The effects of strategic orientations on firm performance, and the mediating role of innovation outcomes: a meta-analytic path analysis

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Problem statement (I)

The strategic orientation of businesses has attracted widespread scholarly attention. It is one of the most heavily studied topic in the management, marketing and entrepreneurial literature over the past two decades.

Grinstein, 2008; Hakala, 2011; Deshpandé, Grinstein, and Ofek, 2012; Gnizy, Baker and Grinstein, 2014; Lonial and Carter, 2015; Deutscher, Zapkau, Schwens, Baum, and Kabst, 2016

Strategic orientations → the means by which firms choose to attempt to create a sustainable presence in the markets in which they compete

Gnizy, Baker, & Grinstein, 2014, p. 478

Most extensively analyzed strategic orientations:

Market Orientation (MO) → the extent to which a firm implements the marketing concept

Entrepreneurial Orientation (EO) → behavioral tendencies, managerial philosophies, and strategic decision-making practices that are entrepreneurial in nature

Learning Orientation (LO) → set of organizational values that influence the propensity of the firm to create and use knowledge

Jaworski & Kohli, 1990; Miller, 1983; Sinkula et al., 1997

Problem statement (II)

By definition, **strategic orientation is linked to firm performance**. However, the nature of this relationship is **not trivial**.

Only **Direct** Effects

A particular orientation and the direct link with performance

e.g. Grinstein, 2008; Hakala, 2011; Deshpandé et al., 2012; Gnizy et al., 2014; Lonial and Carter, 2015; Deutscher et al., 2016

Only **Indirect** Effects

Mediating mechanisms in the strategic orientation–firm performance relationship. **Innovation** serves as a **key link** between organizational culture capabilities –in this case strategic orientations– and firm performance

Joint and interrelated effects of strategic orientations on performance through innovation

e.g. Ozkaya, Droge, Hult, Calantone, and Ozkaya, 2015; Han, Kim, and Srivastava, 1998; Agarwal, Erramilli, and Dev, 2003; Baker and Sinkula, 2005; Vincent, Bharadwaj, and Challagalla, 2005

Simultaneous **direct and indirect** effects

More complexity in the relationships to obtain a more comprehensive for view to capture the 'true' links and to unveil the mediating role of innovation

Research gaps

Little is known about the interaction between strategic orientations and innovation as mediator linking orientations with performance

- It is still **unclear whether there are direct or indirect effects on performance**.
- Results are inconclusive or constrained to **a single industry or firm size**.
- Mediating mechanisms have not attracted much attention in meta-analytic studies
- It is suggested to implement meta-analytic path analysis to comment on the **nature of relationships**.

Grinstein, 2008; Hakala, 2011; Saeed, Yousafzai, Paladino, and De Luca, 2015; Lonial and Carter, 2015; Lockett, Thompson, and Morgenstern, 2009; Doyle and Armenakyan, 2014

Need to quantitative synthesize the current state of knowledge

- Since the strategic orientation topic is maturing and a considerable research work have been performed.

Hakala, 2011

Literature reflects different theoretical approaches, it is opportune to test their validity and utility

- More complete models are requested.

Bergh, Aguinis, Heavey, Ketchen, Boyd, Su, Lau, and Joo, 2016; Baker and Sinkula, 1999a, 1999b, 2002, 2005, 2009.

Purpose

To quantitatively synthesize the available literature's data in an integrative meta-analytic path analysis framework by addressing **two research questions**:

1) Which competing model extracted from the literature on strategic orientations, innovation and firm performance fits better the meta-analytic data?

2) Does innovation play a mediating role –whether null, full or partial– in the strategic orientations and firm performance relationship?

This study aims to:

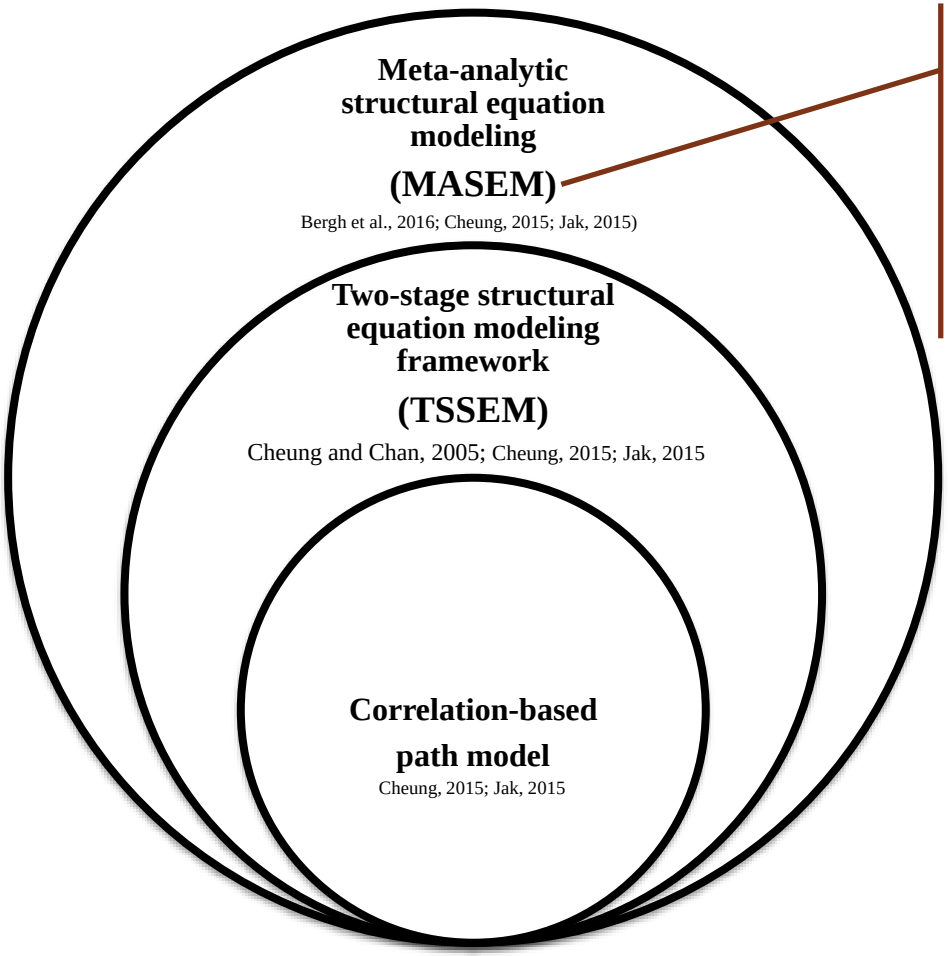
1) to test the **usefulness and validity** of **three different portrayals or settings** of the relationship between strategic orientations, innovation outcomes and firm performance in a theory modelling framework

2) to test the nature (**null, full or partial**) of innovation **as mediator** in the relationship between strategic orientations and firm performance

Research approach

Meta-analytic path analysis

- Collection, extraction and combination of the available empirical research data in order to provide insight into the intermediate mechanisms in a chain of relationships, comparing hypotheses or models against one another to determine the explanatory and predictive adequacy of theories (Bergh et al., 2016).



- A combination of meta-analysis (MA) and structural equation modeling (SEM)
- Is a possible solution for conflicting research findings
- The most recent and advanced research method in strategic management

Theoretical background

Resource-Based View

- Strategic resources and capabilities are those that influence more decisively on firm performance. This idea is widely accepted in the overall strategic management and marketing literature.

First-mover advantage

- Theoretical perspective that complements RBV, allowing to better understand how strategic orientations as firm's organizational cultural capabilities (e.g., MO, EO and LO) are translated into superior performance through innovation

Synergistic effect between MO, EO AND LO

Deutscher et al., 2016; Cadogan, 2012; Mu and Di Benedetto, 2011

Market Orientation (MO) → Innovation Outcomes (INNO)

Atuahene-Gima and Ko, 2001; Akman and Yilmaz, 2008; Augusto and Coelho, 2009; Baker and Sinkula, 2005; Cheng and Krumwiede, 2012; Gatignon,and Xuereb, 1997; Ledwith and O'Dwyer, 2009; Lukas and Ferrell, 2000; Leal-Rodríguez and Albort-Morant (2013); Paladino, 2007, 2008; Sandvik and Sandvik, 2003; Story et al., 2015

Entrepreneurial Orientation (EO) → Innovation Outcomes (INNO)

Alegre and Chiva, 2013; Avlonitis and Salavou, 2007; Baker, Grinstein and Harmancioglu, 2016; Bouncken et al., 2016; Chen et al., 2014,Parkman et al., 2012; Fernández-Mesa and Alegre, 2014; Gunawan and Duysters, 2016; Kam and Wong, 2014; Madhoushi et al., 2011; Pérez-Luño et al., 2011;

Learning Orientation (LO) → Innovation Outcomes (INNO)

Lages et al., 2009; Nybakk, 2012; Sheng and Chien, 2016

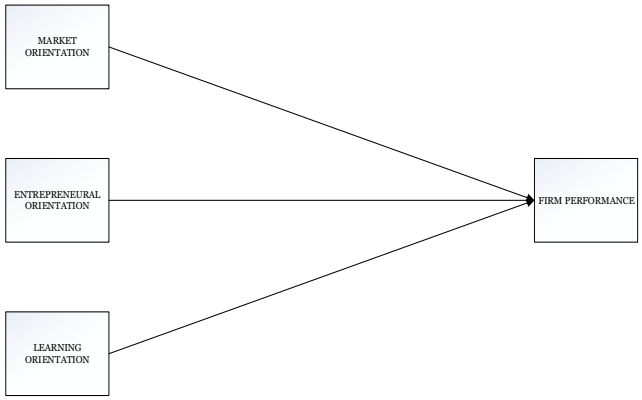
Innovation Outcomes (INNO) → Firm Performance (PERF)

Rubera and Kirca, 2012; Saeed et al., 2015; Chang et al., 2014

Hypothesized approaches

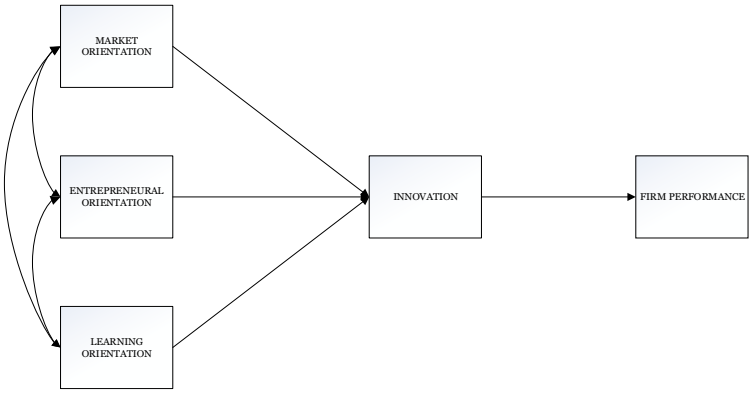
1 Universalistic approach

Independent and parallel direct effects of strategic orientations on firm performance



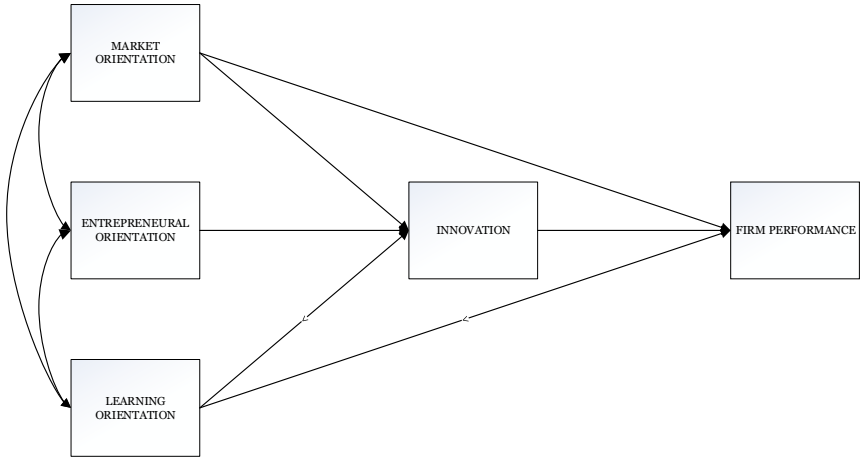
2 Synergistic approach

Joint indirect effects of strategic orientations on firm performance through innovation as full mediator



3 Holistic approach

Joint direct and indirect effects of strategic orientations on firm performance



Hypothesized approaches

① Universalistic approach

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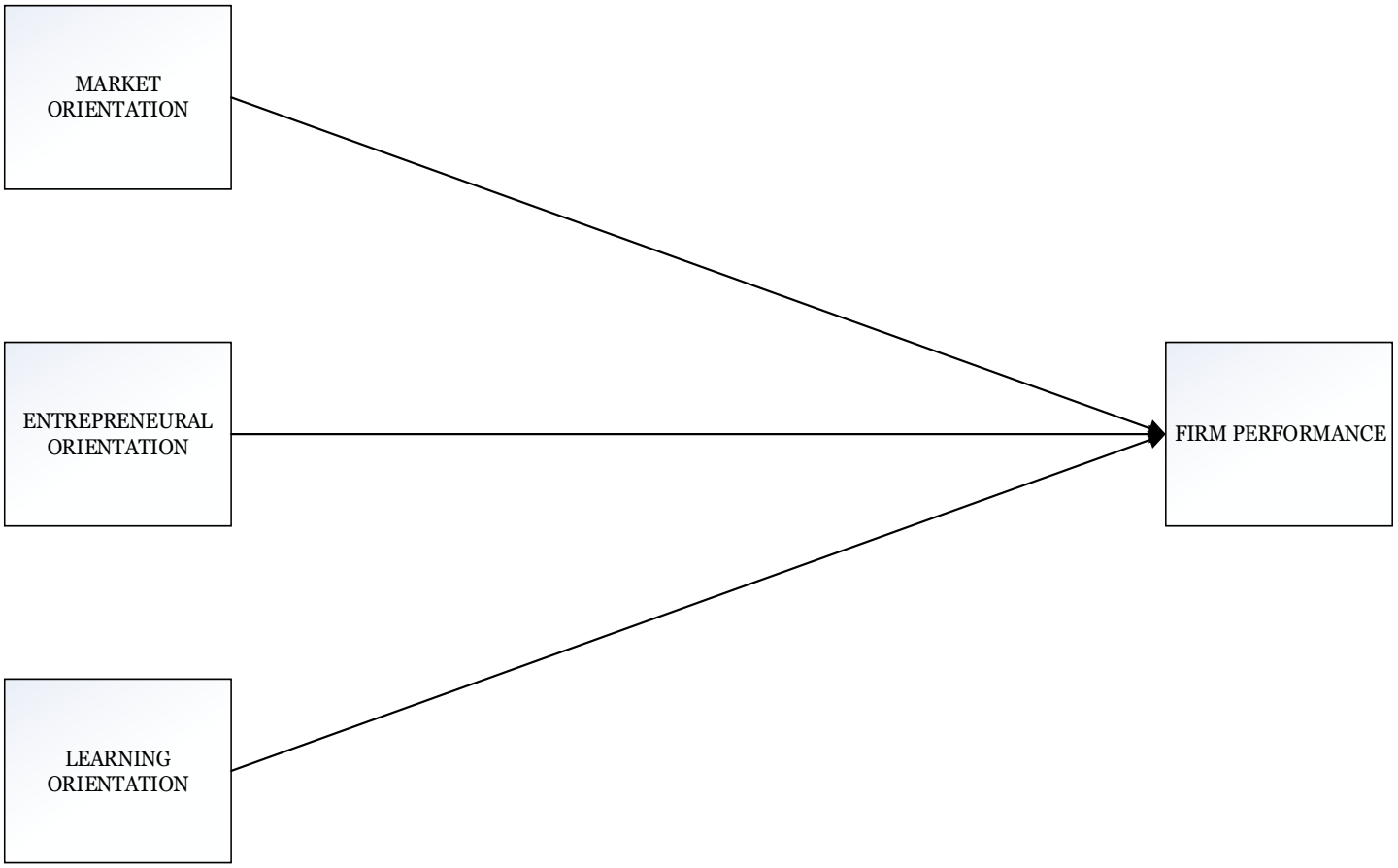

Hypothesized approaches

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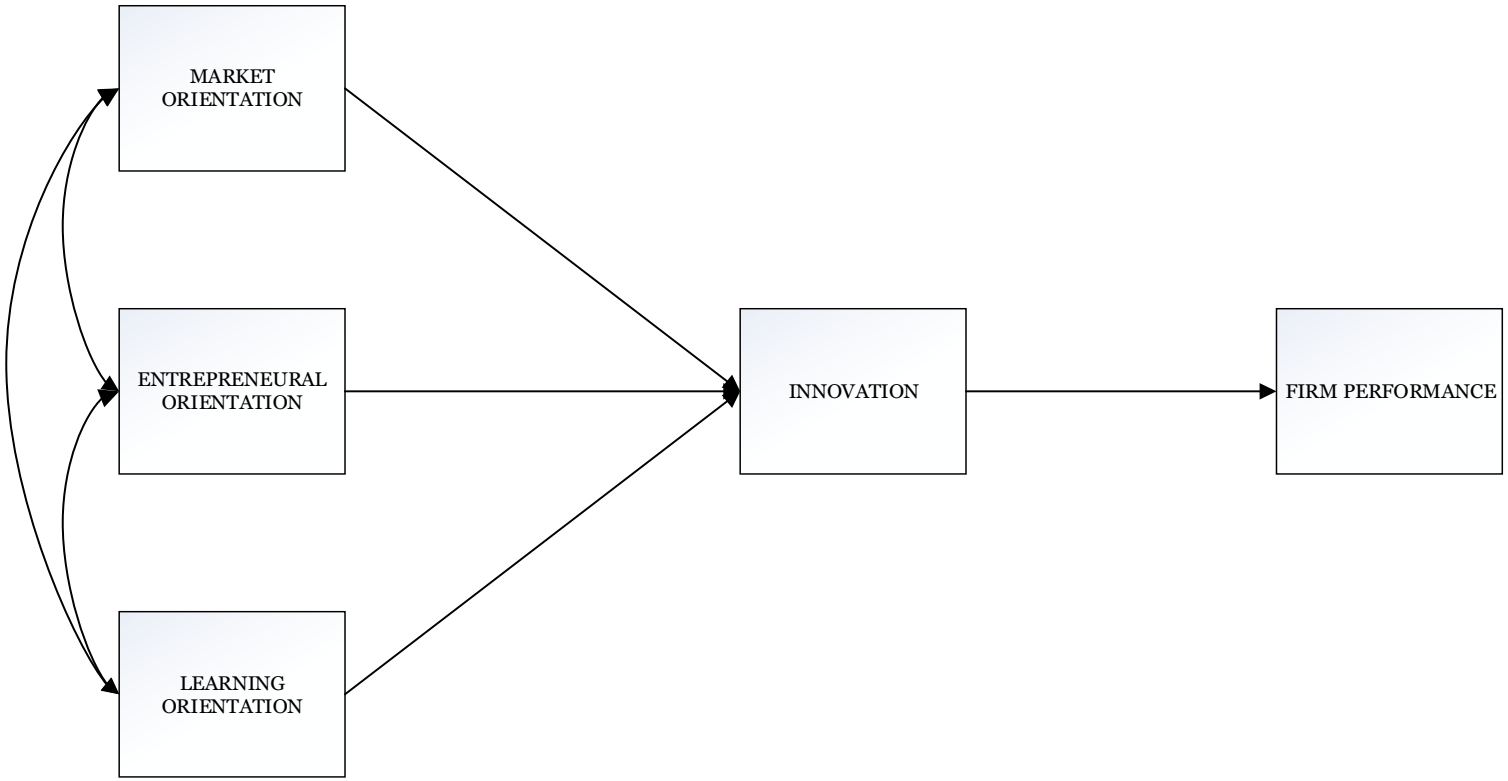
Joint indirect effects of strategic orientations on firm performance through innovation as full mediator



Hypothesized approaches

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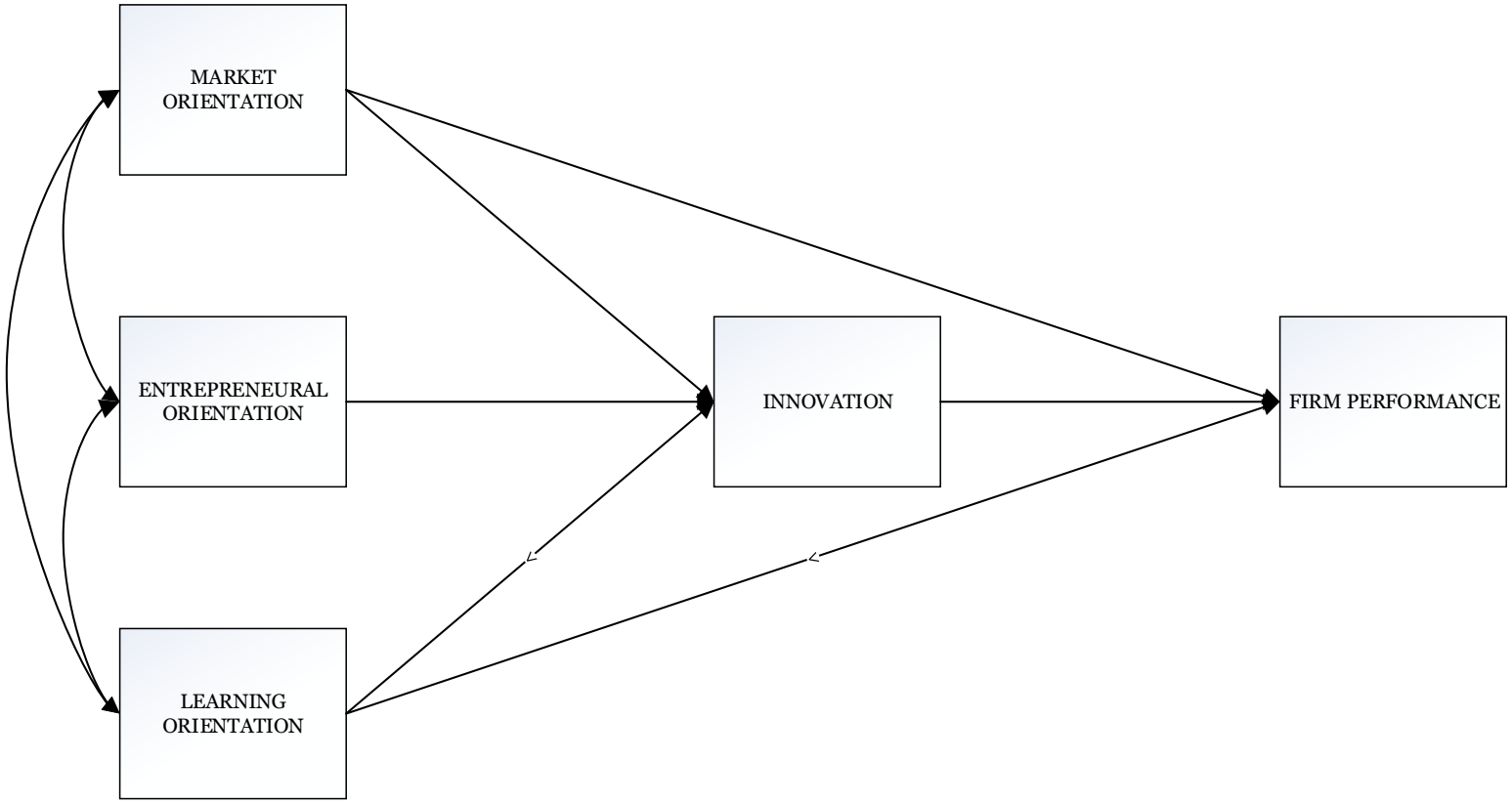

Sample and data collection

Sample frame

- Available empirical studies related to the relationship of **at least one strategic orientation, innovation outcomes and/or firm performance**

Search process

- online citation databases (e.g. Web of Science and Scopus) and search engines (e.g. Google Scholar, Mendeley, Trobador+)

Keywords

- "market orientation," "marketing orientation," "entrepreneurial orientation," "entrepreneurship orientation," "entrepreneurship posture," "learning orientation," "innovation," "innovativeness," "new product development," "innovation," "innovation success," "radical innovation," "firm performance," "business performance," "organizational performance."

Sample and data collection

Early Results	• more than 2700 studies
***Post hoc* selection criteria**	• Sintax → [[(MO *or* EO *or* LO) *and* (innovation)] *and/or* (performance)] • **Observed correlation coefficients** matrices in the primary studies published
Populating sample correlation matrix	• Pairwise deletion • Average composite aggregation
Final dataset	• 113 selected studies • 116 different samples • 289 unique effect sizes • **27,674 observations**

Definition and codification (I)

CONSTRUCT	DEFINITION	CODING SCHEME
Market Orientation	The culture that effectively and efficiently creates value for customers (Narver & Slater, 1990) and the set of activities, processes and behaviors derived from the implementation of the marketing concept (Kohli and Jaworski, 1990).	MKTOR (Narver and Slater, 1990)
		MARKOR (Kohli, Jaworski, and Kumar, 1993)
		MORTN (Deshpandé and Farley, 1998)
		PMO (Narver, Slater, and MacLachlan, 2000; Atuahene-Gima, Slater and Olson, 2005)
		Internal MO (Gounaris, 2006; Sanchez-Hernandez and Miranda, 2011; Fang et al., 2014)
		Market orientation (Matsuno et al., 2002)
Entrepreneurial Orientation	The specifically entrepreneurial aspects of firms' strategies to enact their organizational purpose, sustain its vision, and create competitive advantage involving the intentions, actions, processes, practices, and decision-making activities that lead to new entry (Rauch et al., 2009; Lumpkin and Dess, 1996; Hakala, 2011; Covin and Slevin 1989; Hult et al., 2004; Wiklund, 1999; Wiklund and Shepherd, 2005).	Entrepreneurial posture (Covin and Slevin, 1989)
		Entrepreneurial proclivity (Matsuno et al., 2002)
		Entrepreneurship (Naman and Slevin, 1993)
		Entrepreneurship orientation (Hong et al., 2013)
		Corporate Entrepreneurship (Zahra and Covin, 1995; Chen et al., 2014)
		Entrepreneurial orientation (Lumpkin and Dess, 1996; Nasution and Mavondo, 2008; Alegre and Chiva, 2013)
Learning Orientation	The key values that influences the propensity of the firm to learn by generating, processing and using market information and new knowledge in order to gain competitive advantage (Sinkula et al., 1997; Calantone et al., 2002).	Learning Orientation (Sinkula et al., 1997; Baker and Sinkula, 1999; Calantone et al., 2002; Liu et al., 2002; Sujan et al., 1994; Narver and Slater, 1995; Atuahene-Gima et al., 2005)
		Organizational learning orientation (Nguyen et al., 2016; Paladino, 2007; Mu and Di Benedetto, 2011)

Definition and codification (II)

CONSTRUCT	DEFINITION	CODING SCHEME
Innovation Outcomes	Innovation outcomes refers to the consequences of innovation activities or the outputs of innovation process including the aspect of exploitation and answering questions about 'what' or 'what kind' of innovation (Crossan and Apauyin, 2010). Innovation outcomes represent the a) revenue generation potential of firm's innovativeness because they refer to actual new products that are available in the marketplace (Rubera and Kirca, 2012) and b) the degree of success or fulfillment attained by firms in achieving goals related to new products or services (e.g., Henard and Szymanski, 2001; Montoya-Weiss and Calantone, 1994; Baker and Sinkula, 2009; Gatignon and Xuereb, 1997; Im & Workman, 2004).	Breakthrough innovation (Atuahene-Gima, 2005; Chandy and Tellis, 1998)
		Organizational Innovation (Hurley and Hult, 1998, Mavondo et al., 2005; Song and Xie, 2000 and Zahra, 1996)
		Innovation Rate (Vázquez, Santos-Vijande, and Álvarez, 2001)
		New Product Novelty (Im and Workman, 2004)
		New To The World Products (Lukas and Ferrell, 2000)
		Number Of New Services (Mu and Di Benedetto, 2011; Storey, and Hughes, 2013)
		Radical innovation (Avlonitis, 2001; Cheng, and Krumwiede, 2012)
		Tech-Based Innovation (Zhou, Yim, and Tse, 2005)
		Innovation Success (Baker and Sinkula (1999, 2009; Akman and Yilmaz, 2008)
		Innovation Performance (Pelham and Wilson, 1996; Wang and Ahmed, 2004; Zhou and Li, 2008; Bharadwaj and Menon, 2000)
		New Product Performance (Atuahene-Gima and Ko, 2001)
		New Product Program Performance (Narver and Slater, 1990; Griffin and Page, 1993; Calantone and Garcia, 2003)
		Product Effectiveness (Alegre and Chiva, 2013).
Firm Performance	Firm performance refers to "the economic outcomes resulting from the interplay among an organization's attributes, actions, and environment" (Combs, Crook, and Shook 2005, p. 262) capturing the underlying manifestations of how well a firm is effectively satisfying its stated goals (Bergh et al., 2016; Combs et al., 2005).	Profitability (Alegre y Chiva, 2013; Baker and Sinkula, 2009)
		Financial performance (Chen et al., 2012; Cheng and Huizingh, 2014; Cheng and Krumwiede, 2012
		Firm performance (Ozkaya et al., 2015; Paladino, 2008; Zhou et al., 2005)
		Market effectiveness (Brettel et al., 2012)
		Economic performance (Lages et al., 2009)
		Organizational performance (Baker and Sinkula, 1999; Langerak et al., 2007)
		Business performance (Leal-Rodríguez and Albort-Morant, 2016; Alarcón del Amo et al., 2014)
		Sales growth (Sandvik and Sandvik, 2003)

Meta-analytic and structural equation modeling fitting procedure

Data set was prepared in the form of symmetric correlation matrices for each single study

The software used for conducting the meta-analytic path model was the R **metaSEM** package.

```
1
.41 1
NA NA 1
.31 .27 NA 1
NA NA NA NA 1
1
.52 1
.81 .60 1
NA .84 NA 1
NA .54 NA .54 1
1
NA 1
NA NA 1
NA .41 NA 1
NA .39 NA .69 1
1
NA 1
NA NA 1
NA .61 NA 1
NA NA NA NA 1
1
NA 1
NA NA 1
NA NA NA 1
NA NA .30 NA 1
1
.74 1
NA NA 1
NA NA NA 1
.51 .30 NA NA 1
1
.71 1
NA .09 1
NA NA NA 1
.40 .46 .18 NA 1
1
NA 1
NA NA 1
NA NA NA 1
.74 NA NA NA 1
```

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File Edit Packages Windows Help

```
##Holistic approach
library(metaSEM)
##Defining dataset
my.df4 <- readLowTriMat("dataset155.txt", no.var=5)
my.df4 <- lapply(my.df4, function(x)
##Defining variables
{dimnames(x) <- list(c("MO","EO","LO","INN","PERF"),
c("MO","EO","LO","INN","PERF"))
x})
##Sample sizes
my.n4 <- c(142, 203, 182, 135, 170, 500, 362, 112, 145, 1978, 88, 411, 243, 267, 696, 231, 221, 125, 1
##Missing data pattern
pattern.na(my.df4, show.na = FALSE)
##Samples pattern
pattern.n(my.df4, my.n4)
##Verifying positive definite matrices
is.pd(my.df4)

##Stage 1
random1 <- tssem1(my.df4, my.n4, method="REM", RE.type="Diag", acov="weighted")
summary(random1)
vec2symMat( coef(random1, select="fixed"), diag=FALSE )

##Matrix A specifies all regression coefficients in the model
(A3 <- create.mxMatrix(c(0, 0, 0, 0, 0,
                         0, 0, 0, 0, 0,
                         0, 0, 0, 0, 0,
                  "0.1*MO2INN", "0.1*EO2INN", "0.1*LO2INN", 0, 0,
                         "0.1*MO2PERF", "0.1*EO2PERF", "0.1*LO2PERF", "0.1*INN2PERF", 0),
                       type="Full", nrow=5, ncol=5, byrow=TRUE))

##Matrix S specifies all variances (on the diagonal) and covariances (off-diagonal) in the model.
#### Fixed the variances of the indepedent variables at 1
(S3 <- create.mxMatrix(c(1,
                  ".1*CovMOEO", 1,
                         ".1*CovMOLO", ".1*CovEOLO", 1,
                  0, 0, 0, ".1*errVarINN",
                  0, 0, 0, 0, ".1*errVarPERF"),
                       type="Symm",
                  byrow=TRUE))
##Stage 2
random2 <- tssem2(random1, Amatrix=A3, Smatrix=S3,
intervals.type="LB",
diag.constraints=TRUE,
mx.algebras=list(IndMOINNPERF=mxAlgebra(MO2INN*INN2PERF,
name="IndMOINNPERF"),
IndEOINNPERF=mxAlgebra(EO2INN*INN2PERF,
name="IndEOINNPERF"),IndLOINNPERF=mxAlgebra(LO2INN*INN2PERF,
name="IndLOINNPERF")))
summary(random2)
library("semPlot")
my.plot <- meta2semPlot(random2)
semPaths(my.plot, whatLabels="est", nCharNodes=10, color="green")
```

Random-effects model in two-stage structural equation modeling approach (TSSEM)

Stage 1: meta-analysis of correlation matrices using random-effects approach.

- Purpose → to test of the homogeneity of correlation matrices across samples through the Q and I^2 statistics
- Outcome → **mean or average pooled correlation matrix** as input for Stage 2

Stage 2: fitting structural models into the pooled correlation matrix for path analysis

- Purpose → to evaluate the model fitness
  → to test mediation through direct and indirect effects.
- Outcome → path coefficients with their confidence intervals, explained variance, chi-squared test, goodness of fit indices (CFI, RMSEA, SRMR) → **path diagrams**

Results of meta-analysis: pooled correlation matrix based on random effects modelling

		MO	EO	LO	INNO	PERF
r	**MO**	1				
CI95						
k						
N						
I2						
r	**EO**	.44	1			
CI95		.35: .53				
k		24				
N		7967				
I2		.92				
r	**LO**	.51	.51	1		
CI95		.43: .59	.39: .62			
k		17	5			
N		5096	2691			
I2		.85	.74			
r	**INNO**	.34	.41	.42	1	
CI95		.31: .38	.35: .47	.36: .49		
k		90	41	24		
N		22641	11006	6764		
I2		.86	.90	.84		
r	**PERF**	.33	.36	.37	.39	1
CI95		.28: .39	.28: .44	.28: .46	.32: .46	
k		35	12	12	29	
N		8939	2906	2665	6775	
I2		.84	.78	.83	.89	

Source: Own elaboration based on the metaSEM R package, TSSEM Stage 1 output. MO: Market Orientation; EO: Entrepreneurial Orientation; LO: Learning Orientation; INNO: Innovation Outcomes; PERF: Firm Performance. r: observed correlations; CI95: 95% confidence interval; k: number of studies; N: sample size; I2: percentage of total variance that is due to between-studies variability as opposed to within-study variability. All average correlations are significant ($p<0.001$).

Results of path analysis: direct and indirect effects, covariances and model fitness

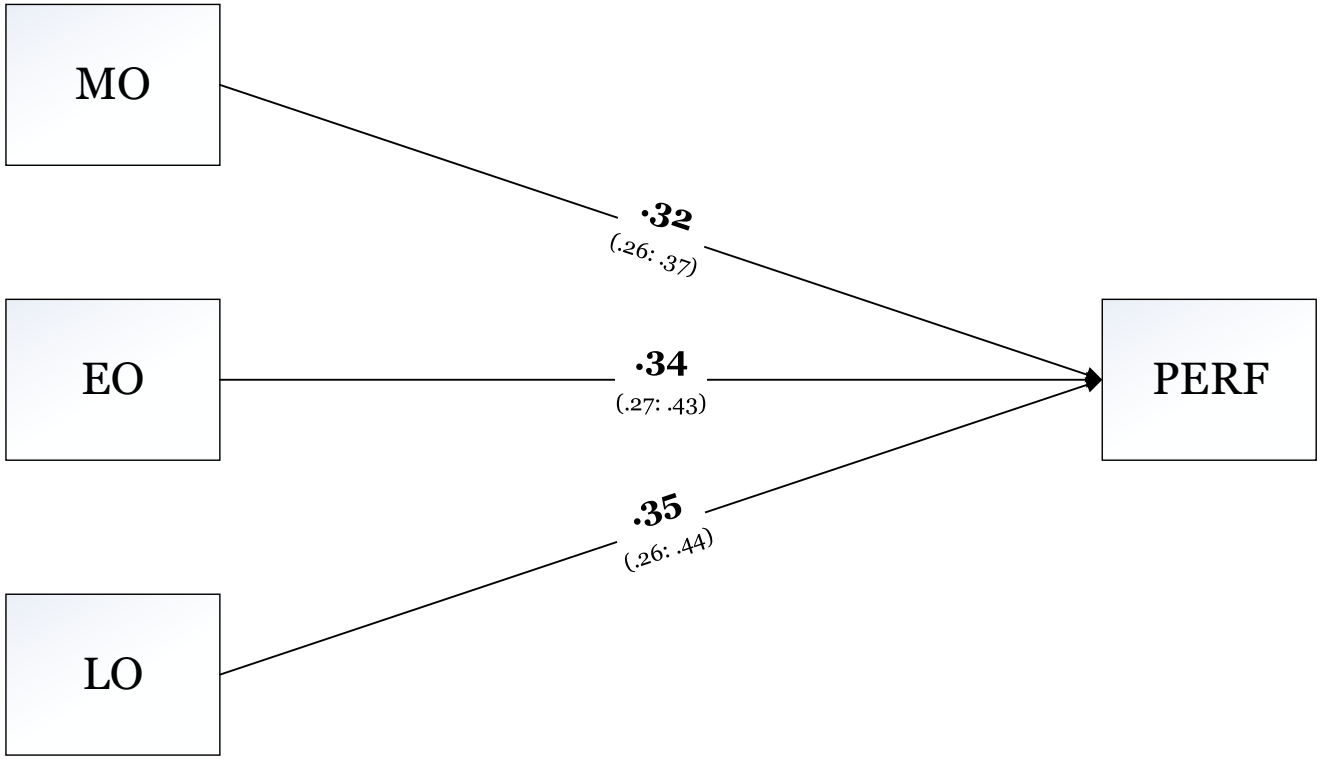
Theoretical Approach		Path Coefficients			Explained Variance		χ² test				Goodness of Fit Indices			Model Fit
		Effect	β	LBCI95	R^2	LBCI95	d.f.	N	Value	p	CFI	RMSEA	SRMR	Support
Universalistic	Direct Effects	MO→PERF	.32	.26: .37	.34	.26: .44	7	27674	1143.06	***	.1808	.0766	.3653	NO
		EO→PERF	.34	.27: .43										
		LO→PERF	.35	.26: .44										
Synergistic	Direct Effects	MO→INNO	.12	.03: .19	.28	.24: .33	3	27674	60.07	***	.9588	.0262	.0846	YES
		EO→INNO	.26	.16: .35										
		LO→INNO	.26	.15: .37										
		INNO→PERF	.54	.49: .60	.30	.24: .36								
	Covariances (*)	MO↔EO	Ψ=.44	.36: .53	N.A.									
		MO↔LO	Ψ=.51	.43: .59										
		EO↔LO	Ψ=.51	.40: .62										
Holistic	Direct Effects	MO→INNO	.11	.03: .19	.24	.20: .29	1	27674	3.99	**	.9978	.0104	.0269	YES
		EO→INNO	.24	.14: .34										
		LO→INNO	.23	.06: .39										
		MO→PERF	.14	.03: .23	.24	.19: .30								
		LO→PERF	.22	.07: .36										
		INNO→PERF	.26	.16: .36										
	Covariances (*)	MO↔EO	Ψ=.45	.36: .54	N.A.									
		MO↔LO	Ψ=.50	.42: .58										
		EO↔LO	Ψ=.54	.43: .65										
	Indirect Effects	MO→INN→PERF	.03	.01: .06										
		EO→INN→PERF	.06	.02: .11										
		LO→INN→PERF	.06	.02: .10										

Source: Own elaboration based on the metaSEM R package, TSSEM Stage 2 output. MO: Market Orientation; EO: Entrepreneurial Orientation; LO: Learning Orientation; INNP: innovation outcomes; PERF: Firm Performance. N.A.: Not applicable

Path model with parameter estimates (path coefficients) and 95% confidence intervals.

① Universalistic approach

Direct effects of strategic orientations on firm performance

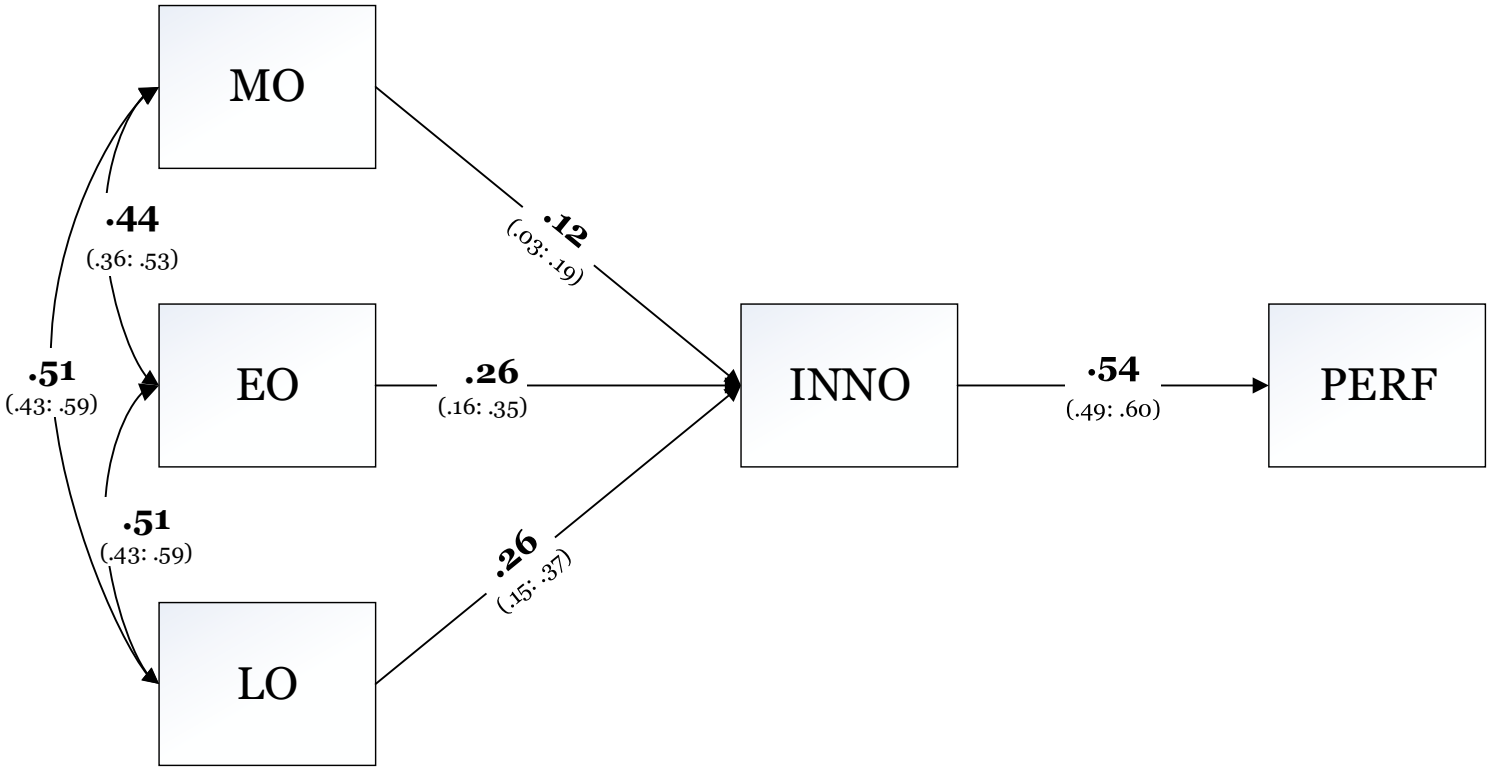


$\chi^2_{(3,\ 27674)}=365.81^{***}$ CFI: .4868 RMSEA: .0605 SRMR: .3307

Path model with parameter estimates (path coefficients) and 95% confidence intervals.

② Synergistic approach

Joint indirect effects of strategic orientations on firm performance through innovation as full mediator

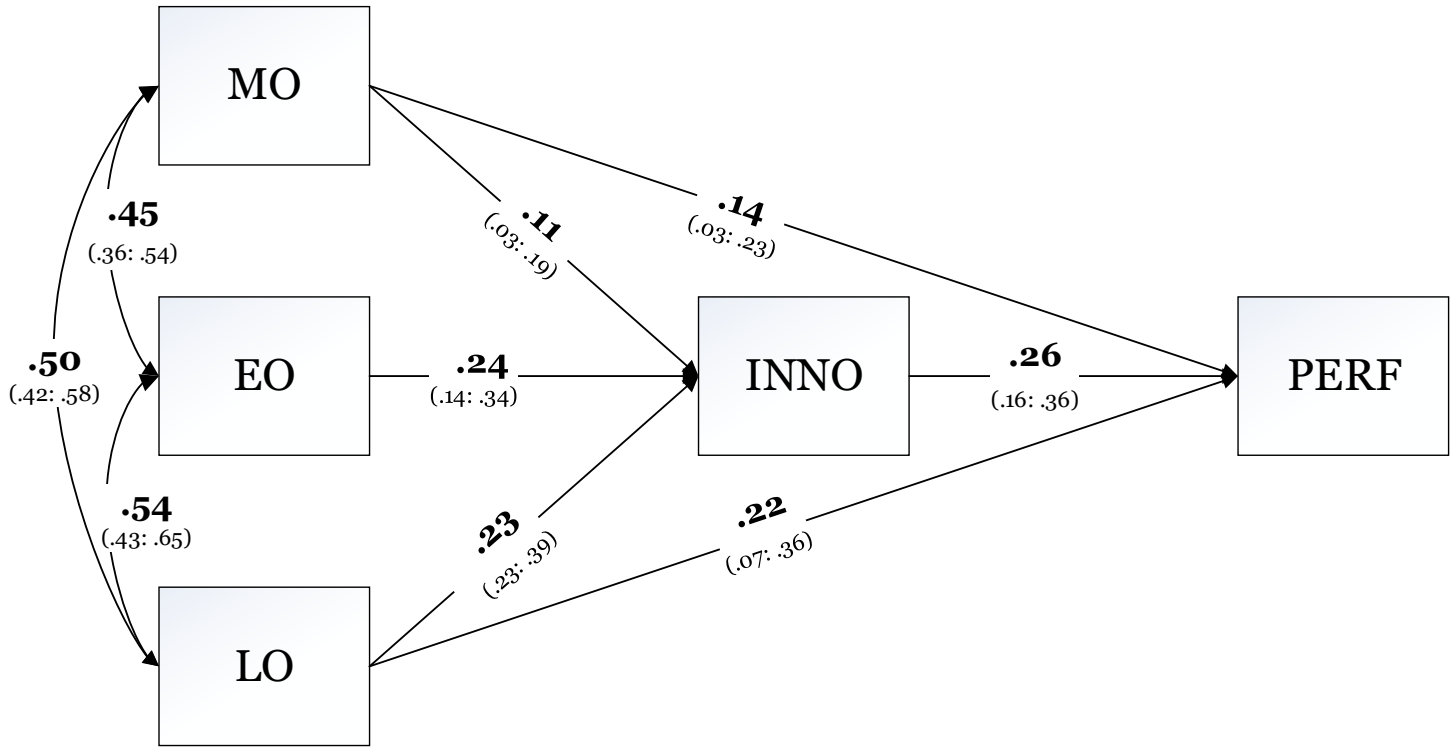


$\chi^2_{(3,\ 27674)}=60.07^{***}$ CFI: .9588 RMSEA: .0262 SRMR: .0846

Path model with parameter estimates (path coefficients) and 95% confidence intervals.

Holistic approach

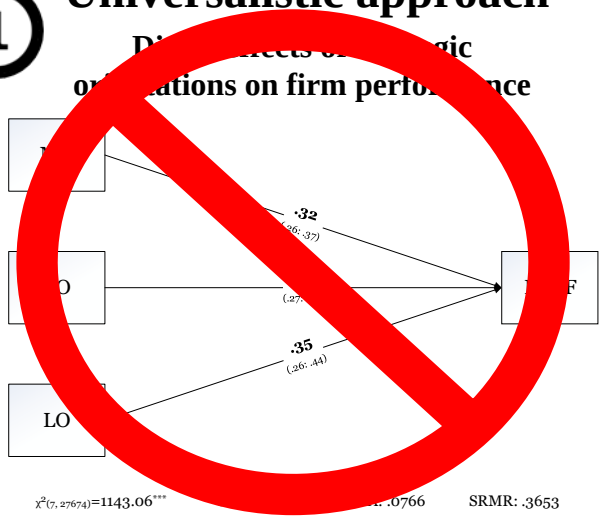
Joint direct and indirect effects of strategic orientations on firm performance



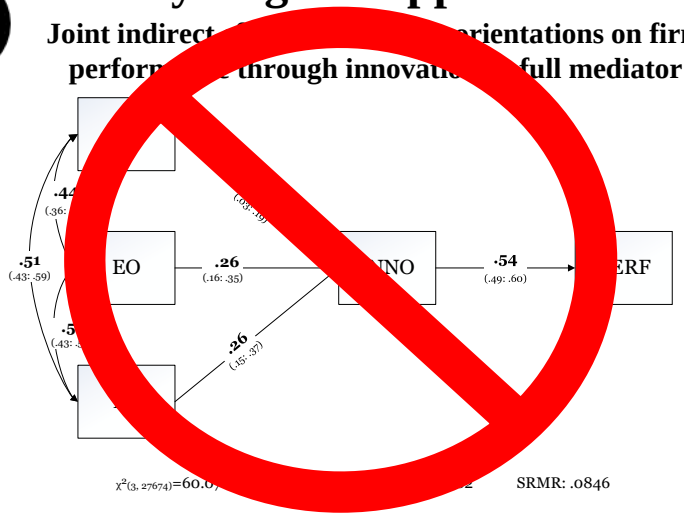
$\chi^2_{(1,\ 27674)}=3.99^{**}$ CFI: .9978 RMSEA: .0104 SRMR: .0269

Path model with parameter estimates (path coefficients) and 95% confidence intervals.

1 Universalistic approach

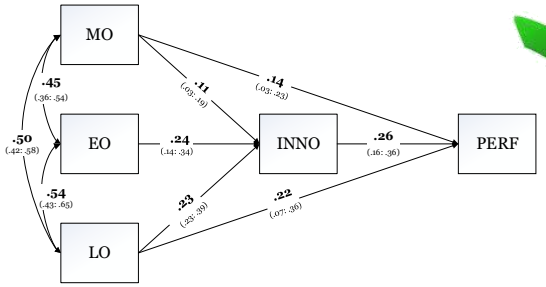


2 Synergistic approach



3 Holistic approach

Joint direct and indirect effects of strategic orientations on firm performance



Conclusions and Discussion

Universal approach may possible be **abandoned**

- The idea of strategic orientations being **universally beneficial is overly simplistic** (Atuahene-Gima, 2005, p. 79); Mu, Thomas, Peng, & Di Benedetto, 2017, p. 3)
- "strategic orientation as culture- level values and norms **do not automatically** lead to superior performance" (Zhou et al., 2005)
- "universal 'truths' are valuable, but incapable of explaining the whole range of situations." (Hakala, 2011)
- is not expected that the culture of an organization shape performance directly, since **"customers do not purchase a firm's goods and services simply because the firm has a particular type of culture."** (Doyle and Armenakyan, 2014, p.196; Hult, Ketchen, & Slater, 2005, p. 1174)
- Conceiving strategic orientations as 'best practices prescriptions' which impact directly on firm performance as hypothesized in the universal approach is **extremely parsimony** in theory modeling.

Conclusions and Discussion

Synergetic approach which added **more complexity made sense**

- Strategic orientations are complementary and interrelated.
- **Introducing innovation outcomes** as full mediator in the relationship between the strategic orientations and firm performance, in a chain of effects, is considered adequate and **fits the meta-analytic data**.
- This more innovativeness outcome-related approach allows to acknowledge that **"in the end, it is a specific product (or service) introduction that generates revenues and not the firm's general commitment to innovation"** (Rubera & Kirca, 2012, p. 135).
- Innovation outcomes **capitalize a positional advantage** based on innovative offerings or superior services, which **in turn** allow firms to enjoy superior performance (Hult & Ketchen, 2001).

Conclusions and Discussion

Holistic approach probed its superiority against the two previous approaches

- Results suggest that MO and LO are double-way important for firm performance (simultaneous direct and indirect effects).
- While MO and LO may help to conceive superior products, processes, and ideas, it is likely that EO provides the stimulus for driving such activities (Hult et al., 2004).
- The **holistic approach** which assumes the **universal and synergistic approaches altogether** is considered the most adequate and better fits the meta-analytic data.

Mediating role of innovation

- The mediating role of innovation outcomes is considered **FULL** in the relationship between EO and firm performance, and **PARTIAL** between MO and firm performance and between LO and firm performance, as depicted in holistic approach path model.

Managerial implications

- achieving superior performance in competitive markets could mainly depends on the pursuing of market opportunities through the delivery of successful innovations given a proper combination of orientations and the synergies generated by

- 1) identifying and exploiting new products or markets

- 2) focusing on creating value for customers anticipating their latent needs, and 3) the continuous learning that provides the vision to predict what the market may become

Limitations

The reported results **do not provide** direct and unequivocal evidence regarding **causality** because primary research studies were not set in experimental designs or used a cross-sectional design (Bergh et al., 2016; Cheung, 2015; Roorda et al., 2017).

There is a possible threat of **endogeneity** on the reported results. However, TSSEM's approach minimize this issue.

Inclusion criteria of primary studies in the meta-analytic correlation matrix

- Unfortunately, several seminal and very well rated studies were excluded due to the **lack of reporting correlations coefficients estimates, as noted by Shook et al. (2004).**
- Several primary studies connected innovation as a capability or process with firm performance and bypass innovation outcomes altogether.
- **Result** → the scope of the final sample was reduced substantially to the detriment of enriched findings

Future research directions

To implement **context moderators** using **random effects TSSEM subgroup analysis**

- *a priori* **contextual moderators** such as firm size (large vs. SME firms), and industry type (manufacturing vs. services firms)

Thanks for your attention!

Questions?

Suggestions are welcome!!!