastructure); MAP (Tobin's q)	Direct	N	4, 5
(Albadvi et al., 2007)	International Journal of Production Research	No Theory	Manufacturing	Iran	C-P; 200 firms	ISC→OPC (+,Sig); OPC→HYP (+,Sig)		Subjective	ISC (IS in communications, IS in planning, IS in operations, IS in quality control, IS as a support for decision making, IS in administrative or office work, IS in financial affairs); OPC (order flow, strategic processes, product, marketing and sales, services, accounting, personnel, technology); HYP (Customer results, People results, Operational results, Growth)	Direct and indirect	N	2, 3

Authors	*Journal*	*Theory[1]*	*Industry sector*	*Country*	*Method-Data[2]*	*Path (significance)[3]*	*Contextual factors[4]*	*Measuring value*	*Operationalization[5]*	*Type of relations*	*Time lag (year)*	*Path mark*
(Aral & Weill, 2007)	Organization Science	RBV, Systems-use Theory, Task-technology fit Theory, TCE, Coordination Theory	Multi	USA	L-S; 588 firm, MIT survey and Compustat, 1999-2002	ISI→HYP (+,n.sig)	ModV: F (IS capabilities); ConV: IS (IS type), F (size)	Objective	ISI (IS spending /sales); MAP (ROA, net margin, Tobin's q, COGS)	Direct	Y (1)	4, 5, 6
(B.-W. Lin, 2007)	Technology in Society	No Theory	Financial	USA	L-S; 155 banks, IW and Compustat, 1995-1999	ISC→ACP (+,sig)	ConV: F (total assets)	Objective	ISC (IW500 ranking); ACP (ROI, ROE, ROA, Tobin's q, MBA, EVA, MVA)	Direct	N	4, 5
(Beccalli, 2007)	Journal of Banking and Finance	No Theory	Financial	Multi-national	L-S; 737 banks, 1995–2000,	ISC→ACP (+,M)	ConV: C (location)	Objective	ISC (hardware, software and services); ACP (ROA, ROE, Profit efficiency, Cost efficiency)	Direct	Y (1)	4, 5, 6
(Chari et al., 2007)	Journal of World Business	Internalization Theory	Multi	USA	L-S; 131 firms, IW and Compustat, 1997	ISI→MAP (+,sig)	ModV: F (International diversification; Foreign sales total sales ratio (FSTS)); ConV: F (size; R&D intensity; advertising intensity), I (industry capital intensity; Industry performance)	Objective	ISI (Annual IS budget); MAP (Tobin's q)	Direct	N	4, 5
(Dehning et al., 2007)	Journal of Operations Management	No Theory	Manufacturing	USA	L-S; 123 firms, Compustat and Lexis/Nexis and Factiva newswire services, 1994–2000	ISI→OPC (+,M); ISI→ACP (+,M)	ConV: IS (age), F (size), I (Industry sector)		ISI (SCM implementation announcements); OPC (Operations and outbound processes); ACP (TIT, ROA, ROS)	Direct and indirect	Y (1-2)	2, 4, 5, 6
(Devaraj et al., 2007)	Journal of Operations Management	RBV, Relational view Theory, Theory of swift and even flow	Multi	USA	C-P; 120 senior managers	a: ISC→OPC (+,M); b: ISC→OPC (+,M)	ConV: F (size), I (industry sector)	Subjective	a: ISC (Supplier production information integration); b: ISC (customer production information integration); OPC (cost, quality, flexibility, Delivery);	Indirect	N	2, 5
(Hendricks et al., 2007)	Journal of Operations Management	No Theory	Multi	USA	L-S; 186 ERP, 140 SCM, 80 CRM announcements, Business Wire, Dow Jones News Service, PR Newswire, the Wall Street Journal, and Compustat, 1991–1999	ISI→ACP (+,M)	ConV: IS (IS type)	Objective	ISI (ERP, CRM, SCM announcements); ACP (ROC, ROS)	Direct	Y (1-5)	4, 5, 6
(Hyvönen, 2007)	Management Accounting Research	Contingency Theory	Multi	Finland	C-P; 51 managers	ISU→HYP (+,Sig)	ConV: F (size), I (industry sector)	Subjective	ISU (ERP, SCM, e-commerce); HYP (MS, sales volume, market developments, development of new products)	Direct	N	4, 5
(Melville et al., 2007)	Decision Support Systems	Institutional Theory	Multi	USA	L-S; 933 firms and 5211 firm–year observations, 1987-1994	ISI→ACP (+,sig)	ModV: I (industry concentration, dynamism); ConV: I (industry sector)	Objective	ISI (IS capital); ACP (EVA)	Direct	N	4, 5
(S. Bharadwaj et al., 2007)	Information Systems Research	Theory of complementarities	Manufacturing	USA	C-P&S; 126 production managers and Compustat	ISC→HYP (+,Sig)		Objective	ISC (integrated access to customer, order, production and market-related data); HYP (TIT, Operating Margin, On-Time Ratio)	Direct	Y (1)	4, 6
(Wang & Alam, 2007)	Journal of Information Systems	No Theory	Multi	USA	L-S; 1323 firms, IW and Compustat, 1991-1992 and 1995-2002	ISC→HYP (+,Sig)		Objective	ISC (IW500 ranking); HYP (Book value of shareholders, Stock price, Capital expenditures, etc.)	Direct	Y (1)	4, 6
(Badri & Alshare, 2008)	International Journal of Information Management	No Theory	Multi	UAE	C-P; 1859 firms	ISC→HYP (+,Sig); ISC→OPC (+,Sig); OPC→HYP (+,Sig)	ConV: F (size, age, relative selling prices, and operating costs), I (market dynamism, competitive intensity, service orientation)	Mixed	HYP (ROA, ROI, OCF, customer satisfaction, overall performance compared to competitors)	Direct and indirect	N	2, 3, 4, 5

Authors	*Journal*	*Theory[1]*	*Industry sector*	*Country*	*Method-Data[2]*	*Path (significance)[3]*	*Contextual factors[4]*	*Measuring value*	*Operationalization[5]*	*Type of relations*	*Time lag (year)*	*Path mark*
(Baker et al., 2008)	Communications of the ACM	Production Theory	Healthcare	USA	L-S; HIMSS Analytics Database, 2006-2007	ISI→ACP (+,Sig); a: ISC→ACP (+,Sig); b: ISC→ACP (+,Sig)	ConV: F (Size)	Objective	ISI (IS spending); a: ISC (IS hardware, IS systems); b: ISC (IS personnel); ACP (Revenue per bed)	Direct	N	4, 5
(Byrd et al., 2008)	Journal of Business Logistics	RBV	Multi	USA	C-P; 225 IT managers	ISC→OPC (+,Sig); OPC→ACP (+,Sig)	ConV: F (size)	Subjective	ISC (IS department skills, business application integration, data quality, hardware/OS quality); OPC (SC performance); ACP (ROE, OPEXP)	Direct and indirect	N	2, 3, 5
(Chari et al., 2008)	Management Science	No Theory	Multi	USA	C-S; 117 firms, IW and Compustat, 1997	ISI→MAP (+,sig)	ModV: F (diversification); ConV: F (size, capital structure, R&D intensity, advertising intensity, market share), I (industry capital intensity, market uncertainty, market growth, industry concentration, industry performance)	Objective	ISI (investment in IS to sales); MAP (Tobin's q)	Direct	N	4, 5
(de Mendonça et al., 2008)	Information Technology for Development	No Theory	Multi	Brazil	C-S; 26776 firms, Brazilian Applied Economics Research Institute, 2003	ISU→ACP (+,Sig)	ConV: F (size, retaining of personnel), I (industry sector)	Objective	ISU (IS tools adoption); ACP (labor productivity)	Direct	N	4, 5
(Dibrell et al., 2008)	Journal of Small Business Management	No Theory	Multi	USA	C-P; 375 senior managers	ISD→ISI (+,Sig); ISI→ACP (+,Sig)		Objective	ISD (Innovativeness), ISI (Total dollar value of IS assets, Total IS investment, Number of IS employees, Number of personal computers and terminals per employee); ACP (ROA, ROS, GINS, GIMS)	Direct	N	1, 4
(J. J.-Y. Lee, 2008)	Information Systems Management	Contingency Theory	Multi	Taiwan	C-P; 1184 firms, Market Information Center (MIC), and Taiwanese Economic Journal (TEJ) survey, 2000-2002	ISI→ACP (+,M)	ConV: F (capital investment, leverage, market share, GINS, R&D investment), I (industry sector)	Objective	ISI (Hardware rate, Software rate, Training rate, Labor rate); ACP (ROA, ROE)	Direct	N	4, 5
(Jeffers et al., 2008)	Decision Sciences	RBV, Theory of complementarities	Logistics	Multi-national	C-P; 44 top level managers	ISU→OPC (N,Sig); OPC→ACP (+,Sig)	ConV: F (Size)	Subjective	ISU (commonly used software and IS equipment); OPC (customer service outcomes); ACP (financial performance, GINS, profitability)	Direct and indirect	N	2, 3, 5
(Kobelsky et al., 2008)	Accounting Review	TOE	Multi	USA	L-S; 1652 observations, IW and Compustat, 1991-1997	a: ISD→ISI (+,Sig); b: ISD→ISI (+,Sig); ISI→ACP (+,Sig); c: ISD→ISI (+,Sig); d: ISD→ISI (+,Sig); e: ISD →ISI (-,Sig) ; f: ISD→ISI (-,Sig); g: ISD→ISI (+,Sig); h: ISD→ISI (+,Sig)	ConV: F (size)	Objective	a: ISD (Industry concentration), b: ISD (Environmental uncertainty), c: ISD (Diversification), d: ISD (Profitability), e: ISD (Debt ratio), f: ISD (Growth), g: ISD (Competitors' IS intensity), h: ISD (Industry type: High/low tech), ISI (IS spending scaled by sales); ACP (operating profit margin, operating ROA)	Direct	Y (1-3)	1, 4, 5, 6
(Loukis et al., 2007)	Journal of Enterprise Information Management	Production Theory	Multi	Greek	C-P; 304 firms	ISI→ACP (+,Sig)		Mixed	ISI (value of computer capital); ACP (sales revenue, expenses for materials and services, labor expenses, value of capital (assets))	Direct	N	4
(M. Ko et al., 2008)	Information Resources Management Journal	No Theory	Multi	USA	L-S; 972 observations, IW and Compustat, 1994-1997	ISI→ACP (+,sig)		Objective	ISI (Annual IS budget); ACP (EVA)	Direct	N	4
(Nakata et al., 2008)	Journal of Managerial Issues	Socio-Technical View	Multi	USA	C-P; 189 marketing managers	ISC→OPC (+,sig); OPC→HYP (+,sig)	ModV: IS (IS service quality); F (trust);	Subjective	OPC (customer orientation)	Direct and indirect	N	2, 3, 5

Authors	*Journal*	*Theory[1]*	*Industry sector*	*Country*	*Method-Data[2]*	*Path (significance)[3]*	*Contextual factors[4]*	*Measuring value*	*Operationalization[5]*	*Type of relations*	*Time lag (year)*	*Path mark*
							ConV: F (size), I (Industry sector)					
(Radhakrishnan et al., 2008)	Omega	TCE, Production Theory	Multi	USA	L-S; 88 firms, IW, Compustat, 1995–1999	ISC→MPC (+,sig); ISC→OPC (+,sig); MPC→HYP (+,sig) ; OPC→HYP (+,sig)		Objective	ISC (IW500 ranking); MPC (Administration, allocation of resources, resources utilization, communication, coordination and control); OPC (inbound logistics process (supplier relations), production and operation process, product and service development process, sales and marketing process, customer relationship process); HYP (ROA, ROS, ROE, Altman Z score, MS)	Direct and indirect	Y (2)	2, 3, 6
(Tallon, 2008)	Information Technology and Management	DC	Multi	USA	C-P; 241 top level managers	ISC→OPC (+,sig)	ModV: I (environmental dynamism)	Subjective	ISC (technical and managerial IS capabilities); OPC (business process agility)	Indirect	N	2, 5
(Thouin et al., 2008)	Health Care Management Review	No Theory	Healthcare	USA	C-S; 1444 firms, Dorenfest Institute survey, 2003	ISI→ACP (+,sig)		Objective	ISI (IS spending /total operating costs, IS staff ratio); ACP (Ratio of total revenue to total cost)	Direct	N	4
(Dale Stoel & Muhanna, 2009)	Information and Management	RBV, Contingency Theory	Multi	USA	L-S; 537 firms, IW and Compustat, 2000-2001	ISC→ACP (+,Sig)	ModV: I (environmental dynamism, environmental munificence, environmental complexity); ConV: F (prior performance), I (industry sector)	Objective	ISC (IW500 ranking); ACP (ROS, ROA, OI/S, OI/A, OI/E, COGS/S, SGA/S)	Direct	Y (1-2)	4, 5, 6
(Ghosal & Nair-Reichert, 2009)	Research Policy	No Theory	Pulp and Paper	USA	L-S; 25 firms, 1996–2003	ISI→ACP (+,Sig)		Objective	ISI (IS and monitoring devices); ACP (labor productivity)	Direct	N	4
(J. K. Kim et al., 2009)	Technological Forecasting and Social Change	No Theory	Electronics	USA, China	L-S; 87 firms from ITTOP 100 for 2004 for China, and IW for 1995-1997 for the USA	ISI→HYP (+,M)	ConV: F (size); I (Industry IS intensity)	Objective	ISI (IS budget/sales); HYP (cost efficiency, ROA, ROE, profit margin, organizational growth)	Direct	N	4, 5
(J.-S. Chen et al., 2009)	Journal of Service Research	Resource Advantage Theory	Financial	Taiwan	C-P; 491 IT and marketing managers	ISC→O PC (+,sig); OPC→HYP (+,sig)		Subjective	ISC (IS Infrastructure, Human IS Resources, IS-Enable Intangibles); OPC (Service Delivery Innovation); HYP (financial and non-financial performance)	Direct and indirect	N	2, 3
(L.J. Yao et al., 2009)	Journal of Computer Information Systems	No Theory	Manufacturing	USA	L-S; 589 firms, Compustat and Gartner IT spending dataset, 1998-2000	ISI→ACP (+,M)		Objective	ISI (IS hardware, software, IS staff, external service providers, data communications); ACP (ROE, ROI, ROA, ROS, NOPAT)	Direct	N	4
(Macher & Mowery, 2009)	British Journal of Management	RBV	Manufacturing	Multi-national	C-P; 1235 firms	ISU→OPC (+,Sig)		Objective	ISU (CAM use); OPC (Cycle time, Yield (defect density));	Indirect	N	2
(Menon et al., 2009)	Journal of Management Information Systems	Production Theory	Healthcare	USA	L-S; Washington State Department of Health (WaDoH) hospital database, 1979-2006	ISC→HYP (+,M)	ConV: F (medical capital, government status of hospitals, urban status, size)	Objective	ISC (Clinical IS, Admin IS); HYP (Labor productivity, Adjusted patient days)	Direct	Y (1-7)	4, 5, 6
(Phama & Jordanb, 2009)	Asia Pacific Management Review	RBV	Multi	Australia	C-P; 140 CIOs and IT managers	ISC→HYP (+,sig)		Subjective	ISC (IS infrastructure, IS human resource)	Direct	N	4
(Ravichandran, Han, et al., 2009)	IEEE Transactions on Engineering Management	Institutional Theory	Multi	USA	L-S; 961 observations, IW and Compustat, 1991-1996	a: ISD→ISI (+,sig); b: ISD →ISI (+,sig); c: ISD→ISI (+,sig); d; ISD→ISI (+,M)	ConV: F (assets; diversification; previous ROA; leverage; short-term debt intensity); I (Industry sector)	Objective	a: ISD (Competitors' IS intensity); b: ISD (Customers' IT intensity); c: ISD (Suppliers' IT intensity); d; ISD (Proportion of institutional ownership); ISI (expenditure for hardware, software, data management, and staff);	-	N	1, 5

Authors	*Journal*	*Theory[1]*	*Industry sector*	*Country*	*Method-Data[2]*	*Path (significance)[3]*	*Contextual factors[4]*	*Measuring value*	*Operationalization[5]*	*Type of relations*	*Time lag (year)*	*Path mark*
(Ravichandran, Liu, et al., 2009)	Journal of Management Information Systems	RBV, Internalization Theory	Manufacturing	USA	L-S; 134 firms and 403 observations, IW and Compustat, 1991-1996	ISI→HYP (+,M)	ModV: F (diversification); ConV: F (size, R&D expenditure, capital intensity, leverage), I (industry sector)	Objective	ISI (IS intensity as IS budgets to total sales of the firm); HYP (ROA, Tobin's q)	Direct	Y (1-2)	4, 5, 6
(Sircar & Choi, 2009)	Information Systems Journal	Production Theory	Multi	USA	L-S; 1154 observations, 1988-1993	ISI→HYP (+,sig); ISC→HYP (+,sig)		Objective	ISI (IS capital); ISC (IS staff);	Direct	N	4
(Benitez-Amado et al., 2010)	Industrial Management and Data Systems	No Theory	Multi	Spain	C-P; 203 IT managers	ISC→MPC (+,Sig); MPC→HYP (+,Sig)	ConV: F (size, quality management practices implementation, strategic agility)	Subjective	ISC (Technological IS resources, Managerial IS resources); MPC (intrapreneurship culture); HYP (GIMS, MS, product and market development)	Direct and indirect	N	2, 3, 5
(Bhatt et al., 2010)	Information and Management	DC, Theory of competitive advantage	Multi	USA	C-P; 105 managers	OPC→HYP (+,Sig); ISC→OPC (+,Sig)		Subjective	OPC (market orientation (information generation, information dissemination, and organizational responsiveness)); HYP (Competitive advantage)	Direct and indirect	N	2, 3
(Davis & Golicic, 2010)	Journal of the Academy of Marketing Science	Resource Advantage Theory	Logistics	USA	C-P; 145 logistics managers	ISC→OPC (+,sig); OPC→HYP (+,sig)		Subjective	ISC (Information Generation, Information Dissemination, Information Use); OPC (market Information Flow); HYP (Comparative Resource Advantages)	Direct and indirect	N	2, 3
(Henderson et al., 2010)	Journal of Information Systems	No Theory	Multi	USA	L-S; 4900 observations, IW and Compustat, 1991-2005	ISI→ACP (+,Sig); ISI→MAP (+,Sig)	ConV: F (earnings variability over the prior three years, R&D intensity, advertising intensity, capital expenditures, leverage, sales)	Objective	ISI (IS spending scaled by sales); MAP (MV, BAHR); ACP (future residual income, future earnings)	Direct	Y (1-3)	4, 5, 6
(Muhanna & Stoel, 2010)	Journal of Information Systems	RBV	Multi	USA	L-S; 116 firms and 171 firm-year observations, IW and Compustat, 1992-1994 and 1999-2006	ISC→MAP (+,M)	ModV: I (Industry dynamism, Industry munificence, Industry complexity); ConV: F (size, book value of equity, net income, advertising intensity, R&D intensity, net dividends (net capital distributions), sales, assets, risks), I (Industry sector)	Objective	ISC (IW500 ranking); MAP (MV)	Direct	N	4, 5
(Ordanini & Rubera, 2010)	Information and Management	RBV	Multi	Italy	C-P; 962 firms, Italian Census Information Database	ISC→ACP (+,Sig)	ConV: IS (age), I (environmental uncertainty)	Objective	ISC (human resource skills, relationship assets); ACP (OI/S, ROS, ROA)	Direct	N	4, 5
(Vijayasarathy, 2010)	Information and Management	No Theory	Manufacturing	USA	C-P; 276 SCM managers	ISU→OPC (+,Sig)	ModV: F (process innovation, uncertainty, partnership quality); ConV: I (industry sector)		ISU (10 IS tools such as GPS, VPN, EDI)	Indirect	N	2, 5
(Walsh et al., 2010)	European Management Review	RBV, Theory of competitive advantage	Multi	Sweden	C-P; 583 SME senior managers	ISI→HYP (+,M)	ModV: IS (IS type); ConV: F (size), I (industry sector)	Subjective	ISI (IS budget); HYP (competitive advantage)	Direct	N	4, 5
(Yao et al., 2010)	International Journal of Accounting Information Systems	Contingency Theory	Manufacturing	USA	L-S; 3444 firms, Gartner IT Spending, Staffing Survey Results, Compustat and Global Researcher databases, 1998-2000	ISI→ACP (+,Sig)	ConV: F (size, vertical integration), I (industry sector)	Objective	ISI (IS spending as a percentage of total revenue); ACP (Labor productivity, Administrative productivity)	Direct	N	4, 5

Authors	*Journal*	*Theory[1]*	*Industry sector*	*Country*	*Method-Data[2]*	*Path (significance)[3]*	*Contextual factors[4]*	*Measuring value*	*Operationalization[5]*	*Type of relations*	*Time lag (year)*	*Path mark*
(Chatzoglou et al., 2011)	Business Process Management Journal	No Theory	Multi	Greek	C-P; 295 top level managers	ISC→ACP (+,Sig)		Subjective	ISC (environmental scanning, strategy, planning and control, acquisition and implementation); ACP (ROA, GINS, Profitability, Liquidity)	Direct	N	4
(Das et al., 2011)	IEEE Transactions on Engineering Management	no Theory	Healthcare	USA	L-S; 47 hospitals from the Washington State Department of Health (WaDoH) hospital database for 26 years	ISI→ACP (+,M)	ConV: F (non-IS-related capital accounts, labor expenses)	Objective	ISIs (investments in patient management, transaction systems, communications, administration); ACP (productivity on operating costs, labor productivity)	Direct	Y (6)	4, 5, 6
(Dewan & Ren, 2011)	Information Systems Research	Strategic Management Theory, Agency Theory, TCE	Multi	USA	L-S; 557 firms and 3100 observations, Compustat, CRSP, Institutional Brokers Estimate System (IBES), Computer Intelligence Infocorp (CII) database, 1988-1992	ISI→HYP (+,n.sig)	ModV: F (diversification); ConV: F (R&D Intensity, Advertising Intensity) I (Industry IS intensity, Industry Sector, Industry Concentration, Industry Tobin's q, Industry Capital Intensity, Regulation)	Objective	ISI (IS Capital / Total Assets); HYP (Average of Quarterly ROA, Average of Monthly Stock Returns)	Direct	Y (1)	4, 5, 6
(Ho et al., 2011)	Strategic Management Journal	Agency Theory, Institutional Theory	Electronics	Taiwan	L-S; 719 observations, China Credit Information Service Ltd (CCIS), Financial Report Database compiled by the Taiwan Economic Journal (TEJ), 2001-2005	ISI→ACP (+,sig)	ModV: F (board independence; foreign ownership); ConV: F (firm growth; leverage; market share; free cash flow; equity-based executive compensation; R&D intensity; age; prior performance)	Objective	ISI (ISI); ACP (ROA,TA)	Direct	Y (1)	4, 5, 6
(Lu & Ramamurthy, 2011)	MIS Quarterly: Management Information Systems	No Theory	Multi	USA	C-P; 128 senior business and IS executives	ISC→OPC (+,Sig)	ModV: F (IS investment); ConV: F (size, age, IS department size, IS department age), I (Industry sector)	Subjective	ISC (IS infrastructure capability, IS business spanning capability, IS proactive stance); OPC (firm agility)	Indirect	N	2, 5
(Masli et al., 2011)	International Journal of Accounting Information Systems	RBV	Multi	USA	L-S; 946 firms, CIO Magazine and Compustat, 1988-2007	ISC→HYP (+,M)	ConV: F (size), I (industry sector)	Objective	ISC (CIO Magazine ranking); HYP (ROA, ROS, Asset turnover, GINS, Tobin's q)	Direct	Y (1-3)	4, 5, 6
(Mithas et al., 2011)	MIS Quarterly: Management Information Systems	RBV	Multi	USA	C-P; 160 observations from 77 firms and intra organizational unit	ISC→MPC (+,sig); ISC→OPC (+,sig); ISC→ACP (+,sig);	ConV: F (leadership, strategic planning, size), I (industry sector)	Subjective	ISC (information management capability); MPC (performance management capability); OPC (customer management capability)	Direct and indirect	N	2, 4, 5
(Nevo & Wade, 2011)	Journal of Strategic Information Systems	System Theory, RBV	Multi	Multi-national	C-P; 168 top-level managers	ISC→HYP (+,M)		Subjective	ISC (IS strategic potential (rarity, value, inimitability)); HYP (operational benefit, strategic benefits)	Direct	N	4
(Trainor et al., 2011)	Industrial Marketing Management	RBV, DC	Multi	Belgium	C-P; 522 senior managers	a: ISD →ISC (+,Sig); b: ISD →ISC (+,Sig); ISC→ACP (+,Sig)	ModV: I (market turbulence, competitive intensity); ConV: F (relative performance)	Subjective	a: ISD (Marketing Orientation); b: ISD (Technology orientation); ISC (e-Marketing capability as technology resources, human resources, business resources); ACP (ROI, Cost position, Profitability)	Direct	N	1, 4, 5
(Benitez-Amado & Walczuch, 2012)	European Journal of Information Systems	RBV	Multi	Spain	L&C-P&S; 63 firms survey and financial data from Actualidad Econo´mica database, 2007-2009	ISC→HYP (+,n.sig); ISC→MPC (+,Sig); MPC→HYP (+,Sig)	ConV: F (size, talent development practices implementation, quality management	Objective	MPC (proactive corporate environmental strategy); HYP (RSE)	Direct and indirect	N	2, 3, 4, 5

Authors	*Journal*	*Theory[1]*	*Industry sector*	*Country*	*Method-Data[2]*	*Path (significance)[3]*	*Contextual factors[4]*	*Measuring value*	*Operationalization[5]*	*Type of relations*	*Time lag (year)*	*Path mark*
							practices implementation)					
(Bloom et al., 2012)	American Economic Review	Trade Theory, Human capital Theory	Multi	USA, UK	C-S; 2550 observations from Annual Business Inquiry (ABI), Business Survey into Capitalized Items (BSCI), the Quarterly Inquiry into Capital Expenditure (QICE) and the Fixed Asset Register (FAR).	ISI→ACP (+,Sig)	ModV: C (people management practices)	Objective	ISI (IS capital per employee); ACP (RPE)	Direct	N	4, 5
(Campbell, 2012)	Journal of Organizational Computing and Electronic Commerce	No Theory	Multi	USA	L-S; 507 firms, 1421 firm-time observations, IW and Compustat, 1991–1996	ISI→ACP (+,M)	ConV: F (size; relative effective use of IS; prior performance); I (industry performance)	Objective	ISI (annual IS budget divided to sales revenue); ACP (ROS, OI/A, COG/S)	Direct	Y (1-4)	4, 5, 6
(Chang & Gurbaxani, 2012a)	MIS Quarterly: Management Information Systems	knowledge-based Theory	Multi	USA	L-S; 617 firms, Compustat and Computer Intelligence InfoCorp (CII), 1987-1994	ISI→HYP (+,M)		Objective	ISI (IS intensity); HYP (Efficiency)	Direct	N	4
(Chang & Gurbaxani, 2012b)	Information Systems Research	No Theory	Multi	USA	L-S; 386 firms and 3088 observations, Compustat and Computer Intelligence InfoCorp (CII), 1987-1994	ISI→ACP (+,M)		Objective	ISI (IS capital); ACP (EVA)	Direct	N	4
(Chen & Tsou, 2012)	Journal of Engineering and Technology Management - JET-M	RBV	IT	Taiwan	C-P; 174 managers	ISC→HYP (+,Sig); ISC→a: OPC (+,Sig); ISC→b: OPC (+,Sig); a: OPC→HYP (+,Sig); b: OPC→HYP (+,Sig)	ConV: F (size, capital, age)	Subjective	ISC (IS infrastructure, IS business experience, IS relationship resources, IS human resources); a: OPC (customer service outcomes); b: OPC (service process innovation); HYP (MS, Customer satisfaction, Profit, Business brand and image, Customer loyalty)	Direct and indirect	N	2, 3, 4, 5
(Chen, 2012)	Information and Management	RBV	Multi	Taiwan	C-P; 233 top-level managers	ISC→OPC (+,Sig); ISC→OPC (+,Sig); OPC→HYP (+,Sig)		Subjective	ISC (Human IS resource); ISC (Technological IS resource); OPC (operations capability, R&D capability, marketing capability); HYP (cost reduction, customer satisfaction)	Direct and indirect	N	2, 3
(Evangelista et al., 2012)	Supply Chain Management	RBV	Logistics	Italy	C-P; 153 SMEs	ISU→OPC (+,Sig); ISU→OPC (+,Sig); OPC→HYP (+,Sig)		Subjective	ISU (LAN, fax, telephone, Internet use); OPC (turnover improvement, expansion of market, number of customers increase, operations improvement, customer service improvement, flexibility improvement, asset utilization improvement); OPC (Logistics capabilities);	Direct and indirect	N	2, 3
(Hung et al., 2012)	Journal of Engineering and Technology Management - JET-M	Microeconomic Theory, Theory of competitive advantage	Financial	Taiwan	C-P; 284 observations from Bureau of Monetary Affairs, Financial Supervisory Commission of Taiwan	ISI→ACP (+,Sig)		Objective	ISI (ATM); ACP (ROA, ROE, TNI, OPEXP)	Direct	N	4
(Kleis et al., 2012)	Information Systems Research	No Theory	Manufacturing	USA	L-S; 210 firms, 1829 observations, National Bureau of Economic Research (NBER) Patent Citation Database, Computer Intelligence Infocorp, and Compustat, 1987-1997	ISI→OPC (+,Sig)	ConV: F (size), I (industry sector)	Objective	ISI (IS capital); OPC (number of patents)	Indirect	Y (2)	2, 5, 6

Authors	*Journal*	*Theory[1]*	*Industry sector*	*Country*	*Method-Data[2]*	*Path (significance)[3]*	*Contextual factors[4]*	*Measuring value*	*Operationalization[5]*	*Type of relations*	*Time lag (year)*	*Path mark*
(L. Zhang et al., 2012)	Tsinghua Science and Technology	no Theory	Manufacturing	China	L-S; 126 firms, RESSET database, 1999-2007	ISU→MAP (+,n.sig)	ConV: F (Firm capital structure; Firm capital intensity; Tobin's Q), I (Industry capital structure; Industry capital intensity; Industry growth; Industry market-to-book; Industry Tobin's Q)	Objective	ISU (whether a given company had implemented ERP systems); MAP (Tobin's q)	Direct	Y (1)	4, 5, 6
(Mithas et al., 2012)	MIS Quarterly: Management Information Systems	RBV	Multi	USA	L-S; 452 firms, proprietary survey; Compustat, 1998-2003	ISI→ACP (+,M)	ModV: I (industry capital intensity; industry Tobin's q); ConV: F (size); I (industry sector)	Objective	ISI (ISIs per employee); ACP (sales, OPEXP, profitability)	Direct	N	4, 5
(Otim et al., 2012)	Journal of Management Information Systems	RBV, Real Options Theory, Decision Theory	Multi	USA	L-S; 420 IT investment announcements; Center for Research in Security Prices (CRSP) and Compustat	ISI→HYP (+,M)	ModV: IS (strategic role type of IS), F (decision-making uncertainty); ConV: F (size; leverage; R&D intensity; non-IS capital expense), I (market risk; growth potential; Industry sector, preannouncement downside risk)	Objective	ISI (ISI announcements); HYP (downside risk (relative performance), security, ROA)	Direct	Y (3)	4, 5, 6
(Perez-Arostegui et al., 2012)	Industrial Management and Data Systems	RBV	Multi	Spain	C-P; 230 managers	ISC→HYP (+,M)	ModV: F (orientation to leadership)	Subjective	ISC (flexible IS infrastructure, IS technical knowledge, IS managerial knowledge, Integration of IS strategy with firm strategy); HYP (Number of complaints, speed of service, customer satisfaction, degree of loyalty)	Direct	N	4, 5
(Pérez-López & Alegre, 2012)	Industrial Management and Data Systems	DC	Multi	Spain	C-P; 170 CEO and IT managers	ISC→MPC (+,sig); MPC→ACP (+,n.sig)		Subjective	ISC (IS operations, IS infrastructure, IS knowledge); MPC (KM processes); ACP (ROA, ROI, profitability)	Direct and indirect	N	2, 3
(R. Kohli et al., 2012)	MIS Quarterly: Management Information Systems	no Theory	Healthcare	USA	C-S; 146 hospitals, HCIA, 2001	ISI→HYP (+,n.sig)	ConV: F (age; teaching hospital; average length of stay; Full-Time Equivalent)	Objective	ISI (IS costs reported by the hospitals to the U.S. federal government); HYP (Tobin's q, ROA, OI, TNI)	Direct	N	4, 5
(Roman Kmieciak et al., 2012)	Industrial Management and Data Systems	RBV	Multi	Poland	C-P; 109 CEOs	ISC→HYP (+,n.sig)	ConV: F (size, age), I (industry sector)	Mixed	ISC (IS knowledge, Integration of IS with business strategy, IS in internal communications); HYP (Quality of products/services, Consumer satisfaction, MS, Productivity per employee, etc.)	Direct	N	4, 5
(Vinekar & Teng, 2012)	Journal of Computer Information Systems	No Theory	Multi	USA	L-S; 1575 firms, IW, IDG's ComputerWorld and Compustat, 1991-1997	ISI→ACP (+,Sig)	ModV: I (industry sector); ConV: F (R&D intensity, capital expenditures, advertising intensity)	Objective	ISI (IS budget for employee); ACP (RPE)	Direct	N	4, 5
(Xue et al., 2012)	MIS Quarterly: Management Information Systems	organizational learning Theory	Multi	USA	L-S; 341 firms and 1023 observations, CI Technology Database from Harte-Hank and Compustat, 2003-2005	ISI→HYP (+,M)	ModV: I (environmental dynamism, environmental munificence, environmental complexity); ConV: F	Objective	ISI (Total IS capital divided by total assets); HYP (TIT, Accounts Payable Turnover, Tobin's q)	Direct	Y (1)	4, 5, 6

Authors	*Journal*	*Theory[1]*	*Industry sector*	*Country*	*Method-Data[2]*	*Path (significance)[3]*	*Contextual factors[4]*	*Measuring value*	*Operationalization[5]*	*Type of relations*	*Time lag (year)*	*Path mark*
							(capital investment, leverage, market share, size, R&D intensity, advertising intensity, brand strength), I (Industry sector)					
(Y. Li & Huang, 2012)	International Journal of Networking and Virtual Organisations	No Theory	Multi	USA	L-S; 121 firms	ISU→MAP (+,n.sig)		Objective	ISU (CRM and SCM adoption announcements); MAP (Abnormal return (long-term))	Direct	N	4
(Yeh et al., 2012)	Business Process Management Journal	No Theory	e-business	Taiwan	C-P; 191 CIOs	ISC→MPC (+,sig); MPC→HYP (+,sig)		Subjective	ISC (Individual level capability (IS leadership capability, IS resource allocation capability); Group level capability (Collaboration capability, Knowledge sharing capability); Organization level capability (System development capability, Project management capability)); MPC (quality of IS strategy implementation processes)	Direct and indirect	N	2, 3
(Bayo-Moriones et al., 2013)	Industrial Management and Data Systems	No Theory	Manufacturing	Spain	C-P; 267 manufacturing SMEs	ISU→ACP (+,Sig); OPC→HYP (+,Sig); ISU→HYP (+,Sig)		Subjective	ISU (use of email, Intranet, Extranet); OPC (operational performance); ACP (MS, Margin, profit)	Direct and indirect	N	3, 4
(Chakravarty et al., 2013)	Information Systems Research	RBV, DC	e-business	USA	C-P; 109 B2B e-commerce firms	ISC→HYP (+,n.sig); ISC→OPC (+,M); OPC→HYP (+,M)	ModV: I (environmental dynamism); ConV: I (Market orientation, Horizontal market, Biased market, Market age, Market maker size, Environmental dynamism, Marketplace configuration)	Subjective	ISC (IS infrastructure, IS skills, IS knowledge); OPC (firm agility); HYP (ROI relative to objective, sales relative to objective, profit relative to goals, growth relative to objective, general success)	Direct and indirect	N	2, 3, 4, 5
(Chang & Gurbaxani, 2013)	Information Systems Research	X-inefficiency Theory	Multi	USA	L-S; 3828 observations, Compustat and Computer Intelligence InfoCorp (CII), 1987-1994	ISI→HYP (+,Sig)		Objective	ISI (IS intensity); HYP (Efficiency)	Direct	N	4
(Cohen & Olsen, 2013)	International Journal of Hospitality Management	RBV	Tourism	South Africa	C-P; 112 hotels	ISC→HYP (+,sig); ISC→MPC (+,sig); ISC→OPC (+,n.sig); MPC→HYP (+,n.sig); OPC→HYP (+,sig)	ConV: F (size; star rating; service orientation; chain affiliation), I (industry sector)	Subjective	ISC (IS infrastructure, IS human resource skills, IS management processes); MPC (employee outcomes); OPC (customer service outcomes);HYP (competitive performance as room occupancy, new customers attracted, GIMS, profitability, sales, RevPAR)	Direct and indirect	N	2, 3, 4, 5
(Gu & Jung, 2013)	Information and Management	RBV, IS success model	Multi	South Korea	C-P; 229 IS senior managers	ISC→MPC (+,Sig); ISC→OPC (+,Sig); OPC→HYP (+,Sig)	ConV: IS (IS objective), F (strategy type, sale revenue, position type), I (industry IS intensity)	Subjective	ISC (IS planning, business process change, acquisition, development, operation, and support); HYP (enhance revenue, reduce cost, increased profitability, strengthened competitive advantage)	Direct and indirect	N	2, 3, 5
(Liu et al., 2013)	Decision Support Systems	DC	Multi	China	C-P; 286 senior managers	ISC→MPC (+,M); ISC→OPC (+,M); MPC→HYP (+,Sig); OPC→HYP (+,Sig)	ConV: F (size, IS department size), I (Industry sector)	Subjective	ISC (Flexible IS infrastructure, IS assimilation); MPC (absorptive capacity); OPC (SC Agility); HYP (ROI, profits as a percentage of sales, decreasing the product or service delivery cycle time, rapid	Direct and indirect	N	2, 3, 5

Authors	*Journal*	*Theory[1]*	*Industry sector*	*Country*	*Method-Data[2]*	*Path (significance)[3]*	*Contextual factors[4]*	*Measuring value*	*Operationalization[5]*	*Type of relations*	*Time lag (year)*	*Path mark*
									response to market demand change, rapid confirmation of customer orders, increase in customer satisfaction)			
(M.-H. Huang & Wang, 2013)	Decision Sciences	Contingency Theory	Multi	Taiwan	C-P; 143 IS managers	ISU→ACP (+,M)	ModV: F (culture); ConV: F (size), I (competitive intensity)	Subjective	ISU (CRM, KM); ACP (ROA, profit margin, total revenue)	Direct	N	4, 5
(Ong & Chen, 2013)	Industrial Management and Data Systems	RBV	Multi	USA	L-S; 466 firms, IW for 2004-2008 and Compustat for 2003-2010	ISC→ACP (+,sig)	ConV: F (size); I (industry sector)	Objective	ISC (IW500 ranking); ACP (ROA, ROS, Tobin's q, MBA, MBE)	Direct	Y (1-2)	4, 5, 6
(Sai Hong & Ghobakhloo, 2013)	Industrial Management and Data Systems	RBV, Theory of complementarities	Multi	Iran	C-P; 218 CEOs	ISC→OPC (+,Sig)	ConV: F (size)	Subjective	OPC (new product development);	Indirect	N	2, 5
(Tafti et al., 2013)	Management Science	No Theory	Multi	USA	L-S; 169 firms, IW and SDC Platinum database, 2000-2006	ISI→MAP (+,Sig)		Objective	ISI (IS intensity as IS budget to revenue); MAP (Tobin's q)	Direct	N	4
(Zhang et al., 2013)	Information Systems Journal	RBV	Multi	USA, China	C-P; 81 export-focused SMEs firms from China and 66 firms from USA	a: ISD→ISC (+,Sig); b: ISD →ISC (+,Sig); c: ISD→ISC (+,n.sig); d: ISD→ISC (+,Sig); e: ISD→ISC (+,Sig); ISC→HYP (+,Sig)	ConV: C (location)	Subjective	a: ISD (Information Intensity); b: ISD (Environmental uncertainty); c: ISD (Marketing Orientation); d: ISD (Entrepreneurial Orientation); e: ISD (Organizational Learning Orientation); ISC (IS Business Partnerships, External IS Linkages, Business IS Strategic Thinking, IS Business Process Integration, IS Management, IS Infrastructure); HYP (Strategic Performance, Financial Performance)	Direct	N	1, 4, 5
(Ani et al., 2014)	African Journal of Science, Technology, Innovation and Development	No Theory	Financial	Nigeria	L-S; 21 banks	ISI→ACP (+,n.sig)		Objective	ISI (computer hardware and software); ACP (profitability)	Direct	Y (1)	4, 6
(Chae et al., 2014)	MIS Quarterly: Management Information Systems	RBV, DC	Multi	USA	L-S; 296 firms, IW, 1991-2007	ISC→ACP (+,n.sig)	ConV: F (size); I (industry sector)	Objective	ISC (IW500 ranking); ACP (ROA, ROS, OI/A, OI/S, OI/E, COG/S, SGA/S, OPEXP/S)	Direct	Y (1-3)	4, 5, 6
(Dixit & Panigrahi, 2014)	Journal of Global Information Technology Management	Contingency Theory	Multi	India	L-S; 320 firms, Centre for Monitoring Indian Economy Pvt. Ltd (CMIE) Prowess database, 2007-2010	ISI→ACP (+,M)	ModV: F (age; export activity); ConV: F (size); I (industry sector)	Subjective	ISI (sum of the spending related to the computers and IS systems, software, IS/ISES services); ACP (cost of operations, capital productivity, profit)	Direct	Y (1-3)	4, 5, 6
(Fernández-Mesa et al., 2014)	Industrial Management and Data Systems	Organizational learning Theory	Ceramic tile	Italy, Spain	C-P; 89 Spanish firms and 97 Italian general and production managers,	ISC→OPC (+,sig)	ConV: F (market power)	Subjective	ISC (IS knowledge, IS operations, IS assets); OPC (innovation performance);	Indirect	N	2, 5
(Y. Chen et al., 2014)	European Journal of Information Systems	RBV	Multi	China	C-P; 214 top-level managers	ISC→OPC (+,Sig); OPC→ACP (+,Sig)	ModV: I (environmental hostility, environmental dynamism, environmental complexity); ConV: F (diversification, size, ownership structure, age)	Subjective	ISC (IS infrastructure, IS business partnerships, IS business process integration, business IS strategic thinking, IS management, External IS linkage); OPC (business process agility); ACP (Profitability, Market growth, ROI, GINS)	Direct and indirect	N	2, 3, 5
(Lim et al., 2015)	Journal of Theoretical and Applied Information Technology	No Theory	Retail; Governmental	USA, South Korea	L-S; Amazon financial information for 1996-2013 and WORKNET for 2002-2013	ISI→ACP (+,sig)		Objective	ACP (revenue)	Direct	Y (1-3)	4, 6
(O.-K. (Daniel) Lee et al., 2015)	Information Systems Research	DC	Multi	China	C-P; 290 IT executives	ISC→MPC (+,Sig)	ModV: I (environmental dynamism); ConV:	Subjective	ISC (IS ambidexterity); MPC (operational ambidexterity)	Indirect	N	2, 5

Authors	*Journal*	*Theory[1]*	*Industry sector*	*Country*	*Method-Data[2]*	*Path (significance)[3]*	*Contextual factors[4]*	*Measuring value*	*Operationalization[5]*	*Type of relations*	*Time lag (year)*	*Path mark*
(Salge et al., 2015)	MIS Quarterly: Management Information Systems	Behavioral Theory, Institutional Theory	Healthcare	USA	L-S; 153 hospitals, National Health Service (NHS), 2002-2007	a: ISD→ISI (-,n.sig); b: ISD→ISI (+,sig); c: ISD →ISI (+,sig); d: ISD→ISI (+,sig)	ModV: F (regulative legitimacy); ConV: F (Size; R&D intensity; case mix; case load; foundation trust status; regional overcapacity; population health status; rurality; time dummies)	Objective	a: ISD (Prior firm performance); b: ISD (Financial slack); c: ISD (IS intensity); d: ISD (Regulative legitimacy); ISI (total annual IS expenditures in percent of its total annual revenues)	-	Y (1)	1, 5, 6
(Y. Chen et al., 2015)	Information and Management	Corporate entrepreneurship perspective	Multi	China	C-P; 138 CEOs and IT managers	ISC→MPC (+,Sig)	ModV: I (competitive intensity); ConV: F (size, age, ownership structure, prior performance), I (industry sector)	Subjective	ISC (IS infrastructure flexibility, IS integration, IS business alignment, IS management); MPC (corporate entrepreneurship)	Indirect	N	2, 5
(Yi Wang et al., 2015)	International Journal of Information Management	RBV, System Theory	Manufacturing	China	C-P; 214 IT managers	a: ISC→OPC (+,n.sig); b: ISC→OPC (+,Sig)	ModV: F (IS capabilities); ConV: F (diversification, size, ownership structure, age, proportion of employee using IS, years of experience with IS); ModV: I (environmental dynamism); ConV:	Subjective	a: ISC (data architectures, network architectures, architectural flexibility, Efficiency of IS operations, processing capacities); b: ISC (IS management); OPC (responsiveness to changes in demand, new product development, change in product mix, product pricing, market expansion, supplier selection, IS adoption and diffusion)	Indirect	N	2, 5
(Felipe et al., 2016)	Journal of Business Research	RBV, DC	Multi	Spain	C-P; 172 senior managers	ISC→OPC (+,Sig); ISC→MPC (+,Sig)	ModV: F (culture); ConV: F (size, age)	Subjective	ISC (outside-in capabilities, spanning capabilities, inside-out capabilities); OPC (firm agility); MPC (absorptive capacity)	Indirect	N	2, 5
(Hao & Song, 2016)	Journal of Business Research	RBV	Manufacturing	USA	C-P; 146 top level managers	ISD→ISC (+,Sig); ISC→ACP (+,Sig)	ConV: I (Buyer power, supplier power, ease of entry, substitution threats, seller concentration, market growth)	Objective	ISD (Technology orientation), ACP ((total revenue – total variable costs)/ total revenue)	Direct	N	1, 4, 5
(Mithas et al., 2016)	Information Systems Research	No Theory	Multi	USA	L-S; 109 firms, IW and National Quality Research Center (NQRC), 1994–1996 and 1999–2006	ISI→HYP (+,M)	ConV: F (total assets), I (industry sector)	Objective	ISI (aggregate ISIs as a percent of sales revenues); HYP (customer satisfaction, profit)	Direct	Y (1)	4, 5, 6
(Ong & Chen, 2016)	Journal of Computer Information Systems	Market-based view (MBV), RBV	Multi	USA	L-S; 257 firms, IW and Compustat, 2000-2009	ISC→ACP (+,sig)	ConV: F (size); I (industry sector)	Objective	ISC (IW500 ranking); ACP (ROE, growth opportunities, MBA)	Direct	N	4, 5
(Peng et al., 2016).	International Journal of Information Management	Process-based view	Multi	China	C-P; 127 top, middle and project managers	ISC→HYP (+,n.sig); MPC→HYP (+,Sig); OPC→HYP (+,Sig); ISC→MPC (+,Sig); ISC→OPC (+,Sig)		Subjective	ISC (basic applications, management support, scope of IS); MPC (business process management capability); OPC (SC management capability); HYP (financial performance, market growth, innovation, company's reputation)	Direct and indirect	N	2, 3, 4
(Purnama & Subroto, 2016)	International Review of Management and Marketing	No Theory	Multi	Indonesia	C-P; 130 top level managers	a: ISD→ISI (+,sig); b: ISD →ISI (+,sig); ISI→HYP (+,sig)		Subjective	a: ISD (Environmental uncertainty); b: ISD (Competitive environment)	Direct	N	1, 4
(Arora & Rahman, 2017a)	International Journal of Business Information Systems	RBV	Multi	India	L-S	ISC→ACP (+,n.sig)		Objective		Direct	Y (1-2)	4, 6
(Arora & Rahman, 2017b)	International Journal of Emerging Markets	RBV	Chemical	India	L-S; 28 firms, CIO India Magazine, 2006 and 2011	ISC→ACP (+,M)	ConV: F (size)	Objective	ISC (CIO India Magazine ranking); ACP (total assets, Revenue, ROA, ROS, Asset turnover, GINS, COG/S, COG/S, SGA/S)	Direct	Y (1-2)	4, 5, 6

Authors	*Journal*	*Theory[1]*	*Industry sector*	*Country*	*Method-Data[2]*	*Path (significance)[3]*	*Contextual factors[4]*	*Measuring value*	*Operationalization[5]*	*Type of relations*	*Time lag (year)*	*Path mark*
(Arora & Rahman, 2017c)	International Journal of Business Excellence	RBV	Multi	India	L-S	ISC→ACP (+,n.sig)		Objective		Direct	Y (1-2)	4, 6
(Ghasemaghaei et al., 2017)	Decision Support Systems	DC, Contingency Theory, Fit perspective	Multi	North America	C-P; 215 senior IT professionals	ISU→OPC (+,n.sig)	ModV: F (Fit facets (data-tools fit, people-tools fit, task-tools fit)); ConV: F (nature of data, size, Analytics type), I (industry sector)	Subjective	ISU (Data Analytics use); OPC (firm agility)	Indirect	N	2, 5
(J. Wu et al., 2017)	Electronic Commerce Research	RBV	Multi	China	L-S; 123 IT leaders, Informatics 500, 2003–2008 and financial Sinofin Economic and Financial database, 2007-2012	ISC→ACP (+,M)	ConV: F (size); I (industry sector)	Objective	ISC (Informatics 500 ranking); ACP (ROA, ROS, OPEXP/S, SGA/S)	Direct	Y (1-3)	4, 5, 6
(Razalli et al., 2017)	International Journal of Supply Chain Management	No Theory	Financial	Malaysia	C-P; 64 top-level managers	ISI→OPC (+,n.sig)	ModV: F (change management; strategic alignment; top management commitment; customer focus; IS investment; process redesign; adequate financial resources; bureaucratic structure)	Subjective	OPC (Quality performance)	Indirect	N	2, 5
(Yichuan Wang & Byrd, 2017)	Journal of Knowledge Management	DC	Healthcare	Taiwan	C-P; 152 C-suite business executives	ISU→MPC (+,M); ISU→MPC (+,M)		Subjective	ISU (Effective use of data aggregation tool, Effective use of data analysis tools, Effective use of data interpretation tools); MPC (absorptive capacity); MPC (Decision making performance);	Indirect	N	2
(Yu Wang et al., 2017)	Chinese Management Studies	No Theory	Multi	China	L-S; 782 firms data, China Stock Market Accounting Research database (CSMAR), Shanghai Stock Exchange, ShenzhenStock Exchange, 2007-2013	ISI→MAP (+,n.sig)	ModV: I (industry R&D intensity, environmental dynamism); ConV: F (size, leverage, growth, CEO overconfidence, board independence, CEO duality, age), I (industry R&D intensity, industry IS intensity)	Objective	ISI (ISI to the total assets); MAP (Tobin's q)	Direct	N	4, 5
(Chae et al., 2018)	Information and Management	Industry-based view	Multi	Multi-national	L-S; 296 IT leaders and comparable control firms, IW and Compustat, 2001-2004	ISC→ACP (+,M)	ConV: F (size; total assets; sales; number of employees), I (industry sector)	Objective	ISC (IW500 ranking); ACP (ROA, ROS, OI/A, OI/S, OI/E, OPEXP/S, COG/S, SGA/S)	Direct	N	4, 5
(Grimmer et al., 2018)	Journal of Retailing and Consumer Services	Resource advantage Theory	Retail	Australia	C-P; 363 owners/managers	ISC→ACP (+,M); a: ISC→MPC (+,Sig); b: ISC→MPC (+,M); a: MPC→ACP (+,Sig); b: MPC→ACP (M,M)		Objective	ISC (relational resources, informational (business) resources, informational (web) resources, physical resources, human and organizational resources); ACP (average annual sales turnover); a: MPC (strategic planning capability); b: MPC (strategic orientation)	Direct and indirect	N	2, 3, 4
(Khuntia et al., 2018)	Production and Operations Management	No Theory	Multi	India	C-P&S; 300 managers and Centre for Monitoring the Indian Economy (CMIE)	ISI→ACP (+,sig)	ConV: F (size)	Objective	ISI (Green ISI as a percentage of IS budget on green IS initiatives); ACP (IS equipment energy consumption, profit)	Direct	N	4, 5

Authors	*Journal*	*Theory[1]*	*Industry sector*	*Country*	*Method-Data[2]*	*Path (significance)[3]*	*Contextual factors[4]*	*Measuring value*	*Operationalization[5]*	*Type of relations*	*Time lag (year)*	*Path mark*
(Kmieciak et al., 2018)	Journal of East European Management Studies	No Theory	Multi	Germany, Poland	C-P; 100 German firms in 2015, and 109 Polish firms in 2010	ISC→HYP (+,Sig)		Subjective	ISC (IS in internal communication, Integration of IS with business strategy, IS knowledge); HYP (quality of products/services, Consumer satisfaction, MS, productivity per employee)	Direct	N	4
(Lyver & Lu, 2018)	Sustainability (Switzerland)	RBV	IT	Canada	C-P; 164 top-level managers	ISC→OPC (+,Sig)		Subjective	ISC (IS infrastructure, flexibility, IS integration, IS business alignment, IS management); OPC (strategic entrepreneurship);	Indirect	N	2
(Mishra et al., 2018)	Journal of Global Information Technology Management	No Theory	Mining	India	C-P; 118 top managers	a: ISU→MPC (+,n.sig); b: ISU→MPC (+,sig)		Subjective	ISU (usage of some IS tolls such as internet, intranet, and fax); a: MPC (KM processes); b: MPC (Decision making performance)	Indirect	N	2
(S. Liu et al., 2018)	International Journal of Information Management	DC	Multi	China	C-P; 184 customer firms of Alibaba	ISC→OPC (+,Sig)	ModV: F (IS investment); ConV: F (size), I (industry sector)	Subjective	ISC (cloud computing capabilities as infrastructure flexibility, infrastructure integration); OPC (operational agility, partnering agility, customer agility);	Indirect	N	2, 5
(Soto-Acosta et al., 2018)	Journal of Knowledge Management	TOE, RBV	Manufacturing	Spain	C-P; 429 top level managers	ISC→OPC (+,Sig); OPC→ACP (+,Sig)	ModV: I (environmental dynamism); ConV: F (size, age); I (industry sector)	Subjective	ISC (IS-supported operations, IS knowledge and budget); OPC (innovation ambidexterity); ACP (ROA, ROE, ROS, MS, GINS)	Direct and indirect	N	2, 3, 5
(Thakurta & Guha Deb, 2018)	Journal of Global Information Technology Management	No Theory	Multi	India	L-S; 5837 observations, CMIE Prowess database, 2000-2014	ISI→MAP (-,Sig); ISI→ACP (-,Sig)	ConV: F (asset size, age, leverage)	Objective	ISI (IS expenses on computer systems, computer hardware, IS-enabled services and software); MAP (BAHR); ACP (OCF/A, ROA)	Direct	Y (1-5)	4, 5, 6
(Wang et al., 2018)	International Journal of Accounting Information Systems	No Theory	Healthcare	USA	L-S; 3266 observations, Definitive Healthcare database, 2011-2016	ISI→ACP (+,sig); ISI→OPC (+,Sig); OPC→ACP (+,Sig)	ConV: F (size; ownership), I (market concentration index)	Objective	ISI (operating IS budget, capital IS budget); OPC (business process performance); ACP (ROA, Productivity)	Direct and indirect	N	2, 3, 4, 5
(Ashrafi et al., 2019)	International Journal of Information Management	DC	Multi	Iran	C-P; 154 CIOs and CEOs	ISC→OPC (+,Sig)	ModV: I (market turbulence, technological turbulence); ConV: F (size, age), I (industry sector)	Subjective	ISC (business analytics capability); OPC (firm agility);	Indirect	N	2, 5
(Aydiner et al., 2019)	International Journal of Information Management	RBV	Multi	Turkey	C-P; 172 CTOs	ISC→MPC (+,M); ISC→OPC (+,M); MPC→HYP (+,n.sig); OPC→HYP (+,Sig)	ConV: F (age; size); I (Industry sector)	Subjective	ISC (infrastructure capability, human resource capability, administrative capability); MPC (decision making performance); OPC (business process performance); HYP (ROS, cost reduction, MS, ROI, inventory reduction, customer loyalty)	Indirect	N	2, 3, 5
(Cepeda & Arias-Pérez, 2019)	Multinational Business Review	No Theory	Multi	Multi-national	C-P; 233 top-level managers	ISC→OPC (+,Sig)	ConV: F (age), I (regulation)	Subjective		Indirect	N	2, 5
(Chu et al., 2019)	Sustainability (Switzerland)	No Theory	Multi	China	C-P; 149 middle or senior managers	ISC→MPC (+,Sig)		Subjective	ISC (IS infrastructure capability, IS business spanning capability, IS proactive stance)	Indirect	N	2
(Havakhor et al., 2019)	Information Systems Research	RBV	Multi	USA	L-S; 294 firms, IW, Compustat, and CRSP, 1999-2008	ISI→MAP (+,M)	ModV: F (R&D intensity; advertising intensity), I (environmental dynamism); ConV: F (size; assets); I (industry Tobin's Q; industry capital intensity; industry concentration;	Objective	ISI (Firm's annual IS budget); MAP (Tobin's q)	Direct	N	4, 5

Authors	*Journal*	*Theory[1]*	*Industry sector*	*Country*	*Method-Data[2]*	*Path (significance)[3]*	*Contextual factors[4]*	*Measuring value*	*Operationalization[5]*	*Type of relations*	*Time lag (year)*	*Path mark*
							related diversification)					
(Irfan & Wang, 2019)	British Food Journal	RBV, DC	Food and beverages	Pakistan	C-P; 240 CEOs	ISC→HYP (+,M)		Subjective	ISC (Flexible IS resources); HYP (Competitive performance as responding to shorter lead times, managing volume and product flexibility, shortening product and service delivery cycle time, excellence in customer service, ROI, profit as percentage of sales, low cost of operations, GIMS)	Direct	N	4
(Jalilvand et al., 2019)	Tourism Review	No Theory	Tourism	Iran	C-P; 317 managers	ISC→MPC (+,Sig)		Subjective	MPC (KM processes)	Indirect	N	2
(Ji et al., 2019)	Chinese Management Studies	No Theory	Multi	China	L-S; 15087 IT investment announcements, Wind database, 2011-2015	ISI→ACP (+,Sig)		Objective	ISI (ISI announcements); ACP (ROA, PCR, LOA, GINP)	Direct	N	4
(Kartawiguna et al., 2019)	International Journal of Advanced Trends in Computer Science and Engineering	RBV	Healthcare	Indonesia	C-P; 34 managers	ISC→HYP (+,Sig)		Subjective		Direct	N	4
(Memon et al., 2019)	Human Systems Management	No Theory	Multi	Pakistan	C-P; 316 managers in small and medium enterprises	ISC→HYP (+,Sig)	ModV: F (capital availability; sustainable competitive position)	Subjective		Direct	N	4, 5
(Sabherwal et al., 2019)	MIS Quarterly: Management Information Systems	No Theory	Multi	USA	L-S; 242 firms, 758 firm-year observations, IW, Compustat and CRSP, 1999-2007	ISI→MAP (+,Sig)	ModV: F (strategic IS alignment); I (environmental uncertainty); ConV: F (age)	Objective	ISI (Firm's annual IS budget); MAP (Tobin's q)	Direct	Y (1)	4, 5, 6
(Steelman et al., 2019)	Information Systems Research	RBV	multi	USA	L-S; 687 firm-year observations, IW, Compustat, CRSP, 2000-2007	ISI→MAP (+,M)	ModV: F (organizational commitment to IS); ConV: F (size, advertising intensity, market share), I (Tobin's q, capital intensity, concentration ratio, environmental turbulence)	Objective	ISI (investments in new or current IS); MAP (Tobin's q)	Direct	N	4, 5
(Sun et al., 2019)	Information Development	DC	Multi	South Korea	C-P; 128 CEOs	ISD→ISC (+,Sig); ISC→HYP (+,Sig)	ModV: F (KM Strategy)	Subjective	ISD (Entrepreneurial Orientation)	Direct	N	1, 4, 5
(Mao et al., 2020)	Information Technology and People	DC	Multi	China	C-P; 165 managers	ISC→MPC (+,M)	ModV: I (industry IS intensity); ConV: F (age; size; IS department age; IS department size; ownership), I (industry sector)	Subjective	ISC (IS knowledge, IS operations, IS assets); MPC (absorptive capacity)	Indirect	N	2, 5
(Mikalef et al., 2020)	European Journal of Information Systems	DC, Systems Theory, Theory of competitive advantage	Multi	Multi-national	C-P; 322 executives	ISC→HYP (+,Sig)	ModV: I (environmental dynamism, environmental heterogeneity, environmental hostility); ConV: F (size, age), I (industry sector)	Subjective	ISC (IS-enabled dynamic capability); HYP (competitive advantage)	Direct	N	4, 5
(Nik Abdullah et al., 2020)	International Journal of Innovation,	No Theory	Multi	Malaysia	C-P; 215 CFOs	ISC→HYP (+,Sig)		Subjective	HYP (financial (stock price, MV, GINS, price-earnings ratio, MS, ROI, and market positioning) and non-	Direct	N	4

Authors	*Journal*	*Theory*[1]	*Industry sector*	*Country*	*Method-Data*[2]	*Path (significance)*[3]	*Contextual factors*[4]	*Measuring value*	*Operationalization*[5]	*Type of relations*	*Time lag (year)*	*Path mark*
	Creativity and Change								financial (business risk, business opportunities, workforce, and brand and reputation))			
(Rehman et al., 2020)	Technology Analysis and Strategic Management	DC	Manufacturing	Pakistan	C-P; 400 CEOs	ISC→MPC (+,Sig); MPC→ACP (+,Sig)		Subjective	ISC (IS infrastructure, IS technical skills); MPC (absorptive capacity); ACP (ROA, ROE, ROS, MS, GINS during the last three years)	Indirect	N	2, 3
(Shahzad et al., 2020)	Journal of Cleaner Production	No Theory	Retail	Pakistan	C-P; 307 managers	ISC→OPC (+,Sig); ISD→ISC (+,Sig)		Subjective	ISC (IS management, IS development, IS intensity); ISD (SC efforts); OPC (material reuse, environmental compliance, environmental preservation, reduction of hazardous wastes and emissions)	Indirect	N	1, 2
(Srimarut & Mekhum, 2020)	International Journal of Supply Chain Management	No Theory	Retail	Thailand	C-P; 395 managers	a: ISC→OPC (+,Sig); b: ISC→OPC (+,Sig); ISD→ISC (+,Sig)		Subjective	ISC (IS management, IS development, IS intensity); ISD (SC Performance); OPC (a: operational performance, b: market performance)	Indirect	N	1, 2

1. DC: Dynamic Capabilities view, RBV: Resource-Based View, TCE: Transaction Cost Theory, TOE: Technology, Organization, Environment

2. C-P: Cross-sectional and primary data, C-S: Cross-sectional and secondary data, L-S: Longitudinal and secondary data, B2B: Business-2-Business, CEO: Chief Executive Officer, CFO: Chief Financial Officer, CIO: Chief Information Officer, CTO: Chief Technology Officer, IT: Information Technology, IW: InformationWeek, SME: Small and Medium Enterprise

3&5. ACP: Accounting Performance, HYP: Hybrid Performance, ISC: IS Capabilities, ISD: IS Determinants, ISI: IS Investment, ISU: IS Use, OPC: Operational Process Capabilities, MAP: Market Performance, MPC: Management Process Capabilities, +: Positive, -: Negative, M: Mixed, N: No effect, Sig: Significant, n.sig: non-significant.

4. ConV: Control Variable, ModV: Moderating Variable, IS: IS-level factors, F: Firm-level factors, I: Industry-level factors, C: Country-level factors

5. ATM: Automated Teller Machine, BAHR: Buy and Hold Return, COG/S: Cost of Goods Sold to Sales, CRM: Customer Relationship Management, EDI: Electronic Data Interchange, ERP: Enterprise Resource Planning, EVA: Economic Value Added, GIMS: Growth in Market Share, GINP: Growth in Net Profit, GINR: Growth in Revenue, GINS: Growth in Sales, IRR: Internal Rate of Return, OCF/A: Operating Cash Flow/Asset, OI: Operating Income, OI/A: Operating Income to Assets, OI/E: Operating Income to Employees, OI/S: Operating Income to Sales, OPEXP: Operating Expense, OPEXP/S: Operating Expense to Sales, PCR: Profit/Cost Ratio, KM: Knowledge Management, LAN: Local Area Network, LOA: Liability on Asset, MBA: Market value to book value, MBE: market stock price to book stock price, MS: Market Share, MV: Market Value, MVA: Market Value Added, NOPAT: Net Operating Profit after Tax, SCM: Supply Chain Management, TMC: Total Market Capitalization, TNI: Total Net Income, ROA: Return on Assets, ROS: Return on Sales, RPE: Revenue per employee, RSE: Rate of sectoral excellence, R&D: Research and Development, SBYE: Sales by Employee, SBYTA: Sales by Total Assets, SGA/S: Selling and General Administration Expense to Sales, TA: Total Assets, TIT: Total Inventory Turnover, Y2K: Year 2000.

References for Appendix II.

Albadvi, A., Keramati, A., & Razmi, J. (2007). Assessing the impact of information technology on firm performance considering the role of intervening variables: Organizational infrastructures and business processes reengineering. *International Journal of Production Research*, *45*(12), 2697–2734. https://doi.org/10.1080/00207540600767780

Andersen, T. J., & Segars, A. H. (2001). *The impact of IT on decision structure and firm performance: Evidence from the textile and apparel industry*. *39*, 85–100.

Anderson, M. C., Banker, R. D., & Ravindran, S. (2006). Value Implications of Investments in Information Technology. *Management Science*, *52*(9), 1359–1376. https://doi.org/10.1287/mnsc.1060.0542

Ani, W. U., Odo, C. O., & Ikenna, E. (2014). The impact of information technology on bank profitability in Nigeria. *African Journal of Science, Technology, Innovation and Development*, *6*(1), 31–37. https://doi.org/10.1080/20421338.2014.895485

Anthony Byrd, T., Lewis, B. R., & Bryan, R. W. (2006). The leveraging influence of strategic alignment on IT investment: An empirical examination. *Information & Management*, *43*(3), 308–321. https://doi.org/10.1016/j.im.2005.07.002

Aral, S., & Weill, P. (2007). IT assets, organizational capabilities, and firm performance: How resource allocations and organizational differences explain performance variation. *Organization Science*, *18*(5), 763–780. https://doi.org/10.1287/orsc.1070.0306

Arora, B., & Rahman, Z. (2017a). Assessing the impact of information technology capability on firm profitability and market value in emerging economies: A study from India. *International Journal of Business Information Systems*, *25*(2), 192–212. https://doi.org/10.1504/IJBIS.2017.10004401

Arora, B., & Rahman, Z. (2017b). Information technology capability as competitive advantage in emerging markets: Evidence from India. *International Journal of Emerging Markets*, *12*(3), 447–463. https://doi.org/10.1108/IJoEM-07-2015-0127

Arora, B., & Rahman, Z. (2017c). Investigating the influence of information technology capability on risk and returns: A firm-level empirical analysis. *International Journal of Business Excellence*, *13*(1), 112–126. https://doi.org/10.1504/IJBEX.2017.085797

Arvanitis, S. (2005). Computerization, workplace organization, skilled labour and firm productivity: Evidence for the Swiss business sector. *Economics of Innovation and New Technology*, *14*(4), 225–249. https://doi.org/10.1080/1043859042000226257

Ashrafi, A., Zare Ravasan, A., Trkman, P., & Afshari, S. (2019). The role of business analytics capabilities in bolstering firms' agility and performance. *International Journal of Information Management*, *47*, 1–15. https://doi.org/10.1016/j.ijinfomgt.2018.12.005

Aydiner, A. S., Tatoglu, E., Bayraktar, E., & Zaim, S. (2019). Information system capabilities and firm performance: Opening the black box through decision-making performance and business-process performance. *International Journal of Information Management*, *47*, 168–182. https://doi.org/10.1016/j.ijinfomgt.2018.12.015

Badri, M. A., & Alshare, K. (2008). A path analytic model and measurement of the business value of e-government: An international perspective. *International Journal of Information Management*, *28*(6), 524–535. https://doi.org/10.1016/j.ijinfomgt.2006.10.004

Baker, J., Song, J., Jones, D., & Ford, E. W. (2008). Information Systems and Healthcare XXIX: Information Technology Investments and Returns—Uniqueness in the Healthcare Industry. *Communications of the Association for Information Systems*, *23*(1), 21.

Banker, Bardhan, Chang, & Lin. (2006). Plant Information Systems, Manufacturing Capabilities, and Plant Performance. *MIS Quarterly*, *30*(2), 315. https://doi.org/10.2307/25148733

Barua, A., Kriebel, C. H., & Mukhopadhyay, T. (1995). Information Technologies and Business Value: An Analytic and Empirical Investigation. *Information Systems Research*, *6*(1), 3–23. https://doi.org/10.1287/isre.6.1.3

Barua, Konana, Whinston, & Yin. (2004). An Empirical Investigation of Net-Enabled Business Value. *MIS Quarterly*, *28*(4), 585. https://doi.org/10.2307/25148656

Bayo-Moriones, A., Billón, M., & Lera-López, F. (2013). Perceived performance effects of ICT in manufacturing SMEs. *Industrial Management & Data Systems*, *113*(1), 117–135. https://doi.org/10.1108/02635571311289700

Beccalli, E. (2007). Does IT investment improve bank performance? Evidence from Europe. *Journal of Banking & Finance*, *31*(7), 2205–2230. https://doi.org/10.1016/j.jbankfin.2006.10.022

Benitez-Amado, J., Llorens-Montes, F. J., & Nieves Perez-Arostegui, M. (2010). Information technology-enabled intrapreneurship culture and firm performance. *Industrial Management & Data Systems*, *110*(4), 550–566. https://doi.org/10.1108/02635571011039025

Benitez-Amado, J., & Walczuch, R. M. (2012). Information technology, the organizational capability of proactive corporate environmental strategy and firm performance: A resource-based analysis. *European Journal of Information Systems*, *21*(6), 664–679. https://doi.org/10.1057/ejis.2012.14

Bergeron, F., Raymond, L., & Rivard, S. (2001). Fit in strategic information technology management research: An empirical comparison of perspectives. *Omega*, *29*(2), 125–142. https://doi.org/10.1016/S0305-0483(00)00034-7

Bergeron, F., Raymond, L., & Rivard, S. (2004). Ideal patterns of strategic alignment and business performance. *Information & Management*, *41*(8), 1003–1020. https://doi.org/10.1016/j.im.2003.10.004

Bharadwaj, Anandhi S, Bharadwaj, S. G., & Konsynski, B. R. (1999). Information technology effects on firm performance as measured by Tobin's q. *Management Science*, *45*(7), 1008–1024.

Bharadwaj, A.S. (2000). A resource-based perspective on information technology capability and firm performance: An empirical investigation. *MIS Quarterly: Management Information Systems*, *24*(1), 169–193. https://doi.org/10.2307/3250983

Bharadwaj, S., Bharadwaj, A., & Bendoly, E. (2007). The Performance Effects of Complementarities Between Information Systems, Marketing, Manufacturing, and Supply Chain Processes. *Information Systems Research*, *18*(4), 437–453. https://doi.org/10.1287/isre.1070.0148

Bhatt, G. D., & Grover, V. (2005). Types of information technology capabilities and their role in competitive advantage: An empirical study. *Journal of Management Information Systems*, *22*(2), 253–277. https://doi.org/10.1080/07421222.2005.11045844

Bhatt, G., Emdad, A., Roberts, N., & Grover, V. (2010). Building and leveraging information in dynamic environments: The role of IT infrastructure flexibility as enabler of organizational responsiveness and competitive advantage. *Information & Management*, *47*(7–8), 341–349. https://doi.org/10.1016/j.im.2010.08.001

Bloom, N., Sadun, R., & Reenen, J. V. (2012). Americans Do IT Better: US Multinationals and the Productivity Miracle. *American Economic Review*, *102*(1), 167–201. https://doi.org/10.1257/aer.102.1.167

Brown, R. M., Gatian, A. W., & Hicks, J. O. (1995). Strategic Information Systems and Financial Performance. *Journal of Management Information Systems*, *11*(4), 215–248. https://doi.org/10.1080/07421222.1995.11518065

Brynjolfsson, E., & Hitt, L. (1996). Paradox Lost? Firm-level Evidence on the Returns to Information Systems Spending. *Management Science*, *42*(4), 541–558.

Byrd, T. A., & Davidson, N. W. (2003). Examining possible antecedents of IT impact on the supply chain and its effect on firm performance. *Information & Management*, *41*(2), 243–255. https://doi.org/10.1016/S0378-7206(03)00051-X

Byrd, T. A., Pitts, J. P., Adrian, A. M., & Davidson, N. W. (2008). Examination of a path model relating information technology infrastructure with firm performance. *Journal of Business Logistics*, *29*(2), 161–187. https://doi.org/10.1002/j.2158-1592.2008.tb00091.x

Campbell, M. (2012). What a Difference a Year Makes: Time Lag Effect of Information Technology Investment on Firm Performance. *Journal of Organizational Computing and Electronic Commerce*, *22*(3), 237–255. https://doi.org/10.1080/10919392.2012.696944

Cepeda, J., & Arias-Pérez, J. (2019). Information technology capabilities and organizational agility: The mediating effects of open innovation capabilities. *Multinational Business Review*, *27*(2), 198–216. https://doi.org/10.1108/MBR-11-2017-0088

Chae, H.-C., Koh, C. E., & Park, K. O. (2018). Information technology capability and firm performance: Role of industry. *Information and Management*, *55*(5), 525–546. https://doi.org/10.1016/j.im.2017.10.001

Chae, H.-C., Koh, C. E., & Prybutok, V. R. (2014). Information technology capability and firm performance: Contradictory findings and their possible causes. *MIS Quarterly: Management Information Systems*, *38*(1), 305–326. https://doi.org/10.25300/MISQ/2014/38.1.14

Chakravarty, A., Grewal, R., & Sambamurthy, V. (2013). Information technology competencies, organizational agility, and firm performance: Enabling and facilitating roles. *Information Systems Research*, *24*(4), 976–997. https://doi.org/10.1287/isre.2013.0500

Chang & Gurbaxani. (2012a). Information Technology Outsourcing, Knowledge Transfer, and Firm Productivity: An Empirical Analysis. *MIS Quarterly*, *36*(4), 1043. https://doi.org/10.2307/41703497

Chang, Y. B., & Gurbaxani, V. (2012b). The Impact of IT-Related Spillovers on Long-Run Productivity: An Empirical Analysis. *Information Systems Research*, *23*(3-part-2), 868–886. https://doi.org/10.1287/isre.1110.0381

Chang, Y. B., & Gurbaxani, V. (2013). An Empirical Analysis of Technical Efficiency: The Role of IT Intensity and Competition. *Information Systems Research*, *24*(3), 561–578. https://doi.org/10.1287/isre.1120.0438

Chari, M. D. R., Devaraj, S., & David, P. (2007). International diversification and firm performance: Role of information technology investments. *Journal of World Business*, *42*(2), 184–197. https://doi.org/10.1016/j.jwb.2007.02.004

Chari, M. D. R., Devaraj, S., & David, P. (2008). Research note—The impact of information technology investments and diversification strategies on firm performance. *Management Science*, *54*(1), 224–234. https://doi.org/10.1287/mnsc.1070.0743

Chatzoglou, P. D., Diamantidis, A. D., Vraimaki, E., Vranakis, S. K., & Kourtidis, D. A. (2011). Aligning IT, strategic orientation and organizational structure. *Business Process Management Journal*, *17*(4), 663–687. https://doi.org/10.1108/14637151111149474

Chen, Ja-Shen, & Tsou, H.-T. (2012). Performance effects of IT capability, service process innovation, and the mediating role of customer service. *Journal of Engineering and Technology Management*, *29*(1), 71–94. https://doi.org/10.1016/j.jengtecman.2011.09.007

Chen, J.-L. (2012). The synergistic effects of IT-enabled resources on organizational capabilities and firm performance. *Information & Management*, *49*(3–4), 142–150. https://doi.org/10.1016/j.im.2012.01.005

Chen, J.-S., Tsou, H. T., & Huang, A. Y.-H. (2009). Service delivery innovation: Antecedents and impact on firm performance. *Journal of Service Research*, *12*(1), 36–55. https://doi.org/10.1177/1094670509338619

Chen, Y., Wang, Y., Nevo, S., Benitez-Amado, J., & Kou, G. (2015). IT capabilities and product innovation performance: The roles of corporate entrepreneurship and competitive intensity. *Information & Management*, *52*(6), 643–657. https://doi.org/10.1016/j.im.2015.05.003

Chen, Y., Wang, Y., Nevo, S., Jin, J., Wang, L., & Chow, W. S. (2014). IT capability and organizational performance: The roles of business process agility and environmental factors. *European Journal of Information Systems*, *23*(3), 326–342. https://doi.org/10.1057/ejis.2013.4

Chowdhury, S. K. (2006). Investments in ICT-capital and economic performance of small and medium scale enterprises in East Africa. *Journal of International Development*, *18*(4), 533–552. https://doi.org/10.1002/jid.1250

Chu, Y., Chi, M., Wang, W., & Luo, B. (2019). The impact of information technology capabilities of manufacturing enterprises on innovation performance: Evidences from SEM and fsQCA. *Sustainability (Switzerland)*, *11*(21). https://doi.org/10.3390/su11215946

Cohen, J. F., & Olsen, K. (2013). The impacts of complementary information technology resources on the service-profit chain and competitive performance of South African hospitality firms. *International Journal of Hospitality Management*, *34*(1), 245–254. https://doi.org/10.1016/j.ijhm.2013.04.005

Dale Stoel, M., & Muhanna, W. A. (2009). IT capabilities and firm performance: A contingency analysis of the role of industry and IT capability type. *Information & Management*, *46*(3), 181–189. https://doi.org/10.1016/j.im.2008.10.002

Das, S., Yaylacicegi, U., & Menon, N. M. (2011). The effect of information technology investments in healthcare: A longitudinal study of its lag, duration, and economic value. *IEEE Transactions on Engineering Management*, *58*(1), 124–140. https://doi.org/10.1109/TEM.2010.2048906

Davis, D. F., & Golicic, S. L. (2010). Gaining comparative advantage in supply chain relationships: The mediating role of market-oriented IT competence. *Journal of the Academy of Marketing Science*, *38*(1), 56–70. https://doi.org/10.1007/s11747-008-0127-8

de Mendonça, M. A. A., Freitas, F., & de Souza, J. M. (2008). Information technology and productivity: Evidence for Brazilian industry from firm-level data. *Information Technology for Development*, *14*(2), 136–153. https://doi.org/10.1002/itdj.20091

Dehning, B., Pfeiffer, G. M., & Richardson, V. J. (2006). Analysts' forecasts and investments in information technology. *International Journal of Accounting Information Systems*, *7*(3), 238–250. https://doi.org/10.1016/j.accinf.2006.07.001

Dehning, B., Richardson, V. J., & Zmud, R. W. (2007). The financial performance effects of IT-based supply chain management systems in manufacturing firms. *Journal of Operations Management*, *25*(4), 806–824. https://doi.org/10.1016/j.jom.2006.09.001

Devaraj, S., & Kohli, R. (2000). Information Technology Payoff in the Health-Care Industry: A Longitudinal Study. *Journal of Management Information Systems*, *16*(4), 41–67. https://doi.org/10.1080/07421222.2000.11518265

Devaraj, S., & Kohli, R. (2003). Performance Impacts of Information Technology: Is Actual Usage the Missing Link? *Management Science*, *49*(3), 273–289. https://doi.org/10.1287/mnsc.49.3.273.12736

Devaraj, S., Krajewski, L., & Wei, J. C. (2007). Impact of eBusiness technologies on operational performance: The role of production information integration in the supply chain. *Journal of Operations Management*, *25*(6), 1199–1216. https://doi.org/10.1016/j.jom.2007.01.002

Dewan, S., & Ren, F. (2011). Information Technology and Firm Boundaries: Impact on Firm Risk and Return Performance. *Information Systems Research*, *22*(2), 369–388. https://doi.org/10.1287/isre.1090.0261

Dibrell, C., Davis, P. S., & Craig, J. (2008). Fueling Innovation through Information Technology in SMEs. *Journal of Small Business Management*, *46*(2), 203–218. https://doi.org/10.1111/j.1540-627X.2008.00240.x

Dixit, G., & Panigrahi, P. (2014). Information technology impact and role of firm age and export activity: An emerging economy context. *Journal of Global Information Technology Management*, *17*(3), 169–187. https://doi.org/10.1080/1097198X.2014.951295

Doms, M. E., Jarmin, R. S., & Klimek, S. D. (2004). Information technology investment and firm performance in US retail trade. *Economics of Innovation and New Technology*, *13*(7), 595–613. https://doi.org/10.1080/1043859042000201911

Drennan, J., & McColl-Kennedy, J. R. (2003). The relationship between Internet use and perceived performance in retail and professional service firms. *Journal of Services Marketing*.

Duh, R.-R., Chow, C. W., & Chen, H. (2006). Strategy, IT applications for planning and control, and firm performance: The impact of impediments to IT implementation. *Information & Management*, *43*(8), 939–949. https://doi.org/10.1016/j.im.2006.08.007

El-Mashaleh, M., O'Brien, W. J., & Minchin, R. E. (2006). Firm Performance and Information Technology Utilization in the Construction Industry. *Journal of Construction Engineering and Management*, *132*(5), 499–507. https://doi.org/10.1061/(ASCE)0733-9364(2006)132:5(499)

Evangelista, P., Mogre, R., Perego, A., Raspagliesi, A., & Sweeney, E. (2012). A survey based analysis of IT adoption and 3PLs' performance. *Supply Chain Management: An International Journal*, *17*(2), 172–186. https://doi.org/10.1108/13598541211212906

Felipe, C. M., Roldán, J. L., & Leal-Rodríguez, A. L. (2016). An explanatory and predictive model for organizational agility. *Journal of Business Research*, *69*(10), 4624–4631. https://doi.org/10.1016/j.jbusres.2016.04.014

Fernández-Mesa, A., Ferreras-Méndez, J. L., Alegre, J., & Chiva, R. (2014). IT competency and the commercial success of innovation. *Industrial Management and Data Systems*, *114*(4), 550–567. https://doi.org/10.1108/IMDS-09-2013-0389

Floyd, S. W., & Wooldridge, B. (1990). Path Analysis of the Relationship between Competitive Strategy, Information Technology, and Financial Performance. *Journal of Management Information Systems*, *7*(1), 47–64. https://doi.org/10.1080/07421222.1990.11517880

Francalanci, C., & Galal, H. (1998). Information Technology and Worker Composition: Determinants of Productivity in the Life Insurance Industry. *MIS Quarterly*, *22*(2), 227. https://doi.org/10.2307/249396

Ghasemaghaei, M., Hassanein, K., & Turel, O. (2017). Increasing firm agility through the use of data analytics: The role of fit. *Decision Support Systems*, *101*, 95–105. https://doi.org/10.1016/j.dss.2017.06.004

Ghosal, V., & Nair-Reichert, U. (2009). Investments in modernization, innovation and gains in productivity: Evidence from firms in the global paper industry. *Research Policy*, *38*(3), 536–547. https://doi.org/10.1016/j.respol.2008.10.010

Grimmer, L., Grimmer, M., & Mortimer, G. (2018). The more things change the more they stay the same: A replicated study of small retail firm resources. *Journal of Retailing and Consumer Services*, *44*, 54–63. https://doi.org/10.1016/j.jretconser.2018.05.012

Grover, V., Teng, J., Segars, A. H., & Fiedler, K. (1998). The influence of information technology diffusion and business process change on perceived productivity: The IS executive's perspective. *Information & Management*, *34*(3), 141–159.

Gu, J.-W., & Jung, H.-W. (2013). The effects of IS resources, capabilities, and qualities on organizational performance: An integrated approach. *Information & Management*, *50*(2–3), 87–97. https://doi.org/10.1016/j.im.2013.02.001

Hao, S., & Song, M. (2016). Technology-driven strategy and firm performance: Are strategic capabilities missing links? *Journal of Business Research*, *69*(2), 751–759. https://doi.org/10.1016/j.jbusres.2015.07.043

Havakhor, T., Sabherwal, R., Steelman, Z. R., & Sabherwal, S. (2019). Relationships between information technology and other investments: A contingent interaction model. *Information Systems Research*, *30*(1), 291–305. https://doi.org/10.1287/isre.2018.0803

Hempell, T. (2005). Does experience matter? Innovations and the productivity of information and communication technologies in German services. *Economics of Innovation and New Technology*, *14*(4), 277–303. https://doi.org/10.1080/1043859042000269106

Henderson, B. C., Kobelsky, K., Richardson, V. J., & Smith, R. E. (2010). The Relevance of Information Technology Expenditures. *Journal of Information Systems*, *24*(2), 39–77. https://doi.org/10.2308/jis.2010.24.2.39

Hendricks, K. B., Singhal, V. R., & Stratman, J. K. (2007). The impact of enterprise systems on corporate performance: A study of ERP, SCM, and CRM system implementations. *Journal of Operations Management*, *25*(1), 65–82. https://doi.org/10.1016/j.jom.2006.02.002

Hitt, L. M., & Brynjolfsson, E. (1996). Productivity, Business Profitability, and Consumer Surplus: Three Different Measures of Information Technology Value. *MIS Quarterly*, *20*(2), 121. https://doi.org/10.2307/249475

Hitt, L. M., Wu, D. J., & Zhou, X. (2002). Investment in Enterprise Resource Planning: Business Impact and Productivity Measures. *Journal of Management Information Systems*, *19*(1), 71–98. https://doi.org/10.1080/07421222.2002.11045716

Ho, J. L. Y., Wu, A., & Xu, S. X. (2011). Corporate Governance and returns on information technology investment: Evidence from an emerging market. *Strategic Management Journal*, *32*(6), 595–623. https://doi.org/10.1002/smj.886

Hu, Q., & Plant, R. (2001). An Empirical Study of the Casual Relationship Between IT Investment and Firm Performance: *Information Resources Management Journal*, *14*(3), 15–26. https://doi.org/10.4018/irmj.2001070102

Huang, M.-H., & Wang, E. T. G. (2013). Marketing Is from Mars, IT Is from Venus: Aligning the Worldviews for Firm Performance: Marketing Is from Mars, IT Is from Venus. *Decision Sciences*, *44*(1), 87–125. https://doi.org/10.1111/j.1540-5915.2012.00396.x

Huang, S.-M., Ou, C.-S., Chen, C.-M., & Lin, B. (2006). An empirical study of relationship between IT investment and firm performance: A resource-based perspective. *European Journal of Operational Research*, *173*(3), 984–999. https://doi.org/10.1016/j.ejor.2005.06.013

Huang, T.-H. (2005). A Study on the Productivities of IT Capital and Computer Labor: Firm-level Evidence from Taiwan's Banking Industry. *Journal of Productivity Analysis*, *24*(3), 241–257. https://doi.org/10.1007/s11123-005-4933-4

Hung, C. S., Yen, D. C., & Ou, C. S. (2012). An empirical study of the relationship between a self-service technology investment and firm financial performance. *Journal of Engineering and Technology Management*, *29*(1), 62–70. https://doi.org/10.1016/j.jengtecman.2011.09.006

Hyvönen, J. (2007). Strategy, performance measurement techniques and information technology of the firm and their links to organizational performance. *Management Accounting Research*, *18*(3), 343–366. https://doi.org/10.1016/j.mar.2007.02.001

Irfan, M., & Wang, M. (2019). Data-driven capabilities, supply chain integration and competitive performance: Evidence from the food and beverages industry in Pakistan. *British Food Journal*, *121*(11), 2708–2729. https://doi.org/10.1108/BFJ-02-2019-0131

Jalilvand, M. R., Khazaei Pool, J., Khodadadi, M., & Sharifi, M. (2019). Information technology competency and knowledge management in the hospitality industry service supply chain. *Tourism Review*, *74*(4), 872–884. https://doi.org/10.1108/TR-04-2018-0054

Jeffers, P. I., Muhanna, W. A., & Nault, B. R. (2008). Information Technology and Process Performance: An Empirical Investigation of the Interaction Between IT and Non-IT Resources*. *Decision Sciences*, *39*(4), 703–735. https://doi.org/10.1111/j.1540-5915.2008.00209.x

Jen Huang, C., & Ju Liu, C. (2005). Exploration for the relationship between innovation, IT and performance. *Journal of Intellectual Capital*, *6*(2), 237–252. https://doi.org/10.1108/14691930510592825

Ji, P., Yan, X., & Yu, G. (2019). The impact of information technology investment on enterprise financial performance in China. *Chinese Management Studies*, *14*(3), 529–542. https://doi.org/10.1108/CMS-04-2019-0123

Johannessen, J., Olaisen, J., & Olsen, B. (1999). Strategic use of information technology for increased innovation and performance. *Information Management & Computer Security*, *7*(1), 5–22. https://doi.org/10.1108/09685229910255133

Kar Yan Tam. (1998). Analysis of firm-level computer investments: A comparative study of three Pacific-rim economies. *IEEE Transactions on Engineering Management*, *45*(3), 276–286. https://doi.org/10.1109/17.704250

Kartawiguna, D., Prabowo, H., & Jap, T. (2019). The role of information technology in mediating the effect of medical resources on hospital clinical performance. *International Journal of Advanced Trends in Computer Science and Engineering*, *8*(6), 2887–2892. https://doi.org/10.30534/ijatcse/2019/33862019

Kelley, M. R. (1994). Productivity and Information Technology: The Elusive Connection. *Management Science*, *40*(11), 1406–1425. https://doi.org/10.1287/mnsc.40.11.1406

Khuntia, J., Saldanha, T. J. V., Mithas, S., & Sambamurthy, V. (2018). Information Technology and Sustainability: Evidence from an Emerging Economy. *Production and Operations Management*, *27*(4), 756–773. https://doi.org/10.1111/poms.12822

Kim, C., & Davidson, L. F. (2004). The effects of IT expenditures on banks' business performance: Using a balanced scorecard approach. *Managerial Finance*, *30*(6), 28–45. https://doi.org/10.1108/03074350410769100

Kim, J. K., Xiang, J. Y., & Lee, S. (2009). The impact of IT investment on firm performance in China: An empirical investigation of the Chinese electronics industry. *Technological Forecasting and Social Change*, *76*(5), 678–687. https://doi.org/10.1016/j.techfore.2008.03.008

Kivijärvi, H., & Saarinen, T. (1995). Investment in information systems and the financial performance of the firm. *Information & Management*, *28*(2), 143–163. https://doi.org/10.1016/0378-7206(95)94022-5

Kleis, L., Chwelos, P., Ramirez, R. V., & Cockburn, I. (2012). Information Technology and Intangible Output: The Impact of IT Investment on Innovation Productivity. *Information Systems Research*, *23*(1), 42–59. https://doi.org/10.1287/isre.1100.0338

Kmieciak, R., Michna, A., & Felden, C. (2018). A comparison of information technology capability, employee empowerment and innovativeness in german and polish firms. *Journal of East European Management Studies*, *23*(4), 642–672. https://doi.org/10.5771/0949-6181-2018-4-642

Kmieciak, Roman, Michna, A., & Meczynska, A. (2012). Innovativeness, empowerment and IT capability: Evidence from SMEs. *Industrial Management & Data Systems*, *112*(5), 707–728. https://doi.org/10.1108/02635571211232280

Ko, M., Clark, J. G., & Ko, D. (2008). Revisiting the impact of information technology investments on productivity: An empirical investigation using multivariate adaptive regression splines (MARS). *Information Resources Management Journal*, *21*(3), 1–23. https://doi.org/10.4018/irmj.2008070101

Ko, M., & Osei-Bryson, K.-M. (2004). The productivity impact of information technology in the healthcare industry: An empirical study using a regression spline-based approach. *Information and Software Technology*, *46*(1), 65–73. https://doi.org/10.1016/S0950-5849(03)00110-1

Ko, Myung, & Osei-Bryson, K.-M. (2004). Using regression splines to assess the impact of information technology investments on productivity in the health care industry. *Information Systems Journal*, *14*(1), 43–63. https://doi.org/10.1111/j.1365-2575.2004.00160.x

Kobelsky, K. W., Richardson, V. J., Smith, R. E., & Zmud, R. W. (2008). Determinants and Consequences of Firm Information Technology Budgets. *The Accounting Review*, *83*(4), 957–995. https://doi.org/10.2308/accr.2008.83.4.957

Kohli, R., Devaraj, S., & Ow, T. T. (2012). Does information technology investment influence a firm's market value? A case of non-publicly traded healthcare firms. *MIS Quarterly: Management Information Systems*, *36*(4), 1145–1164. https://doi.org/10.2307/41703502

Kohli, Rajiv, & Devaraj, S. (2004). Contribution of institutional DSS to organizational performance: Evidence from a longitudinal study. *Decision Support Systems*, *37*(1), 103–118. https://doi.org/10.1016/S0167-9236(02)00211-7

Koski, H. (1999). The implications of network use, production network externalities and public networking programmes for firm's productivity. *Research Policy*, *28*(4), 423–439. https://doi.org/10.1016/S0048-7333(98)00127-9

Kraemer, K. L., Gibbs, J., & Dedrick, J. (2005). Impacts of Globalization on E-Commerce Use and Firm Performance: A Cross-Country Investigation. *The Information Society*, *21*(5), 323–340. https://doi.org/10.1080/01972240500253350

Kwon, M. J., & Stoneman, P. (1995). The Impact Of Technology Adoption On Firm Productivity *. *Economics of Innovation and New Technology*, *3*(3–4), 219–234. https://doi.org/10.1080/10438599500000004

Lee, B. (1999). An Integrated Assessment of Productivity and Efficiency Impacts of Information Technology Investments: Old Data, New Analysis and Evidence. *Journal of Productivity Analysis*, *12*(1), 21–43.

Lee, B., & Menon, N. M. (2000). Information Technology Value through Different Normative Lenses. *Journal of Management Information Systems*, *16*(4), 99–119. https://doi.org/10.1080/07421222.2000.11518267

Lee, J. J.-Y. (2008). Complementary effects of information technology investment on firm profitability: The functional forms of the complementarities. *Information Systems Management*, *25*(4), 364–371. https://doi.org/10.1080/10580530802384761

Lee, O.-K. (Daniel), Sambamurthy, V., Lim, K. H., & Wei, K. K. (2015). How Does IT Ambidexterity Impact Organizational Agility? *Information Systems Research*, *26*(2), 398–417. https://doi.org/10.1287/isre.2015.0577

Lee, S., & Kim, S. H. (2006). A Lag Effect of IT Investment on Firm Performance: *Information Resources Management Journal*, *19*(1), 43–69. https://doi.org/10.4018/irmj.2006010103

Lehr, B., & Lichtenberg, F. (1999). Information Technology and Its Impact on Productivity: Firm-Level Evidence from Government and Private Data Sources, 1977-1993. *The Canadian Journal of Economics / Revue Canadienne d'Economique*, *32*(2), 335. https://doi.org/10.2307/136426

Li, L. (2005). Assessing intermediate infrastructural manufacturing decisions that affect a firm's market performance. *International Journal of Production Research*, *43*(12), 2537–2551.

Li, M., & Ye, L. R. (1999). Information technology and firm performance: Linking with environmental, strategic and managerial contexts. *Information & Management*, *35*(1), 43–51.

Li, Y., & Huang, J. (2012). Risk and return of IT investment: Evidence from SCM and CRM announcements. *International Journal of Networking and Virtual Organisations*, *11*(3/4), 290. https://doi.org/10.1504/IJNVO.2012.048911

Lichtenberg, F. R. (1995). The Output Contributions Of Computer Equipment And Personnel: A Firm-Level Analysis. *Economics of Innovation and New Technology*, *3*(3–4), 201–218. https://doi.org/10.1080/10438599500000003

Lim, G. G., Lee, D. C., & Cole, R. E. (2015). A comparative study on the time lag effect of investments in innovative information systems. *Journal of Theoretical and Applied Information Technology*, *77*(3), 328–341.

Lin, B.-W. (2007). Information technology capability and value creation: Evidence from the US banking industry. *Technology in Society*, *29*(1), 93–106. https://doi.org/10.1016/j.techsoc.2006.10.003

Lin, C., & Tseng, H. (2006). Identifying the pivotal role of participation strategies and information technology application for supply chain excellence. *Industrial Management & Data Systems*, *106*(5), 739–756. https://doi.org/10.1108/02635570610666476

Liu, H., Ke, W., Wei, K. K., & Hua, Z. (2013). The impact of IT capabilities on firm performance: The mediating roles of absorptive capacity and supply chain agility. *Decision Support Systems*, *54*(3), 1452–1462. https://doi.org/10.1016/j.dss.2012.12.016

Liu, S., Chan, F. T. S., Yang, J., & Niu, B. (2018). Understanding the effect of cloud computing on organizational agility: An empirical examination. *International Journal of Information Management*, *43*, 98–111. https://doi.org/10.1016/j.ijinfomgt.2018.07.010

Loukis, E., Sapounas, I., & Aivalis, K. (2007). The effect of generalized competition and strategy on the business value of information and communication technologies. *Journal of Enterprise Information Management*, *21*(1), 24–38. https://doi.org/10.1108/17410390810842237

Lu & K. (Ram) Ramamurthy. (2011). Understanding the Link Between Information Technology Capability and Organizational Agility: An Empirical Examination. *MIS Quarterly*, *35*(4), 931. https://doi.org/10.2307/41409967

Lubbe, S. (1995). The profit impact of IT investment. *Journal of Information Technology*, *10*(1), 44–51.

Lyver, M. J., & Lu, T.-J. (2018). Sustaining innovation performance in SMEs: Exploring the roles of strategic entrepreneurship and IT capabilities. *Sustainability (Switzerland)*, *10*(2). https://doi.org/10.3390/su10020442

Macher, J. T., & Mowery, D. C. (2009). Measuring Dynamic Capabilities: Practices and Performance in Semiconductor Manufacturing. *British Journal of Management*, *20*, S41–S62. https://doi.org/10.1111/j.1467-8551.2008.00612.x

Mahmood, M. A. (1993). Associating organizational strategic performance with information technology investment: An exploratory research. *European Journal of Information Systems*, *2*(3), 185–200. https://doi.org/10.1057/ejis.1993.29

Mahmood, M. A., & Mann, G. J. (1993a). Impact of information technology investment: An empirical assessment. *Accounting, Management and Information Technologies*, *3*(1), 23–32. https://doi.org/10.1016/0959-8022(93)90007-S

Mahmood, M. A., & Mann, G. J. (1993b). Measuring the organizational impact of information technology investment: An exploratory study. *Journal of Management Information Systems*, *10*(1), 97–122. https://doi.org/10.1080/07421222.1993.11517992

Mao, H., Liu, S., Zhang, J., Zhang, Y., & Gong, Y. (2020). Information technology competency and organizational agility: Roles of absorptive capacity and information intensity. *Information Technology and People*. https://doi.org/10.1108/ITP-12-2018-0560

Marshall, T. E., & Byrd, T. A. (1997). Relating information technology investment to organizational performance: A causal model analysis. *Omega*, *25*(1), 43–56. https://doi.org/10.1016/s0305-0483(96)00040-0

Mashal, A. (2006). Impact of Information Technology Investment on Productivity and Profitability: The Case of a Leading Jordanian Bank. *Journal of Information Technology Case and Application Research*, *8*(4), 25–46. https://doi.org/10.1080/15228053.2006.10856099

Masli, A., Richardson, V. J., Sanchez, J. M., & Smith, R. E. (2011). Returns to IT excellence: Evidence from financial performance around information technology excellence awards. *International Journal of Accounting Information Systems*, *12*(3), 189–205. https://doi.org/10.1016/j.accinf.2010.10.001

Mcguckin, R. H., Streitwieser, M. L., & Doms, M. (1998). The Effect Of Technology Use On Productivity Growth. *Economics of Innovation and New Technology*, *7*(1), 1–26. https://doi.org/10.1080/10438599800000026

Melville, N., Gurbaxani, V., & Kraemer, K. (2007). The productivity impact of information technology across competitive regimes: The role of industry concentration and dynamism. *Decision Support Systems*, *43*(1), 229–242. https://doi.org/10.1016/j.dss.2006.09.009

Memon, A., An, Z. Y., Memon, M. Q., & Yan, B. (2019). IT capability, capital availability and firm performance. *Human Systems Management*, *38*(3), 221–233. https://doi.org/10.3233/HSM-180463

Menon, N. M., & Lee, B. (2000). Cost control and production performance enhancement by IT investment and regulation changes: Evidence from the healthcare industry. *Decision Support Systems*, *30*(2), 153–169. https://doi.org/10.1016/S0167-9236(00)00095-6

Menon, N. M., Yaylacicegi, U., & Cezar, A. (2009). Differential Effects of the Two Types of Information Systems: A Hospital-Based Study. *Journal of Management Information Systems*, *26*(1), 297–316. https://doi.org/10.2753/MIS0742-1222260111

Mikalef, P., Pateli, A., & van de Wetering, R. (2020). IT architecture flexibility and IT governance decentralisation as drivers of IT-enabled dynamic capabilities and competitive performance: The moderating effect of the external environment. *European Journal of Information Systems*, 1–29. https://doi.org/10.1080/0960085X.2020.1808541

Mishra, P. C., Kishore, S., & Shivani, S. (2018). The Role of Information Technology for Knowledge Management: An Empirical Study of the Indian Coal Mining Industry. *Journal of Global*

Information Technology Management, *21*(3), 208–225. https://doi.org/10.1080/1097198X.2018.1498275

Mithas, S., Krishnan, M. S., & Fornell, C. (2016). Information technology, customer satisfaction, and profit: Theory and evidence. *Information Systems Research*, *27*(1), 166–181. https://doi.org/10.1287/isre.2015.0609

Mithas, S., Ramasubbu, N., & Sambamurthy, V. (2011). How information management capability influences firm performance. *MIS Quarterly: Management Information Systems*, *35*(1), 237–256. https://doi.org/10.2307/23043496

Mithas, S., Tafti, A., Bardhan, I., & Goh, J. M. (2012). Information technology and firm profitability:Mechanisms and empirical evidence. *MIS Quarterly: Management Information Systems*, *36*(1), 205–224. https://doi.org/10.2307/41410414

Mitra, S., & Chaya, A. K. (1996). Analyzing Cost-Effectiveness of Organizations: The Impact of Information Technology Spending. *Journal of Management Information Systems*, *13*(2), 29–57. https://doi.org/10.1080/07421222.1996.11518122

Mitra, Sabyasachi. (2005). Information Technology as an Enabler of Growth in Firms: An Empirical Assessment. *Journal of Management Information Systems*, *22*(2), 279–300. https://doi.org/10.1080/07421222.2005.11045847

Morikawa, M. (2004). Information Technology and the Performance of Japanese SMEs. *Small Business Economics*, *23*(3), 171–177. https://doi.org/10.1023/B:SBEJ.0000032023.11566.4b

Muhanna, W. A., & Stoel, M. D. (2010). How Do Investors Value IT? An Empirical Investigation of the Value Relevance of IT Capability and IT Spending Across Industries. *Journal of Information Systems*, *24*(1), 43–66. https://doi.org/10.2308/jis.2010.24.1.43

Mukhopadhyay, T., Kekre, S., & Kalathur, S. (1995). Business Value of Information Technology: A Study of Electronic Data Interchange. *MIS Quarterly*, *19*(2), 137. https://doi.org/10.2307/249685

Nakata, C., Zhu, Z., & Kraimer, M. L. (2008). The complex contribution of information technology capability to business performance. *Journal of Managerial Issues*, *20*(4), 485–506.

Nevo, S., & Wade, M. (2011). Firm-level benefits of IT-enabled resources: A conceptual extension and an empirical assessment. *The Journal of Strategic Information Systems*, *20*(4), 403–418. https://doi.org/10.1016/j.jsis.2011.08.001

Nik Abdullah, N. H., Harjito, D. A., & Said, J. (2020). The role of strategic management accounting on heterogeneity of human capital, information technology capabilities and value creation. *International Journal of Innovation, Creativity and Change*, *10*(11), 652–673.

Ong, C.-S., & Chen, P. (2013). Information technology capability-enabled performance, future performance, and value. *Industrial Management and Data Systems*, *113*(5), 669–682. https://doi.org/10.1108/02635571311324133

Ong, C.-S., & Chen, P.-Y. (2016). A valuation model for information technology capability-enabled firm value. *Journal of Computer Information Systems*, *56*(2), 137–144. https://doi.org/10.1080/08874417.2016.1117375

Ordanini, A., & Rubera, G. (2010). How does the application of an IT service innovation affect firm performance? A theoretical framework and empirical analysis on e-commerce. *Information & Management*, *47*(1), 60–67. https://doi.org/10.1016/j.im.2009.10.003

Osei-Bryson, K.-M., & Ko, M. (2004). Exploring the relationship between information technology investments and firm performance using regression splines analysis. *Information and Management*, *42*(1), 1–13. https://doi.org/10.1016/j.im.2003.09.002

Otim, S., Dow, K., Grover, V., & Wong, J. (2012). The impact of information technology investments on downside risk of the firm: Alternative measurement of the business value of IT. *Journal of Management Information Systems*, *29*(1), 159–194. https://doi.org/10.2753/MIS0742-1222290105

Peffers, K., & dos Santos, B. L. (1996). Performance effects of innovative IT applications over time. *IEEE Transactions on Engineering Management*, *43*(4), 381–392. https://doi.org/10.1109/17.543980

Peng, J., Quan, J., Zhang, G., & Dubinsky, A. J. (2016). Mediation effect of business process and supply chain management capabilities on the impact of IT on firm performance: Evidence from Chinese firms. *International Journal of Information Management*, *36*(1), 89–96. https://doi.org/10.1016/j.ijinfomgt.2015.09.006

Perez-Arostegui, M. N., Benitez-Amado, J., & Tamayo-Torres, J. (2012). Information technology-enabled quality performance: An exploratory study. *Industrial Management & Data Systems*, *112*(3), 502–518. https://doi.org/10.1108/02635571211210095

Pérez-López, S., & Alegre, J. (2012). Information technology competency, knowledge processes and firm performance. *Industrial Management and Data Systems*, *112*(4), 644–662. https://doi.org/10.1108/02635571211225521

Peslak, A. R. (2003). A firm level study of information technology productivity using financial and market based measures. *Journal of Computer Information Systems*, *43*(4), 72–80.

Phama, T. L., & Jordanb, E. (2009). Information technology resources and business performance: An Australian context. *Asia Pacific Management Review*, *14*(4), 407–426.

Powell, T. C., & Dent-Micallef, A. (1997). Information technology as competitive advantage: The role of human, business, and technology resources. *Strategic Management Journal*, *18*(5), 375–405.

Prattipati, S. N., & Mensah, M. O. (1997). Information systems variables and management productivity. *Information & Management*, *33*(1), 33–43.

Purnama, C., & Subroto, W. T. (2016). Competition intensity, uncertainty environmental on the use of information technology and its impact on business performance small and medium enterprises. *International Review of Management and Marketing*, *6*(4), 984–992.

Radhakrishnan, A., Zu, X., & Grover, V. (2008). A process-oriented perspective on differential business value creation by information technology: An empirical investigation. *Omega*, *36*(6), 1105–1125. https://doi.org/10.1016/j.omega.2006.06.003

Rai, A., Patnayakuni, R., & Patnayakuni, N. (1996). Refocusing where and how IT value is realized: An empirical investigation. *Omega*, *24*(4), 399–412. https://doi.org/10.1016/0305-0483(96)00009-6

Rai, Patnayakuni, & Seth. (2006). Firm Performance Impacts of Digitally Enabled Supply Chain Integration Capabilities. *MIS Quarterly*, *30*(2), 225. https://doi.org/10.2307/25148729

Ravichandran, T., Han, S., & Hasan, I. (2009). Effects of institutional pressures on information technology investments: An empirical investigation. *IEEE Transactions on Engineering Management*, *56*(4), 677–691. https://doi.org/10.1109/TEM.2009.2032037

Ravichandran, T., Lertwongsatien, C., & Lertwongsatien, C. (2005). Effect of Information Systems Resources and Capabilities on Firm Performance: A Resource-Based Perspective. *Journal of Management Information Systems*, *21*(4), 237–276. https://doi.org/10.1080/07421222.2005.11045820

Ravichandran, T., Liu, Y., Han, S., & Hasan, I. (2009). Diversification and Firm Performance: Exploring the Moderating Effects of Information Technology Spending. *Journal of Management Information Systems*, *25*(4), 205–240. https://doi.org/10.2753/MIS0742-1222250407

Ray, G., Muhanna, W. A., & Barney, J. B. (2005). Information technology and the performance of the customer service process: A resource-based analysis. *MIS Quarterly: Management Information Systems*, *29*(4), 625–652. https://doi.org/10.2307/25148703

Razalli, M. R., Hasnan, N., & Noordin, A. (2017). Business process reengineering and quality performance in the islamic banks: The information technology as a moderator. *International Journal of Supply Chain Management*, *6*(3), 300–308.

Rehman, N., Razaq, S., Farooq, A., Zohaib, N. M., & Nazri, M. (2020). Information technology and firm performance: Mediation role of absorptive capacity and corporate entrepreneurship in

manufacturing SMEs. *Technology Analysis and Strategic Management*. https://doi.org/10.1080/09537325.2020.1740192

Rogers, D. S., Daugherty, P. J., & Ellinger, A. E. (1996). The relationship between information technology and warehousing performance. *Logistics and Transportation Review*, *32*(4), 409.

Ross, A. (2002). A multi-dimensional empirical exploration of technology investment, coordination and firm performance. *International Journal of Physical Distribution and Logistics Management*, *32*(7), 591–609. https://doi.org/10.1108/09600030210442603

Sabherwal, R., Sabherwal, S., Havakhor, T., & Steelman, Z. (2019). How does strategic alignment affect firm performance? The roles of information technology investment and environmental uncertainty1. *MIS Quarterly: Management Information Systems*, *43*(2), 453–474. https://doi.org/10.25300/MISQ/2019/13626

Sai Hong, T., & Ghobakhloo, M. (2013). IT investments and product development effectiveness: Iranian SBs. *Industrial Management & Data Systems*, *113*(2), 265–293. https://doi.org/10.1108/02635571311303578

Salge, T. O., Kohli, R., & Barrett, M. (2015). Investing in information systems: On the behavioral and institutional search mechanisms underpinning hospitals' is investment decisions. *MIS Quarterly: Management Information Systems*, *39*(1), 61–89. https://doi.org/10.25300/MISQ/2015/39.1.04

Sánchez, J. I. L., Minguela Rata, B., Rodríguez Duarte, A., & Sandulli, F. D. (2006). Is the Internet productive? A firm-level analysis. *Technovation*, *26*(7), 821–826. https://doi.org/10.1016/j.technovation.2005.03.002

Sánchez-Rodríguez, C., Dewhurst, F. W., & Rafael Martínez-Lorente, A. (2006). IT use in supporting TQM initiatives: An empirical investigation. *International Journal of Operations & Production Management*, *26*(5), 486–504. https://doi.org/10.1108/01443570610659874

Santhanam & Hartono. (2003). Issues in Linking Information Technology Capability to Firm Performance. *MIS Quarterly*, *27*(1), 125. https://doi.org/10.2307/30036521

Shahzad, F., Du, J., Khan, I., Shahbaz, M., & Murad, M. (2020). Untangling the influence of organizational compatibility on green supply chain management efforts to boost organizational performance through information technology capabilities. *Journal of Cleaner Production*, *266*. https://doi.org/10.1016/j.jclepro.2020.122029

Shao, B. B. M., & Lin, W. T. (2002). Technical efficiency analysis of information technology investments: A two-stage empirical investigation. *Information and Management*, *39*(5), 391–401. https://doi.org/10.1016/S0378-7206(01)00105-7

Shin, N. (2001). The impact of information technology on financial performance: The importance of strategic choice. *European Journal of Information Systems*, *10*(4), 227–236. https://doi.org/10.1057/palgrave.ejis.3000409

Shin, Namchul. (2006). The impact of information technology on the financial performance of diversified firms. *Decision Support Systems*, *41*(4), 698–707. https://doi.org/10.1016/j.dss.2004.10.003

Siegel, D. (1997). The Impact of Computers on Manufacturing Productivity Growth: A Multiple-Indicators, Multiple-Causes Approach. *Review of Economics and Statistics*, *79*(1), 68–78. https://doi.org/10.1162/003465397556548

Sircar, S., & Choi, J. (2009). A study of the impact of information technology on firm performance: A flexible production function approach. *Information Systems Journal*, *19*(3), 313–339. https://doi.org/10.1111/j.1365-2575.2007.00274.x

Sircar, S., Turnbow, J. L., & Bordoloi, B. (2000). A framework for assessing the relationship between information technology investments and firm performance. *Journal of Management Information Systems*, *16*(4), 69–97. https://doi.org/10.1080/07421222.2000.11518266

Soto-Acosta, P., Popa, S., & Martinez-Conesa, I. (2018). Information technology, knowledge management and environmental dynamism as drivers of innovation ambidexterity: A study

in SMEs. *Journal of Knowledge Management*, *22*(4), 824–849. https://doi.org/10.1108/JKM-10-2017-0448

Srimarut, T., & Mekhum, W. (2020). The impact of compatibility on the process integration of the supply chain in improving firm performance: The mediating effect of information technology capability. *International Journal of Supply Chain Management*, *9*(1), 155–167.

Sriram, V., & Stump, R. (2004). Information technology investments in purchasing: An empirical investigation of communications, relationship and performance outcomes. *Omega*, *32*(1), 41–55. https://doi.org/10.1016/j.omega.2003.09.008

Steelman, Z. R., Havakhor, T., Sabherwal, R., & Sabherwal, S. (2019). Performance consequences of information technology investments: Implications of emphasizing new or current information technologies. *Information Systems Research*, *30*(1), 204–218. https://doi.org/10.1287/isre.2018.0798

Stratopoulos, T., & Dehning, B. (2000). Does successful investment in information technology solve the productivity paradox? *Information and Management*, *38*(2), 103–117. https://doi.org/10.1016/S0378-7206(00)00058-6

Sun, J., Song, S., Wipawayangkool, K., & Oh, J. S. (2019). Roles of dynamic capabilities and knowledge management strategies on organizational performance. *Information Development*. https://doi.org/10.1177/0266666919894377

Tafti, A., Mithas, S., & Krishnan, M. S. (2013). The effect of information technology–enabled flexibility on formation and market value of alliances. *Management Science*, *59*(1), 207–225.

Tallon, P. P. (2008). Inside the adaptive enterprise: An information technology capabilities perspective on business process agility. *Information Technology and Management*, *9*(1), 21–36. https://doi.org/10.1007/s10799-007-0024-8

Tallon, P. P., Kraemer, K. L., & Gurbaxani, V. (2000). Executives' Perceptions of the Business Value of Information Technology: A Process-Oriented Approach. *Journal of Management Information Systems*, *16*(4), 145–173. https://doi.org/10.1080/07421222.2000.11518269

Tam, K. Y. (1998). The Impact of Information Technology Investments on Firm Performance and Evaluation: Evidence from Newly Industrialized Economies. *Information Systems Research*, *9*(1), 85–98. https://doi.org/10.1287/isre.9.1.85

Tanriverdi. (2006). Performance Effects of Information Technology Synergies in Multibusiness Firms. *MIS Quarterly*, *30*(1), 57. https://doi.org/10.2307/25148717

Teo, T. S., & Wong, P. K. (1998). *An Empirical Study of the Performance Impact of Computerization in the Retail Industry*. *26*(5), 11.

Thakurta, R., & Guha Deb, S. (2018). IS/IT investments and firm performance: Indian evidence. *Journal of Global Information Technology Management*, *21*(3), 188–207. https://doi.org/10.1080/1097198X.2018.1498274

Thouin, M. F., Hoffman, J. J., & Ford, E. W. (2008). The effect of information technology investment on firm-level performance in the health care industry. *Health Care Management Review*, *33*(1), 60–68. https://doi.org/10.1097/01.HMR.0000304491.03147.06

Tippins, M. J., & Sohi, R. S. (2003). IT competency and firm performance: Is organizational learning a missing link? *Strategic Management Journal*, *24*(8), 745–761. https://doi.org/10.1002/smj.337

Trainor, K. J., Rapp, A., Beitelspacher, L. S., & Schillewaert, N. (2011). Integrating information technology and marketing: An examination of the drivers and outcomes of e-Marketing capability. *Industrial Marketing Management*, *40*(1), 162–174. https://doi.org/10.1016/j.indmarman.2010.05.001

Vijayasarathy, L. R. (2010). An investigation of moderators of the link between technology use in the supply chain and supply chain performance. *Information & Management*, *47*(7–8), 364–371. https://doi.org/10.1016/j.im.2010.08.004

Vinekar, V., & Teng, J. T. (2012). IT impacts in information and physical product industries. *Journal of Computer Information Systems*, *53*(1), 65–71.

Walsh, G., Schubert, P., & Jones, C. (2010). Enterprise system investments for competitive advantage: An empirical study of Swiss SMEs. *European Management Review*, *7*(3), 180–189. https://doi.org/10.1057/emr.2010.12

Wang, L., & Alam, P. (2007). Information technology capability: Firm valuation, earnings uncertainty, and forecast accuracy. *Journal of Information Systems*, *21*(2), 27–48.

Wang, T., Wang, Y., & McLeod, A. (2018). Do health information technology investments impact hospital financial performance and productivity? *International Journal of Accounting Information Systems*, *28*, 1–13. https://doi.org/10.1016/j.accinf.2017.12.002

Wang, Yi, Shi, S., Nevo, S., Li, S., & Chen, Y. (2015). The interaction effect of IT assets and IT management on firm performance: A systems perspective. *International Journal of Information Management*, *35*(5), 580–593. https://doi.org/10.1016/j.ijinfomgt.2015.06.006

Wang, Yichuan, & Byrd, T. A. (2017). Business analytics-enabled decision-making effectiveness through knowledge absorptive capacity in health care. *Journal of Knowledge Management*, *21*(3), 517–539. https://doi.org/10.1108/JKM-08-2015-0301

Wang, Yu, Wang, T., & Li, X. (2017). Does R&D create additional business value through IT? *Chinese Management Studies*, *11*(2), 194–208. https://doi.org/10.1108/CMS-04-2016-0084

Weill, P. (1992). The Relationship Between Investment in Information Technology and Firm Performance: A Study of the Valve Manufacturing Sector. *Information Systems Research*, *3*(4), 307–333. https://doi.org/10.1287/isre.3.4.307

Wu, F., Yeniyurt, S., Kim, D., & Cavusgil, S. T. (2006). The impact of information technology on supply chain capabilities and firm performance: A resource-based view. *Industrial Marketing Management*, *35*(4), 493–504. https://doi.org/10.1016/j.indmarman.2005.05.003

Wu, J., Wang, N., & Wang, Z. (2017). Impact of information technology capability on financial performance during the period of economic downturn: The case of Chinese listed companies. *Electronic Commerce Research*, *17*(3), 403–423. https://doi.org/10.1007/s10660-016-9248-1

Xue, Ray, & Sambamurthy. (2012). Efficiency or Innovation: How Do Industry Environments Moderate the Effects of Firms' IT Asset Portfolios? *MIS Quarterly*, *36*(2), 509. https://doi.org/10.2307/41703465

Yao, Lee J., Liu, C., & Chan, S. H. (2010). The influence of firm specific context on realizing information technology business value in manufacturing industry. *International Journal of Accounting Information Systems*, *11*(4), 353–362. https://doi.org/10.1016/j.accinf.2010.09.007

Yao, L.J., Sutton, S. G., & Chan, S. H. (2009). Wealth creation from information technology investments using the eva®. *Journal of Computer Information Systems*, *50*(2), 42–48.

Yeh, C.-H., Lee, G.-G., & Pai, J.-C. (2012). How information system capability affects e-business information technology strategy implementation: An empirical study in Taiwan. *Business Process Management Journal*, *18*(2), 197–218. https://doi.org/10.1108/14637151211225171

Zhang, L., Huang, J., & Xu, X. (2012). Impact of ERP investment on company performance: Evidence from manufacturing firms in China. *Tsinghua Science and Technology*, *17*(3), 232–240. https://doi.org/10.1109/TST.2012.6216752

Zhang, M., Sarker, S., & Sarker, S. (2013). Drivers and export performance impacts of IT capability in 'born-global' firms: A cross-national study: IT capability in 'born-global' firms. *Information Systems Journal*, *23*(5), 419–443. https://doi.org/10.1111/j.1365-2575.2012.00404.x

Zhu, K. (2004). The Complementarity of Information Technology Infrastructure and E-Commerce Capability: A Resource-Based Assessment of Their Business Value. *Journal of Management Information Systems*, *21*(1), 167–202. https://doi.org/10.1080/07421222.2004.11045794

Zhu, K., & Kraemer, K. L. (2002). e-Commerce Metrics for Net-Enhanced Organizations: Assessing the Value of e-Commerce to Firm Performance in the Manufacturing Sector. *Information Systems Research*, *13*(3), 275–295. https://oi.org/10.1287/isre.13.3.275.82