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SME INNOVATIONS AND PERFORMANCE: THE MEDIATING ROLE OF PRODUCT INNOVATION

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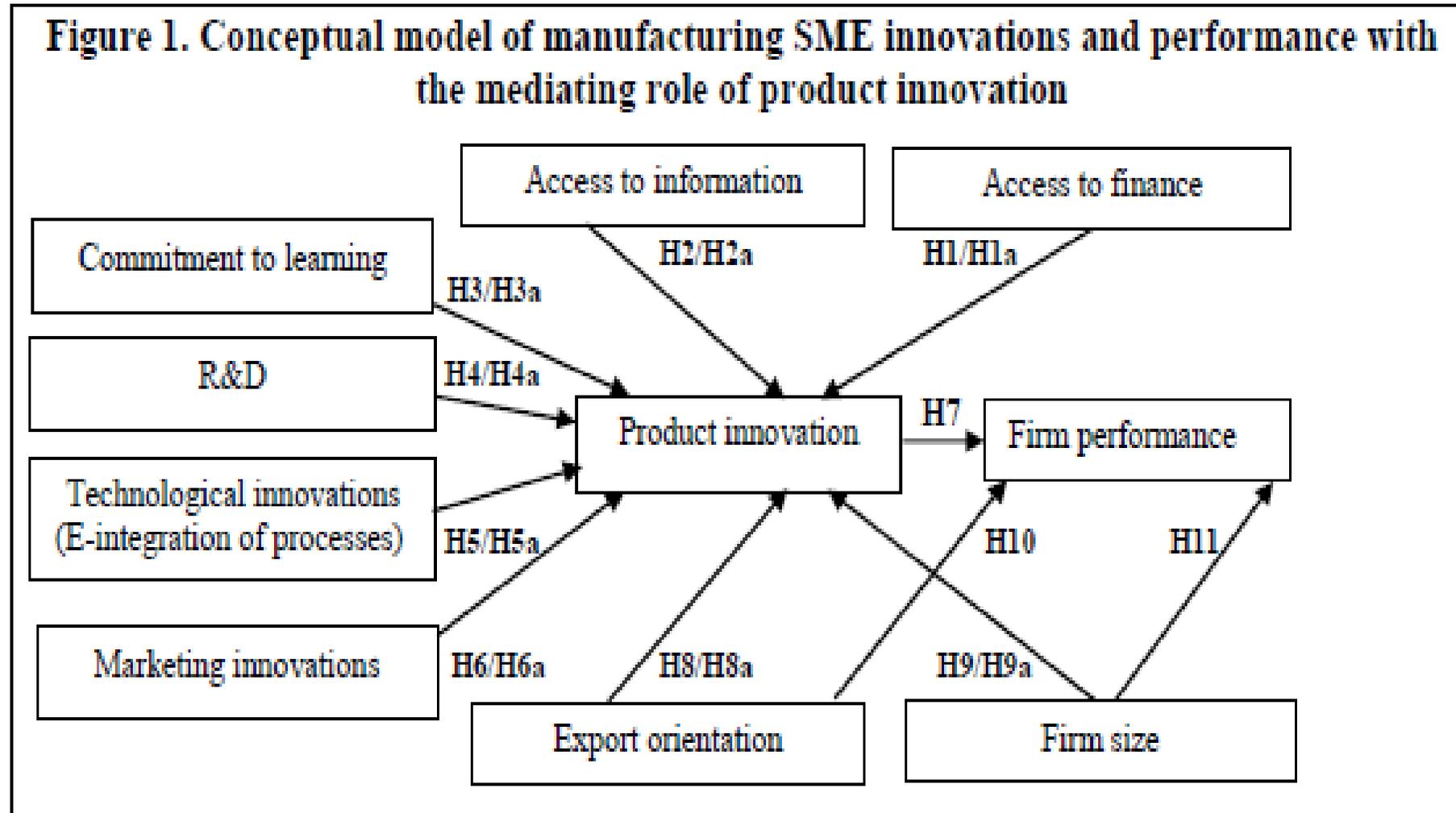
Introduction

- **Main goal** - to investigate the mediating role of product innovation in the SME “innovations-performance” relationship.
- **Research questions:**
 1. What are the “innovations-performance” relationships in the manufacturing SME?
 2. Does the product innovation mediate the effects of process innovations and other factors on performance?
- **Sample** characteristics: 500 SMEs from 18 manufacturing activities; 195 microenterprises (39% of all); 202 small (40.4%); and 103 medium size enterprises (20.6%).

Literature review

- **Basic theories:** RBV, DBV, IO, and entrepreneurship studies
- The innovation management literature shows mixt results in respect to the “innovation-performance” relationships (positive, negative, or lack of such relations) (Rosenbusch et al., 2011, p. 442)
- The uncertainty of the “innovation-performance” results may be due to:
 - (1) different contributions of different types of innovations to performance; and
 - (2) more *complex relationships* among types of innovations and their effects on performance.
- The research indicated that there are differences in the determinants of profitability of product vs. process innovators (Leipoen, 2000, p. 20)
- If the product innovations contribute directly and positively to the firm performance, the effects of process innovations are not so clear (Fagerberg et al., 2005, p. 7)
- Some process innovations are cost saving, while others may support product innovations and contribute *indirectly* to performance
- There are no many studies about the mediation role of innovations on performance

Conceptual model and hypotheses



Results of exploratory factor analysis

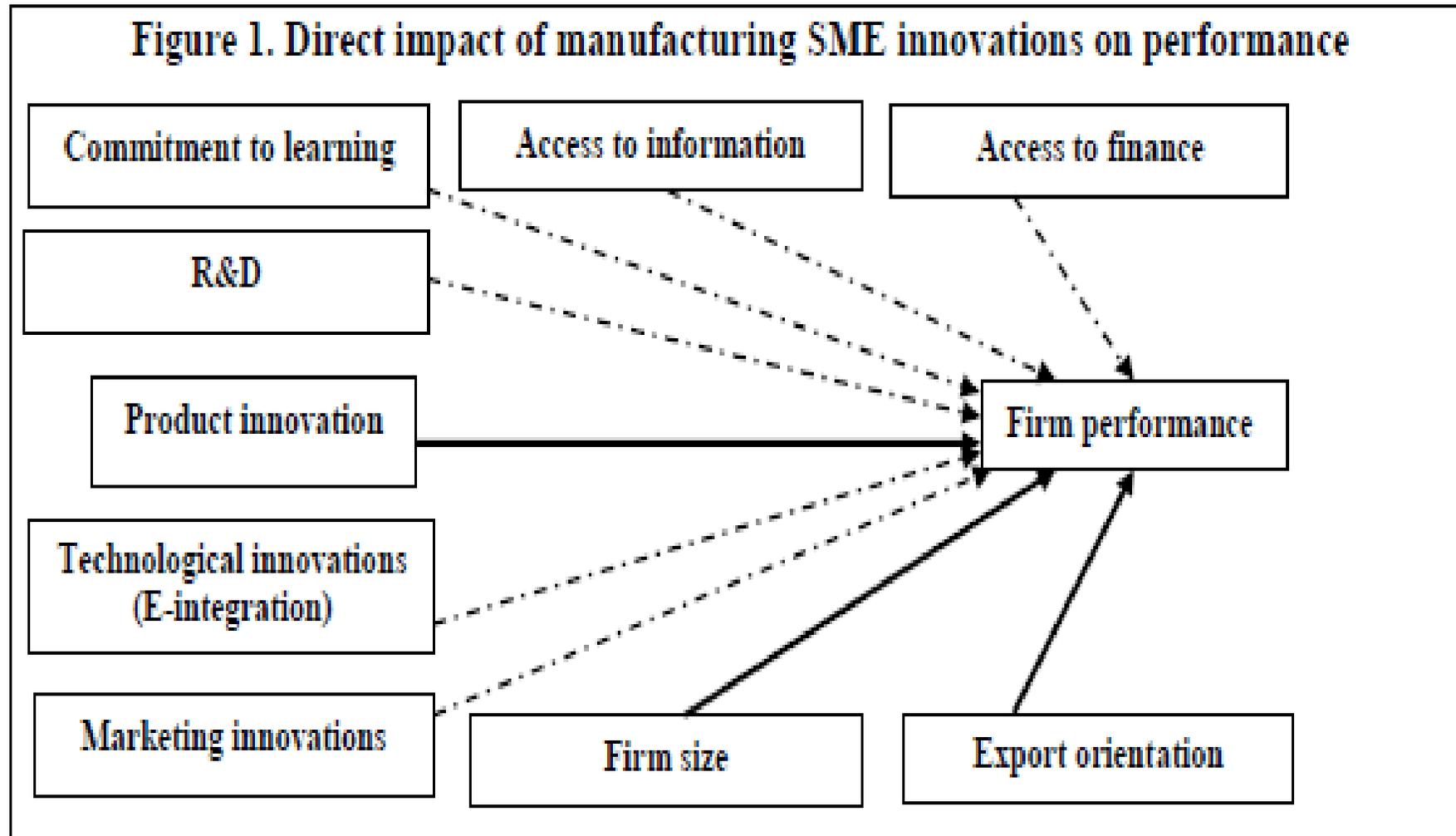
The EFA resulted in seven factors:

1. COMMITMENT TO LEARNING
2. PRODUCT INNOVATIONS
3. MARKETING INNOVATIONS
4. ACCESS TO INFORMATION
5. ACCESS TO FINANCE
6. TECHNOLOGICAL INNOVATIONS (e-integration of processes)
7. R&D

Two internal factors as control variables:

8. Export orientation, and
9. Firm size,
10. PERFORMANCE was measured by perceptual changes of four indicators in the last year: number of staff; revenues; profits; and market share.

Direct influences of SMEs innovations and other factors on performance



Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
A14_Export	————→	P1_Performance	,226***
B7_Size	————→	P1_Performance	,135***
F4_Information	————→	P1_Performance	,031
F5_Finance	————→	P1_Performance	,076
F2_Product	————→	P1_Performance	,181**
F6_Technological	————→	P1_Performance	-,030
F1_Learning	————→	P1_Performance	-,066
F3_Marketing	————→	P1_Performance	,074
F7_R_D	————→	P1_Performance	-,051

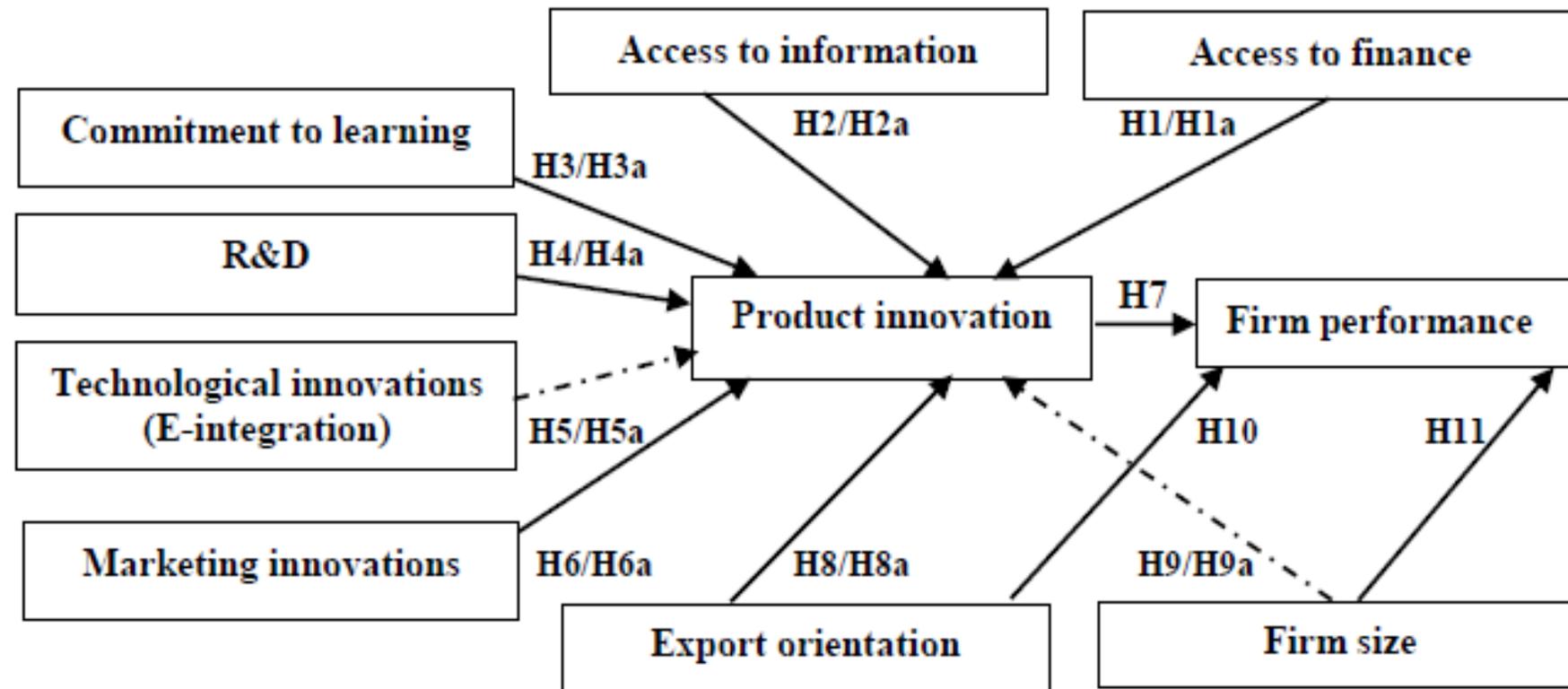
Results of path analysis

			Estimate	Hypotheses
F4_Access to information	→	F2_Product innovations	.104**	H1 - supported
F5_Access to finance	→	F2_Product innovations	.088**	H2 - supported
F6_Technological innovations	→	F2_Product innovations	.067 (n.s.)	H3 - non supported
F1_Commitment to learning	→	F2_Product innovations	.193***	H4 - supported
F3_Marketing innovations	→	F2_Product innovations	.090**	H5 - supported
F7_R&D	→	F2_Product innovations	.303***	H6 - supported
A14_Export orientation	→	F2_Product innovations	.204***	H8 - supported
B7_Size	→	F2_Product innovations	-.153***	H9 - partially supported
F2_Product innovations	→	P1_Performance	.171***	H7 - supported
A14_Export orientation	→	P1_Performance	.201***	H10 - supported
B7_Size	→	P1_Performance	.209***	H11- supported

The model explains about **29% of the variance of product innovations** and **18% of the variance of performance**

The true model

Figure 1. Conceptual model of manufacturing SME innovations and performance with the mediating role of product innovation



Mediating role of product innovations

Multiple indirect effects: (All - Default model)

Parameter		Estimate	SE	Mean	Lower	Upper	P
Estimand 1	H1*H7 = H1a - supported	.028	.013	.028	.008	.053	.028
Estimand 2	H2*H7 = H2a - supported	.026	.016	.027	.007	.065	.010
Estimand 3	H3*H7 = H3a - supported	.022	.013	.021	.005	.049	.033
Estimand 4	H4*H7 = H4a - supported	.057	.018	.057	.031	.091	.007
Estimand 5	H5*H7 = H5a - supported	.033	.019	.032	.008	.073	.028
Estimand 6	H6*H7 = H6a - supported	.088	.025	.087	.049	.132	.008
Estimand 7	H8*H7 = H8a - supported	.043	.014	.043	.023	.070	.009
Estimand 8	H9*H7 = H9a - partially supported	-.012	.005	-.012	-.022	-.005	.010

Conclusions

- Product innovations *mediate fully* the effects of process innovations and external factors. These innovations and factors contribute positively and significantly, but *indirectly* (through product innovations) to the SME performance
- Product innovations *mediate partially* the effects of two internal factors (firm export orientation and firm size) on performance
- The last two factors have also the strongest total effects on performance, which means that the firm **resources and export capabilities are more important** for performance than innovations.

Implications for managers and limitations

- *Implications for managers*: before introducing new products, they need to take into account the respective process requirements. These changes however assume certain costs, which do not translate directly in better performance. These activities can contribute to the performance indirectly (through the success of the new or improved products).
- The *limitations* of this research are related, first, to the subjective evaluations of innovations and performance by interviewed managers; second, to the responses of only one manager in each SME; and third, to the cross-sectional data 18 manufacturing sub-sectors, which prevents inferences about cause and effects