

Supplier's Involvement and Success of Radical New Product Development in New Ventures

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Radical Innovation

Definition:

1. **Fundamental changes in new products that represent revolutionary changes in technology**
2. **The technologies incorporated in radical innovations are clear departures from the state of current knowledge and embody high degrees of new knowledge**

Afuah 2000; Dewar and Dutton 1986; Ettlie, Bridges, and O'Keefe 1984; Tushman and Anderson 1986

Motivations and Background

- **Importance of supplier involvement in radical innovation**
 - **Greater supplier involvement benefits radical innovation**
- **Few research focus on new ventures**
 - **A lot of radical innovations are created by new ventures**
 - **The creation of radical innovation is extremely difficult for new ventures due to limited financial resources**
 - **New ventures depend greatly on partners for financial investment.**
 - **Many new ventures find that partnering with suppliers can be particularly fruitful**
 - **Selecting the best partner and encouraging them is more important for new ventures**
 - **Catch 22 situation**

Motivations and Background

- How do new ventures

- qualify potential suppliers in terms of the skills and abilities they possess
- select the best suppliers as potential partners
- get suppliers interested and involved in the radical innovation, and encourage them to commit financial resources?

Research Questions

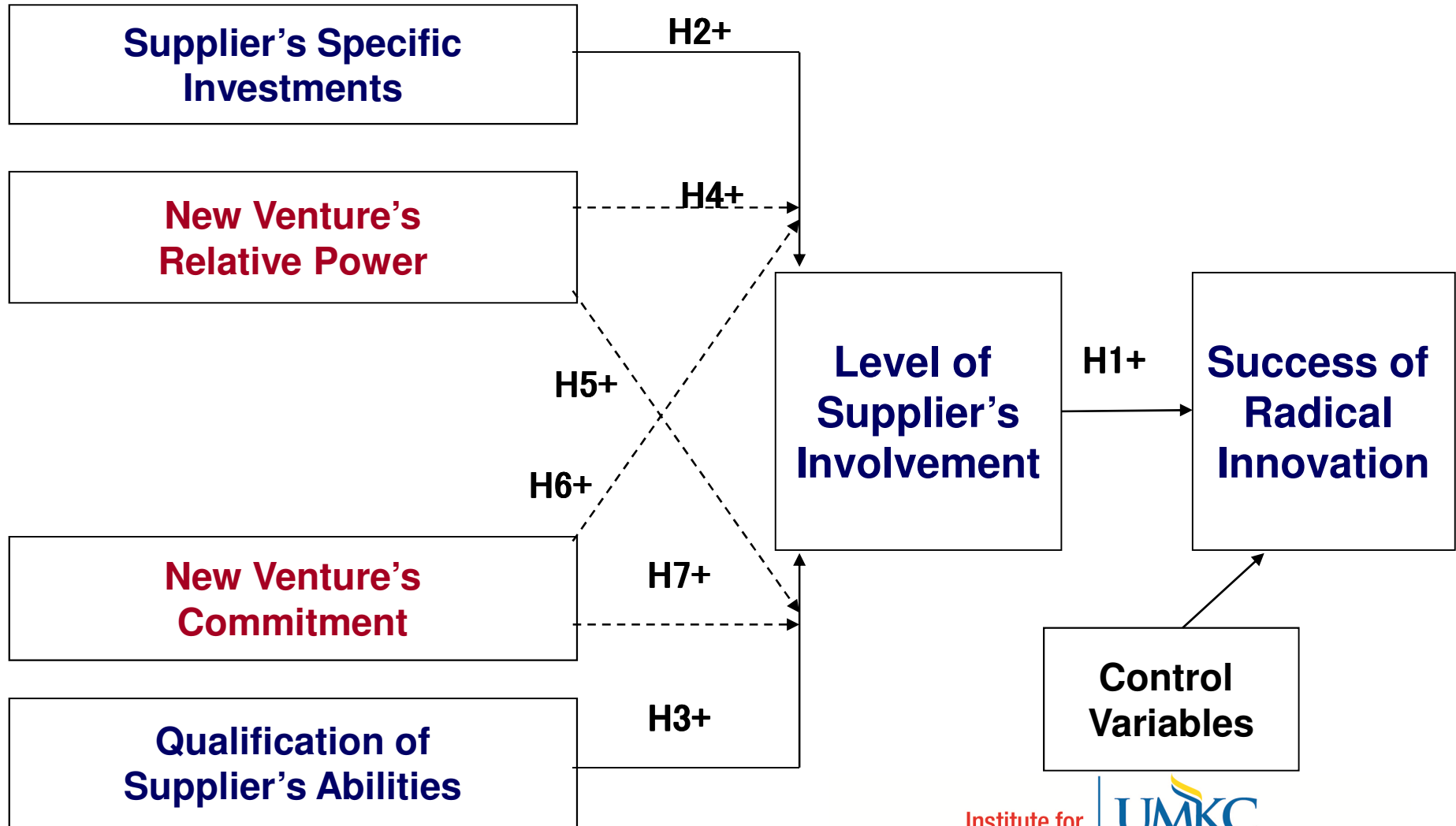
- *What are the effects of supplier's involvement on the success of radical innovations of new ventures?*
- *What are the effects of the supplier's specific investments and the new venture's qualification of supplier's abilities on supplier's involvement in the radical innovation process? (Direct effects)*
- *Can new ventures use relative power and commitment to the supplier to encourage greater levels of supplier's involvement in their radical innovations? (Contingency effects)*

Theoretical Foundation

Transaction cost analysis (TCA) as theoretical background Williamson (1975)

- Direct effects:
 - supplier's asset-specific investments for the new venture's innovation process
 - new ventures' qualification and knowledge of the supplier
- Contingency effects:
 - new venture's relative power,
 - new venture's commitment to the supplier

Theoretical Model



Control Variables

- **Total number of employees**
- **Firm age**
- **# of Prior Contacts with this Supplier**
- **# of Prior Projects with this Supplier**
- **Total R&D budget for this radical innovation project**
- **Marketing budget for the product launch of this radical innovation project**
- **Buyer power, Supplier power, Threat of entry, and Substitution Threats**

Supplier's Involvement in the Radical Innovation Process

- Product design
- Product testing
- Product commercialization

Research Methodology

- **Members of the 1995-2000 *Inc 500***
- **982 key informant from each new venture**
 - **one of the original founders with an equity stake of at least 10% and was actively involved in strategic decision making**
- **3-page survey following the total design method for survey research (Dillman 1978)**
- **Unit of analysis: working partnership with a major supplier of a recent radical innovation project**
- **A follow-up survey to the supplier firms to minimize the possibility of common method bias: collecting data on the supplier's perceived level of involvement**

Research Methodology

Data collected:

- 173 radical innovation projects (response rate of 17.6%)
- 257 entrepreneurs returned the survey to us indicating that their firms have not introduced any radical innovation projects which met our definition
- Profiles of respondents:
 - average age of the key informant was 43
 - >85% of the respondents were original founders
 - >95% percent were identified in some way as key strategic decision-makers
 - All respondents considered themselves entrepreneurs
 - 97 respondents had been involved previously in other new ventures

Research Methodology

Data collected (cont.):

- Firm characteristics:

- all relatively small firms
- Firm size: 37 to 423 employees, with an average of 253.
- The product categories include:
 - **Audio, Computer Hardware, Consumer Electronics Accessories, Digital Imaging, Games, Home Appliances, Home Data Networking, Integrated Home Systems, Mobile Electronics, Office Equipment, Online/Internet, Optical Imaging, Personal Electronics, Software, Software/Embedded Technologies, Telephones, Test and Measurement, Video, and Wireless Communications**

Study Measures

Supplier's Specific Investment

(1=strongly disagree;
7=strongly agree)

(Cronbach alpha=0.87)

- Our production system has been tailored to producing the items being sold to this firm.
- We have spent significant resources to ensure the specifications of our supplies for this product fit well with this firm's production capabilities.
- Gearing up to deal with this firm on this product requires highly specialized tools and equipment.
- This firm has some unusual technological standards for this item, which have required extensive adaptation by our production system.
- Most of the training we have undertaken relative to this firm's requirements for this item can be easily adapted for use with another customer. (R)

Study Measures

Qualification of Supplier's Abilities
(1= no qualification;
7= extensive qualification)
(Cronbach alpha=0.92)

- **Technical capability**
- **Compatibility of production processes**
- **Product quality**
- **Financial strength**
- **Delivery capability**

Study Measures

New Venture's Power
(1=strongly disagree;
7=strongly agree)
(Cronbach alpha=0.75)

- 1. We have a significant influence on this supplier's operation.**
- 2. We can pretty much dictate how this supplier meets our specifications.**
- 3. This supplier yields to our recommendations on general business practices.**

Study Measures

New Venture's Commitment to Supplier

(1=strongly disagree;
7=strongly agree)

(Cronbach alpha=0.95)

- We are continually on the lookout for another supplier. (R)
- Our relationship with this supplier is a long-term alliance.
- This manufacturer is willing to dedicate whatever people and resources it takes to supply what the supplier needs.

Study Measures

**Level of Supplier's
Involvement**
(1= no involvement;
7= extensive involvement)
(Cronbach alpha=0.96)

From the new venture's perspective:

To what extent did you involve this supplier in the following stages of development of this product?

1. Product design
2. Product testing
3. Product commercialization

From the supplier's perspective:

To what extent did you get involved with this manufacturer in the following stages of development of this manufacturer's product?

1. Product design
2. Product testing
3. Product commercialization

Study Measures

Success of Radical Innovation:

Gross Margin

$$=(\text{Total Revenue}-\text{Total Variable Costs})/\text{Total Revenue}$$

GM1 = Gross margin for the first year

GM2 = Gross margin for the second year

GM3 = Gross margin for the third year

AGM: Average Gross Margin = (GM1 + GM2 + GM3) / 3

Sales Growth

SG1: Sales growth 1 = (year 2 sales)/(year 1 sales)

SG2: Sales growth 2 = (year 3 sales)/(year 2 sales)

ASG: Average Sales Growth = (SG1 + SG2)/2

Study Measures

Control variables

Total number of employees

Firm age

of Prior Contacts with this Supplier

of Prior Projects with this Supplier

Total R&D budget for this radical innovation project

Marketing budget for the product launch of this radical innovation project

Buyer power, Supplier power, Threat of entry, and Substitution Threats

Summary of Results:

Consequences of Supplier's Involvement

	Gross Margin of the First Three Years	Average Sales Growth of the First Three Years
Supplier's Involvement	5.99* (.59)	66.74* (4.38)
Supplier's Involvement ²	-.56 (.48)	-3.98 (3.60)

Note: Un-standardized coefficients (Standard Error).

Summary of Results:

Antecedents of Supplier's Involvement

	Hypothesis (direction)	Un- Standardized Coefficient	Standardized Coefficient
<i>Supplier's Specific Investment</i>	H2 (+)	0.75*	0.64*
<i>Qualification of Supplier's Abilities</i>	H3 (+)	0.17*	0.16*
<i>Relative Power</i>		0.00	0.00
<i>Commitment to Supplier</i>		0.18*	0.19*
<i>Specific Investment*Relative Power</i>	H4 (+)	0.13*	0.14*
<i>Qualification of Ability*Relative Power</i>	H5 (+)	-0.12*	-0.18*
<i>Specific Investment*Commitment</i>	H6 (+)	0.02	0.03
<i>Qualification of Ability*Commitment</i>	H7 (+)	-0.14*	-0.25*

adjusted R² : .66; Regression F-value: 18.21

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Summary of Findings

Consequence of the Supplier's Involvement in the Radical Innovation Process:

one-point increase in supplier's involvement from the mean level increases AGM by 5.99%, and ASG by 66.74%!

Antecedents:

- 1. supplier's specific investment and qualification of a supplier's abilities are good for supplier's involvement in radical innovation process***
- 2. Commitments to a supplier is generally good for supplier's involvement, but its effectiveness is reduced if the new venture has done a good job in qualification of the supplier's abilities***
- 3. Relative power is only effective when a supplier has made specific investment for the new venture's radical innovation project***

Contributions and Implications

1. *Discover the contingency effects which are not accounted for in the simple TCA model.*

Among the first to address the effects of contingency conditions and found surprising findings:

- Surprisingly, new venture's relative power has **no effects** on supplier's involvement. It also has a **negative** moderating effects on the relationship between qualification of supplier's abilities and supplier's involvement.
- While new venture's commitment to its suppliers have a positive effect on supplier's involvement, it has a **negative** moderating effect on the relationship between qualification of the supplier and supplier's involvement.

Contributions and Implications

2. **Raise questions which challenge the literature**
 1. **Should a new venture use relative power at all?**
 2. **Are commitments to your **suppliers** good for new venture if you had done a good job in pre-qualification of your suppliers' abilities?**
3. **Contribution to both the entrepreneurship literature and innovation literature**

**Questions,
Comments,
Suggestions, ...**

Thank you!

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