

## **Value Co-Creations in Network Partnerships: A Service-Dominant Logic View**

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### Abstract

The purpose of this paper is to examine a set of empirical findings that lend support to the concept of many-to-many marketing and, extend selected premises of the service-dominant (S-D) logic. This logic views marketing as complex systems of relationships, value networks or service eco-systems. S-D logic stipulates that all exchange is inherently relational. Therefore, this paper integrates, into the service-dominant logic, research findings based on Macneil's relational exchange theory. It highlights the importance of viewing value assessments of network actors to be the result of a combination of idiosyncratic (subject) and experiential (object) variables. A firm's innovative capacity and competitiveness are dependent on its relational competencies and interactions within networks of trusting interfirm partnerships. Over two decades of empirical research clearly shows that, in diverse business contexts, the strength of relational norms leads to enhanced performance of interfirm exchanges. Our thesis is, that it is primarily the assessment of partner trustworthiness that drives relationship behaviors and, therefore, it is theoretically and managerial advantageous to understand the diverse processes leading to trustworthiness and to explore its association with relational antecedents and performance outcomes. We do this by examining trustworthiness assessments of company managers and their lead investors in the context of a biotechnology network. In this paper, we first develop and test a model evaluating the nature of the mediation of partner trustworthiness between relational norms and both co-created business value and overall partnership effectiveness. As expected, trustworthiness partially mediates the latter but, surprisingly and most importantly, trustworthiness fully mediates the link between relational strength and co-created business value. Second, the results extend, to the business-to-business domain, the recent findings in organizational behavior research demonstrating that the effect of specific dimensions or processes of trustworthiness on performance are respondent and context dependent.

**Key words:** Trust, relational exchange theory, inter-organizational networks, value co-creation

## **Introduction**

The service-dominant (S-D) logic and the concept of many-to-many marketing (Gummesson 2008) emphasize that all exchange is inherently relational (Vargo and Lusch 2008a; 2008b) and therefore, marketing is viewed as complex systems of relationships (Gummesson, Lusch, and Vargo 2010), value networks (Lusch, Vargo, and Tanniru 2010) or service eco-systems (Lusch, Vargo, and O'Brien 2007). Concomitantly, Dant and Brown (2008) point out that strict distinctions between business-to-business (B2B) and business-to-customer (B2C) exchanges are obsolete. Therefore, firms must become immersed with other actors in more encompassing B2B networks. The consequences of this network ubiquity are higher collaboration and more innovation (Lusch, Vargo, and O'Brien 2007). The firm's focus shifts from itself to the network, where a true relational view of value co-creation is that each party to an exchange makes its value proposition and actualizes the value proposition of the other party (Gummesson and Polese 2009; Paulin and Ferguson 2010). From a resource-based view, network performance depends on the ability to develop relational capital resources (Spralls, Hunt, and Wilcox 2010). Relational resources can be leveraged in the network to make other resources more productive, and this value-in-use can create a competitive advantage (Davis and Mentzer 2008). S-D logic clearly indicates that it is imperative for inter-organizational network research to investigate multiple dyads and both parties in a dyad.

Over the past two decades, B2B research has increasingly shifted from a transactional to a relational focus (Lambe, Spekman, and Hunt 2000) with an emphasis on relational, or social contracts (Vargo, Lusch, and Malter 2006). A major stream of empirical B2B research has investigated the role of Macneil's (1974; 1980) relational exchange theory (RET) and relational contract norms. A review of these studies demonstrates that, in a wide variety of B2B contexts, there is a consistent positive link between the strength of relational norms and exchange performance (Paulin and Ferguson 2010). In addition, Palmatier, Dant, and Grewal (2007) find that relational norms are antecedents to exchange performance under several theoretical approaches including that of commitment and trust. However, there are clear conceptual differences and independent performance outcomes between trust and trustworthiness (Colquitt, Scott, and LePine 2007). The study of trustworthiness as a mediation variable between relational strength and value co-creation (performance) in interfirm exchanges has not been confirmed with empirical evidence.

The trust literature distinguishes among *trust* (intention to accept vulnerability to the trustee), *trustworthiness* (multi-faceted construct assessing the competence and character of trustee) and *trust propensity* (dispositional willingness to rely on others) (Colquitt, Scott, and LePine 2007). The concept of trust has been intimately linked to the development and performance of inter-organizational relational exchange (Jeffries and Reed 2000; Macneil 1980; Morgan and Hunt 1994; Nielsen and Nielsen 2009; Palmatier, Dant, and Grewal 2007). Trust is the factor most often cited as contributing to the success of relational exchange (Spralls, Hunt, and Wilcox 2010). Trust is not only a dispositional

construct, but also one that is an integral aspect of relationships (Schoorman, Mayer, and Davis 2007). In inter-organizational exchange, interpersonal and organizational aspects of trust interact (Jeffries and Reed 2000) so that trust is a meso concept involving micro-level psychological processes and macro-level institutional considerations (Rousseau et al. 1998). Surprisingly, B2B research, although mostly about trustworthiness, tends not to make a distinction between trustworthiness and trust (Blois 1999).

Value creating relational exchange networks are highly prevalent in today's internet and knowledge-based economy where partners pool their resources in order to address transient, but important, business opportunities or threats. These exchanges are typical in biotechnology networks. These exchanges are characterized by a high rate of partnership formation and dissolution, each formed to accomplish a specific goal that, when achieved, the relationship is ended and the successful partners "depart gracefully" (Powell et al. 2005). Lambe, Spekman, and Hunt (2000) point out that inter-firm relational exchange research has ignored these shorter-term "interimistic" relationships in favour of the longer or "enduring" type. In interimistic relationships, longer-term commitment to the partnership is not expected and time constraints are thought to limit the interactions typically required for the development of relational norms and trustworthiness judgements. Also, in these relationships it is not known to what extent relational strength and partner trustworthiness contribute to value co-creation and, if relationship duration plays a role even if longer term commitment is not a major concern.

### *Purposes of paper*

We present an empirical study of relational exchange in the context of a network of emerging biotechnology companies. Three exchange perspectives are studied. The first two perspectives involve the exchange between the biotech company manager and the lead-investor partner as evaluated by both parties (BIOM→LINV; LINV→BIOM). The third perspective investigates the biotech manager's exchange with the company's most important non-financial business partner (BIOM→NFP). First, we develop and test hypotheses within a model linking the constructs of relational strength (norms), partner trustworthiness, co-created business value and overall partnership effectiveness in the three exchange perspectives (Figure 1). Subsequently, we investigate the proposition that exchange partner trustworthiness mediates the association between relational strength and both co-created business value and overall partnership effectiveness. Finally, in each exchange perspective, we determine the relative effect of individual trustworthiness processes on co-created business value and overall partnership effectiveness.

## **Research method**

### *Sample and data collection*

Structured interviews were conducted with managers from 79 emerging biotechnology companies (BIOM) and their lead-investors (LINV). The biotech companies were drawn from the biopharmaceutical or "red" biotech network of partnerships. Approximately 70 percent were in the first or second round of financing with the remainder being in subsequent rounds prior to initial public offering. The lead-investors were mainly venture capital companies but a few were business angels, bank

subsidiaries, and representatives of government funding agencies. The respondents for the biotechnology companies were chief executive, operations or financial officers. The important criteria for the selection of the biotechnology company respondents were a strong involvement in the external business partnerships and interaction with the lead-investor. They were asked to name their lead-investor who was subsequently contacted. The investor respondents were mainly the managers responsible for the portfolio company.

All interviews were confidential and it was made clear to the respondents that at no time would their individual responses be made known to their partner or made public. The biotechnology company managers responded to two questionnaires, one concerning their partnership with their lead-investor (BIOM→LINV) and the other with their most important non-financial partner (BIOM→NFP). Lead-investors responded to one questionnaire concerning their partnerships with biotechnology companies (LINV→BIOM). Overall, the exchange perspectives were evenly divided between those with durations of one-year or less and greater than one-year.

### *Measures*

The items retained for assessing the research model's construct variables of strength of relational exchange, trustworthiness, and co-created business value are provided in the Appendix B. *Relational* strength was measured with a 5-item scale of relational norms based on Macneil's (1974; 1980) relational exchange theory. The scale was based on the norms of communication, flexibility and solidarity. Similar scales are to

be found in Brown, Dev, and Lee (2000), Cannon, Achrol and Gundlach (2000) and Ferguson, Paulin and Bergeron (2005). The *trustworthiness* construct was measured using the five-category framework described by Doney and Cannon (1997). The processes are termed: calculative, predictive, intentionality, capability and transference. A single item was used to assess *overall partnership effectiveness*. Measures of *business value co-creation* were developed after consultation with biotech scientific and investor representatives.

#### *Measurement technique and analyses*

The analysis used partial least squares (PLS), specifically the SMARTPLS 2.0.M3 program of Ringle, Wende, and Will (2005). PLS accommodates both the reflective and formative measurement specifications of latent variables. Because it uses determined latent scores and relaxes distributional assumptions, PLS resolves the inadmissible solutions and factor indeterminacy conditions generally found in covariance-based analysis of complex models (Chin 1998; Fornell and Bookstein 1982). These conditions are amplified for models incorporating formative specified constructs (Williams, Edwards, and Vandenberg 2003) and when small data sets are used (Boomsma 1985; Chen et al. 2001; Gerbing and Anderson 1987). Our sample conforms to a generally accepted PLS consideration for formative measurement, stipulating that there should be a ratio of at least 10 observations per indicator for the formative construct having the largest number of indicators.

Relational strength (norms) is specified using reflective measurement, whereas the trustworthiness and co-creation of business value constructs were measured with formative model specification. The choice to use formative over reflective measurement specifications for the constructs of partner trustworthiness and business value co-creation is based primarily on their substantive sense and on theoretical considerations (Bollen and Lenox 1991; Diamantopoulos and Winklhofer 2001). As conceptualized and operationalized, co-created business value and partner trustworthiness process indicators are independent causes of their respective constructs. These indicators are not interchangeable as they would be in a reflective specification. They are not expected to automatically covary with each other and do not share the same content, although, at a broad level, they convey a common theme (Jarvis, MacKenzie, and Podsakoff 2003).

## **Results and Discussion**

The structural model results (Table 1) and the mediation analyses (Table 2) show consistent results across the three exchange perspectives studied. However, the contributions to partnership performance of individual trustworthiness dimensions vary significantly across the three exchange perspectives (Table 3 and 4).

*Trustworthiness is a mediator of co-created business value and overall partnership effectiveness*

The major and surprising contribution of our study to the relational exchange literature is that the association between relational strength and co-created business value is not direct, but is fully mediated by the respondent's assessment of the trustworthiness of the exchange partner. Had we not included partner trustworthiness in the model, we would have only confirmed other's findings of a direct effect of relational strength on this aspect of exchange performance. Our finding that relational strength is an antecedent of trustworthiness and performance is in line with the analysis of Palmatier, Dant, and Grewal (2007), that relational norms are antecedents to exchange performance according to several theoretical approaches but, in particular, the effect of relational norms on performance is mediated especially in a trust and commitment approach. Also, the present findings are all the more robust since they are consistent in the three exchange perspectives, and a significant portion of the variance in co-created business value is explained by the assessment of partner trustworthiness. The finding that partner trustworthiness partially mediates the effect of relational norms on overall partnership effectiveness is to be expected since it measures relationship attributes other than the immediate ones of business value and represents a more general attitude analogous to that of general satisfaction with the relationship (Paulin, Perrien, and Ferguson 1997).

### *Partnership duration*

The present findings demonstrate that, in shorter-term partnerships, duration does not significantly affect relational strength, partner trustworthiness, co-created business value and overall partnership effectiveness. Even though Lambe, Spekman, and Hunt (2000) propose that relational norms would not be as strong in shorter-term exchanges, they paradoxically suggest that some firms develop capacities for developing norms faster with fewer interactions. Similarly, McKnight, Cummings, and Chervany (1998) indicate that paradoxically high trust levels can exist early in relationships due to dispositional, situational and institutional factors. Our results provide empirical evidence to support the observation that Macneil's give-and-take relational contracting is common practice in biotechnology networks, where the competency to shortcut the norm development process by modeling behavior from partners in the network is well recognized (Powell, Koput, and Smith-Doerr 1996; Powell et al. 2005). That there is an insignificant effect of duration in shorter-term partnership is consistent with the empirical results reported for longer-term relational exchange (Heide 1994; Ferguson, Paulin, and Bergeron 2005; Jap and Ganesan 2000; Joshi and Campbell 2003; Lusch and Brown 1996).

### *Contextual diversity of individual partner trustworthiness assessments*

Our study of three inter-related exchange perspectives clearly illustrates the specificity of individual partner trustworthiness processes with respect to their relative effect on co-created business value and overall partnership effectiveness. The present results in a network context of interfirm partnerships confirm the importance and independent contribution of the trustworthiness concept to outcomes as reported in the

meta analysis of Colquitt, Scott, and LePine (2007). In managerial terms, these results point to the importance of examining multiple bases of trustworthiness rather than depending on a single mechanism (Sheppard and Sherman 1998). Even in similar contexts, trustworthiness can vary according to the history, stage of development and, as shown here, to cues in the immediate setting (Schoorman, Mayer, and Davis 2007).

For conceptual and managerial reasons it is important to note that the calculative process for partner trustworthiness assessment did not mediate business value co-creation and partnership effectiveness in either of the three biotechnology exchange perspectives studied here. The calculative process is based on the TCE norm of opportunistic behavior, or the assumption that decision makers may unscrupulously seek to serve their self-interests with guile (Williamson 1985). Again, this empirical finding lends support to the observation by Powell et al. (2005) that the evolution of biotechnology partnership network is characterized more by well-developed relational norms rather than transactional opportunistic behavior. They point out that “centrality” or visibility in the biotech network is essential for knowledge acquisition and sharing and, that this comes about through somewhat fragile interdependent collaborative relational partnerships and not, as some predicted, through opportunistic and transactional one-sided selfish behaviors. Interestingly, in some retail markets socially embedded community and institutional factors can also mitigate opportunistic motives for gain and profit (Varman and Costa 2009).

### *Managerial implications*

From a managerial point of view, organizations operating in relational networks must rely on mutual trust and commitment to speed innovative processes and ensure value creation (Spralls, Hunt, and Wilcox 2010; Vargo and Lusch 2008a). Although trust can be viewed as having both rational and irrational aspects, Sheppard and Sherman (1998) emphasize that it can be understood and managed with rational acts. However, it is important to emphasize that we assess *trustworthiness* and not *trust*. It is the perceptions of partner trustworthiness that determines behavior and these perceptions are to a great extent partnership and context specific. The firm must develop the reciprocal abilities of understanding how a given partner assesses the firm's trustworthiness and how the firm itself determines the partner's trustworthiness. We refer here to relational capabilities that also extend beyond the partnership to the broader network. It is important for the firm to create an organizational culture that develops interfirm relational competencies and trustworthiness, one in which reciprocal service provision and value creation is a strategic objective. In particular, most organizations must nurture the operant human and technological relational resources (Vargo and Lusch 2008b; Madhavaram and Hunt 2008) that foster openness to innovation through the acquisition, exchange and integration of exogenous knowledge. Pre-requisites include the effective development of relational information technology combined with the selection, training, and rewarding of personnel and business units on the basis of relational competencies and performance. It is also necessary to develop and protect the firm's reputation as a trusted partner, by showing commitment, fulfilling promises, correcting errors, adapting to changing conditions and

avoiding behaviors perceived by customers, partners, employees and other stakeholders as opportunistic and self-serving. After all, relationships are one thing that cannot be commoditized (Tapscott and Williams 2006).

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Table 1  
Structural model results.

Exchange perspectives		BIOM→NFP			BIOM→LINV		LINV→BIOM	
<i>Hypothesized structural relationships</i>		Coefficient	<i>t</i> -Value <sup>a</sup>	Coefficient	<i>t</i> -Value <sup>a</sup>	Coefficient	<i>t</i> -Value <sup>a</sup>	
H1	Relational norms → Co-created business value	β	-.10	<i>ns</i>	.11	<i>ns</i>	.02	<i>ns</i>
H2	Relational norms → Overall effectiveness	β	.39	3.06**	.42	2.62**	.29	2.60**
H3	Relational norms → Trustworthiness	β	.64	6.02***	.83	19.2***	.52	5.47**
H4	Trustworthiness → Co-created business value	β	.53	2.51**	.48	2.48**	.67	4.38**
H5	Trustworthiness → Overall effectiveness	β	.33	2.55**	.33	2.07**	.54	4.78**
<i>Control<sup>b</sup></i>								
	Relationship duration → Trustworthiness	δ	-.04	<i>ns</i>	-.02	<i>ns</i>	-.04	<i>ns</i>
	Relationship duration → Co-created business value	δ	.04	<i>ns</i>	-.10	<i>ns</i>	-.05	<i>ns</i>
	Relationship duration → Overall effectiveness	δ	.02	<i>ns</i>	.00	<i>ns</i>	-.07	<i>ns</i>
<i>Model statistics</i>								
	Trustworthiness	<i>R</i> <sup>2</sup>	.40		.69		.27	
	Co-created value	<i>R</i> <sup>2</sup>	.23		.38		.47	
	Effectiveness	<i>R</i> <sup>2</sup>	.43		.52		.55	

<sup>a</sup> PLS bootstrapped standard error, resample = 1000.

<sup>b</sup> Reference category = one year duration or less.

\* *p* < .05 (One-tailed test).

\*\* *p* < .01 (One-tailed test).

\*\*\* *p* < .001 (One-tailed test).

Table 2

Mediation effects of partner trustworthiness between relational strength (norms) and a) co-created business value and b) overall partnership effectiveness

	BIOM→NFP				BIOM→LINV				LINV→BIOM			
	PE	Z	BC 95% CI		PE	Z	BC 95% CI		PE	Z	BC 95% CI	
Mediation effects of partner trustworthiness			Lower	Upper			Lower	Upper			Lower	Upper
a) Co-created business value	.34	2.31*	.100	.618	.39	2.46**	.328	.883	.35	3.42**	.243	.633
b) Overall partnership effectiveness	.21	2.35**	.111	.496	.28	2.06*	.086	.563	.28	3.60**	.239	.532
$R^2_{\text{med-Co-Created value}}$			.05				.28				.13	
$R^2_{\text{med}}/R^2$			.21				.74				.29	
$R^2_{\text{med-Effectiveness}}$			.27				.43				.26	
$R^2_{\text{med}}/R^2$			.63				.82				.48	

PE = Product of coefficients point estimate; Z = results for the Sobel (1982) test; BC = Bias corrected bootstrap confidence intervals, resample = 1000.

$R^2_{\text{med}} = R^2$  effect-size measures for the mediation;  $R^2_{\text{med}}/R^2 =$  portion of variance explained in outcomes due to the mediation effect.

\*  $p < .05$  (One-tailed test).

\*\*  $p < .01$  (One-tailed test).

Table 3  
Relative effects of individual trustworthiness process on co-created business value

Effect size	BIOM→NFP				BIOM→LINV				LINV→BIOM			
	Processes	PE	SE	Z	Processes	PE	SE	Z	Processes	PE	SE	Z
≤.05	Calculative	-.01	.05	<i>ns</i>	Calculative	.00		<i>ns</i>	Calculative	-.04	.06	<i>ns</i>
	Predictability	.04	.10	<i>ns</i>	Predictability	.05	.06	<i>ns</i>	Intentionality	.04	.09	<i>ns</i>
.06-.24	Intentionality	.17	.13	<i>ns</i>	Capability	.11	.09	<i>ns</i>	Capability	.10	.08	<i>ns</i>
	<b>Transference</b>	<b>.17</b>	.10	1.63 <sup>a</sup>	Transference	.15	.10	<i>ns</i>	Transference	.14	.12	<i>ns</i>
≥.25	<b>Capability</b>	<b>.32</b>	.16	2.02*	<b>Intentionality</b>	<b>.29</b>	.14	2.11*	<b>Predictability</b>	<b>.29</b>	.15	<b>3.72*</b>

PE = Product of coefficients point estimate; Z = results for the Sobel (1982) test;

<sup>a</sup>  $p < .05$  (One-tailed test).

\*  $p < .05$  (One-tailed test).

\*\*  $p < .01$  (One-tailed test).

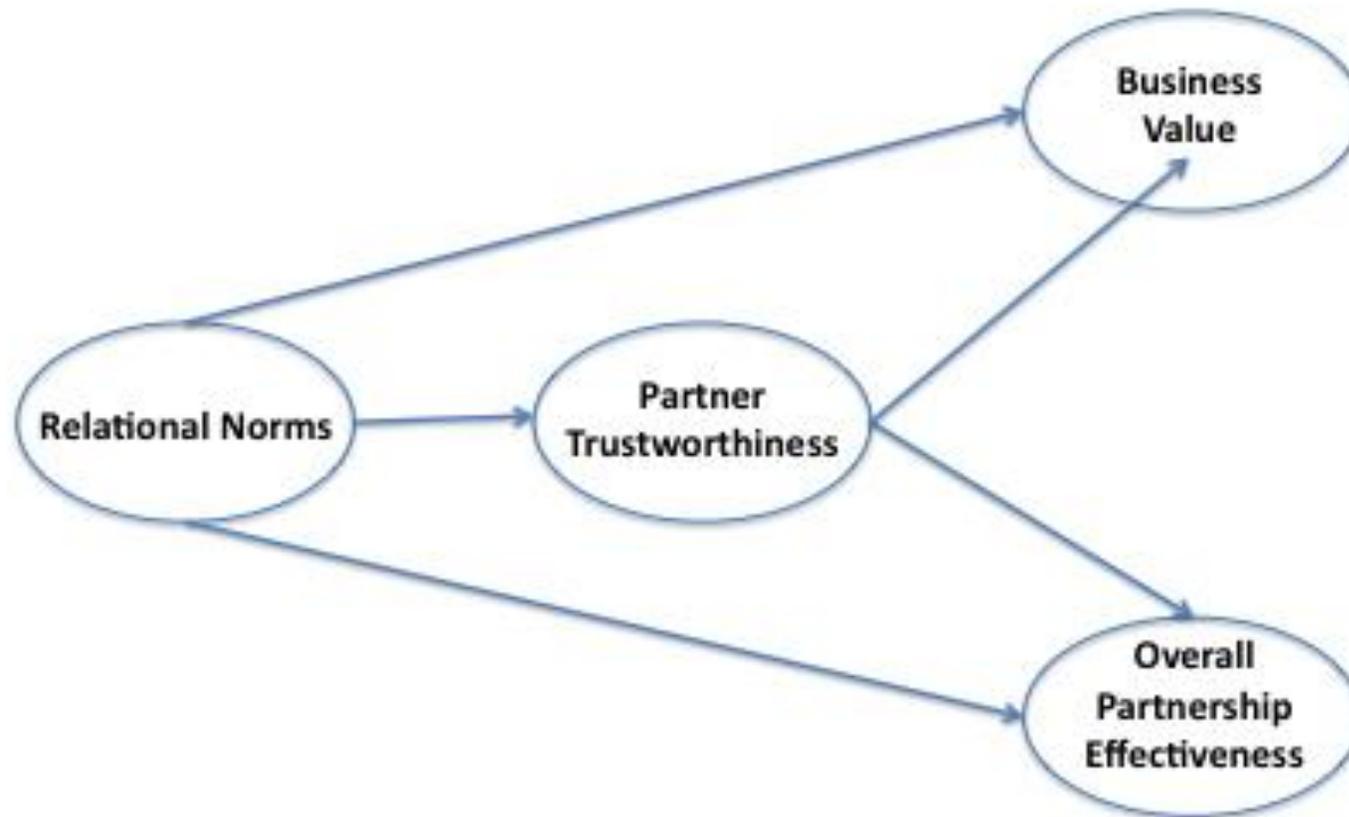
Table 4

Relative effects of individual trustworthiness process on overall partnership effectiveness

Effect size	BIOM→NFP				BIOM→LINV				LINV→BIOM			
	Processes	PE	SE	Z	Processes	PE	SE	Z	Processes	PE	SE	Z
≤.05	Calculative	-.01	.02	<i>ns</i>	Calculative	.00		<i>ns</i>	Calculative	-.02	.05	<i>ns</i>
	Predictability	.02	.03	<i>ns</i>	Predictability	.03	.04	<i>ns</i>	Intentionality	.03	.07	<i>ns</i>
.06-.11	<b>Intentionality</b>	<b>.10</b>	.05	1.97*	Capability	.08	.07	<i>ns</i>	Capability	.08	.06	<i>ns</i>
	<b>Transference</b>	<b>.11</b>	.05	2.05*	Transference	.10	.07	<i>ns</i>	Transference	.11	.09	<i>ns</i>
≥.11	<b>Capability</b>	<b>.19</b>	.08	2.41**	<b>Intentionality</b>	<b>.20</b>	.11	1.84*	<b>Predictability</b>	<b>.45</b>	.11	3.95**

PE = Product of coefficients point estimate; Z = results for the Sobel (1982) test;

<sup>a</sup>  $p = .05$  (One-tailed test).\*  $p < .05$  (One-tailed test).\*\*  $p < .01$  (One-tailed test).



**Fig.1. The research model.**