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REFERENCES

- Aiken, L. S., West, S. G., & Reno, R. R. 1991. *Multiple Regression: Testing and Interpreting Interactions*: Sage.
- Alterowitz, R. 1988. *New Corporate Ventures*. New York: Wiley.
- Amabile, T. M. 1983. The social psychology of creativity: A componential conceptualization. *Journal of personality and social psychology*, 45(2): 357.
- Andersen, T., & Knudsen, T. 2006. Organizational Structure and Strategy Process: Effective Strategy Formation under Uncertainty, *Copenhagen Conference on Strategic Management (CCSM)*. Copenhagen.
- Andersen, T. J. 2000. Strategic planning, autonomous actions and corporate performance. *Long Range Planning*, 33(2): 184-200.
- Andersen, T. J. 2004. Integrating Decentralized Strategy Making and Strategic Planning Processes in Dynamic Environments. *Journal of Management Studies*, 41(8): 1271-1299.
- Andersen, T. J., & Nielsen, B. B. 2007. *The effective ambidextrous organization: a model of integrative strategy making processes*. Paper presented at the Strategic Management Society; 27th Annual International Conference.
- Andriopoulos, C., & Lewis, M. W. 2009. Exploitation-exploration tensions and organizational ambidexterity: Managing paradoxes of innovation. *Organization Science*, 20(4): 696-717.
- Ansoff, H. I. 1967. *Evolution of Corporate Planning*: Stanford Research Institute.
- Axtell, C. M., & Parker, S. K. 2003. Promoting role breadth self-efficacy through involvement, work redesign and training. *Human Relations*, 56(1): 113-131.
- Baker, T., & Nelson, R. E. 2005. Creating something from nothing: Resource construction through entrepreneurial bricolage. *Administrative science quarterly*, 50(3): 329-366.
- Baltes, G., & Gard, J. 2010a. Living Labs as intermediary in open innovation: On the role of entrepreneurial support, *16th International Conference on Concurrent Enterprising*. Lugano, Switzerland.
- Baltes, G., & Gard, J. 2010b. Strategische Führungssysteme für Intermediäre der Open Innovation - Konzeption und Fallstudie, *J. Gausemeier (Ed.), 6. Symposium für Vorschau und Technologieplanung*. Berlin.
- Baltes, G., Gard, J., & Mogck, A. 2011. Vertriebskonfiguratoren erfolgreich Implementieren - Steigerung der Vertriebseffizienz durch den Einsatz von Produktkonfiguratoren. *Horizonte*, 37(03).

- Baltes, G., Gard, J., & Sticksel, P. 2010. Strategische Steuerung von Wissensarbeit – Fallstudie einer Living Lab Innovation. *Horizonte*, 35(3).
- Bantel, K. A. 1998. Technology-based, “adolescent” firm configurations: strategy identification, context, and performance. *Journal of Business Venturing*, 13(3): 205-230.
- Barney, J. 1991. Firm resources and sustained competitive advantage. *Journal of management*, 17(1): 99-120.
- Bartlett, C. A., & Ghoshal, S. 1999. *Managing across borders: The transnational solution*: Taylor & Francis.
- Becker, M. C. 2004. Organizational routines: a review of the literature. *Industrial and corporate change*, 13(4): 643-678.
- Benner, M. J., & Tushman, M. 2002. Process management and technological innovation: A longitudinal study of the photography and paint industries. *Administrative Science Quarterly*, 47(4): 676-707.
- Benner, M. J., & Tushman, M. L. 2003. Exploitation, exploration, and process management: The productivity dilemma revisited. *Academy of Management Review*, 28(2): 238-256.
- Birkinshaw, J. 1997. Entrepreneurship in multinational corporations: The characteristics of subsidiary initiatives. *Strategic Management Journal*, 18(3): 207-229.
- Birkinshaw, J. 2005. The secret diary of corporate venturing. *Business Strategy Review*, 16(2): 19-24.
- Birkinshaw, J., & Hill, S. A. 2005. Corporate Venturing Units: Vehicles for Strategic Success in the New Europe. *Organizational Dynamics*, 34(3): 247-257.
- Birkinshaw, J., & Hood, N. 1998. *Multinational Corporate Evolution and Subsidiary Development*: Palgrave Macmillan.
- Birkinshaw, J., van Basten Batenburg, R., & Murray, G. 2002. Venturing to succeed. *Business Strategy Review*, 13(4): 10-17.
- Biron, M., & Bamberger, P. 2010. The impact of structural empowerment on individual well-being and performance: Taking agent preferences, self-efficacy and operational constraints into account. *Human Relations*, 63(2): 163-191.
- Block, Z. 1989. Damage control for new corporate ventures. *Journal of Business Strategy*, 10(2): 22-28.
- Block, Z., & MacMillan, I. C. 1993. *Corporate venturing creating new businesses within the firm*. Boston, Mass.: Harvard Business School Press.
- Bluhm, D. J., Harman, W., Lee, T. W., & Mitchell, T. R. 2011. Qualitative research in management: a decade of progress. *Journal of Management Studies*, 48(8): 1866-1891.

- Bosma, N., Van Praag, M., Thurik, R., & De Wit, G. 2004. The value of human and social capital investments for the business performance of startups. *Small Business Economics*, 23(3): 227-236.
- Bouchard, V. 2002. Corporate Entrepreneurship: Lessons from the field, blind spots and beyond. *European Entrepreneurial Learning: Cahiers de Recherche d'E.M.LYON*, 2002(8).
- Bower, J. L. 1986. *Managing the resource allocation process : a study of corporate planning and investment*. Boston, Mass.: Harvard Business School Press.
- Boyle, T. A., Kumar, U., & Kumar, V. 2005. Organizational contextual determinants of cross-functional NPD team support. *Team Performance Management*, 11(1-2): 27-39.
- Brazeal, D. 1993. Organizing for internally developed corporate ventures. *Journal of Business Venturing*, 8(1): 75-90.
- Breaugh, J. 1985. The Measurement of Work Autonomy. *Human Relations*, 38(6): 551-570.
- Breaugh, J. 1999. Further Investigation of the Work Autonomy Scales: Two Studies. *Journal of Business and Psychology*, 13(3): 357-373.
- Briody, E. K., Cavusgil, S. T., & Miller, S. R. 2004. Turning three sides into a Delta at General Motors: Enhancing partnership integration on corporate ventures. *Long Range Planning*, 37(5): 421-434.
- Brock, D. 2003. Autonomy of individuals and organizations: Towards a strategy research agenda. *International Journal of Business and Economics*, 2: 57-73.
- Brown, S. L., & Eisenhardt, K. M. 1995. Product development: Past research, present findings, and future directions. *Academy of management review*, 20(2): 343-378.
- Brown, T. A. 2015. *Confirmatory factor analysis for applied research*: Guilford Publications.
- Bruining, H., & Wright, M. 2002. Entrepreneurial orientation in management buy-outs and the contribution of venture capital. *Venture Capital: An International Journal of Entrepreneurial Finance*, 4(2): 147-168.
- Bruining, J. 1992. *Performance improvement after management buy-out*. Unpublished Ph.D. Thesis Erasmus University, Rotterdam
- Brush, C. G., & Vanderwerf, P. A. 1992. A comparison of methods and sources for obtaining estimates of new venture performance. *Journal of Business Venturing*, 7(2): 157-170.
- Burgelman, R. 1983. A Model of the Interaction of Strategic Behavior, Corporate Context, and the Concept of Strategy. *The Academy of Management Review*, 8(1): 61-70.
- Burgelman, R. 1996. A process model of strategic business exit: Implications for an evolutionary perspective on strategy. *Strategic Management Journal*, 17(S1): 193-214.
- Burgelman, R., & Grove, A. 1996. Strategic Dissonance. *California Management Review*, 38(2): 8-28.

- Burgelman, R., & Grove, A. 2007. Let chaos reign, then rein in chaos—repeatedly: Managing strategic dynamics for corporate longevity. *Strategic Management Journal*, 28(10): 965-979.
- Burgers, J., & Jansen, J. 2008. Organizational Ambidexterity and Corporate Entrepreneurship: The Differential Effects on Venturing, Innovation and Renewal Processes. *Frontiers of Entrepreneurship Research*, 28(19): 1-16.
- Burgers, J., Jansen, J., Van den Bosch, F. A. J., & Volberda, H. W. 2009. Structural differentiation and corporate venturing: The moderating role of formal and informal integration mechanisms. *Journal of Business Venturing*, 24(3): 206-220.
- Burns, T., & Stalker, G. 1961. *The Management of Innovation*. London: Tavistock Publications.
- Campbell, A., Goold, M., & Alexander, M. 1995a. Corporate strategy: The quest for parenting advantage. *Harvard Business Review*, 73: 120-120.
- Campbell, A., Goold, M., & Alexander, M. 1995b. The value of the parent company. *California Management Review*, 38(1): 79-97.
- Carlile, P. R. 2004. Transferring, translating, and transforming: An integrative framework for managing knowledge across boundaries. *Organization Science*, 15(5): 555-568.
- Chandler, G. N., & Hanks, S. H. 1993. Measuring the performance of emerging businesses: A validation study. *Journal of Business Venturing*, 8(5): 391-408.
- Christensen, C. 1997. *The innovator's dilemma: when new technologies cause great firms to fail*. Harvard Business Press.
- Christensen, K. 2004. A classification of the corporate entrepreneurship umbrella: labels and perspectives. *International Journal of Management and Enterprise Development*, 1(4): 301-315.
- Clark, K. B., & Fujimoto, T. 1991. *Product development performance: Strategy, organization, and management in the world auto industry*. Harvard Business Press.
- Cohen, M. D., Burkhart, R., Dosi, G., Egidi, M., Marengo, L., Warglien, M., & Winter, S. 1996. Routines and other recurring action patterns of organizations: contemporary research issues. *Industrial and corporate change*, 5(3): 653-698.
- Cohen, M. D., March, J. G., & Olsen, J. P. 1972. A garbage can model of organizational choice. *Administrative science quarterly*: 1-25.
- Commission, E. 2003. EU-Empfehlung (2003/361/EG) - Empfehlung der Kommission vom 6. Mai 2003 betreffend der Definition der Kleinstunternehmen sowie der kleinen und mittleren Unternehmen.
- Covin, J., Garrett, R. P., Kuratko, D. F., & Shepherd, D. A. 2010. Navigating in the new business domains: Internal corporate ventures as exploratory vehicles. *Academy of Management Annual Meeting Proceedings*: 1-6.

-
- Covin, J., & Miles, M. P. 2007. Strategic Use of Corporate Venturing. *Entrepreneurship: Theory & Practice*, 31(2): 183-207.
- Covin, J., Slevin, D. P., & Covin, T. J. 1990. Content and performance of growth-seeking strategies: A comparison of small firms in high-and low technology industries. *Journal of Business Venturing*, 5(6): 391-412.
- Crockett, D. R., McGee, J. E., & Payne, G. T. 2013. Employing new business divisions to exploit disruptive innovations: The interplay between characteristics of the corporation and those of the venture management team. *Journal of Product Innovation Management*, 30(5): 856-879.
- Crockett, D. R., Payne, T. G., & McGee, J. E. 2007. Exploitation of Entrepreneurial Opportunities in the Corporation: An Exploration of Functional-Level Support, Decision Autonomy, and Performance. *Entrepreneurial Strategic Processes, Advances in Entrepreneurship, Firm Emergence and Growth*, Vol. 10: 33 - 63.
- Cronbach, L. J. 1951. Coefficient alpha and the internal structure of tests. *psychometrika*, 16(3): 297-334.
- D'Aveni, R. A. 1994. *Hypercompetition: Managing the Dynamics of Strategic Maneuvering*. New York: Free Press.
- Deci, E. L., & Ryan, R. M. 2000. The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological inquiry*, 11(4): 227-268.
- Delmar, F., & Shane, S. 2006. Does experience matter? The effect of founding team experience on the survival and sales of newly founded ventures. *Strategic Organization*, 4(3): 215-247.
- Dess, G., Lumpkin, G. T., & McGee, J. 1999. Linking Corporate Entrepreneurship to Strategy, Structure, and Process: Suggested Research Directions. *Entrepreneurship: Theory and Practice*, 23: 85-98.
- Dess, G., & Robinson, R. B. 2006. Measuring organizational performance in the absence of objective measures: the case of the privately-held firm and conglomerate business unit. *Strategic Management Journal*, 5(3): 265-273.
- Dougherty, D. 1995. Managing Your Core Incompetencies for Corporate Venturing. *Entrepreneurship: Theory & Practice*, 19(3): 113-135.
- Duncan, R. B. 1976. The Ambidextrous Organization: Designing Dual Structures for Innovation. In K. R. H., L. R. Pondy, & D. Slevin (Eds.), *The management of organization design: Strategies and implementation*: 167-188. New York: North Holland.
- Dushnitsky, G., & Lenox, M. J. 2006. When does corporate venture capital investment create firm value? *Journal of Business Venturing*, 21(6): 753-772.
- Edwards, C. C. 2013. *TI-84 Plus Graphing Calculator for Dummies*: John Wiley & Sons.

- Edwards, R., Ahmad, A., & Moss, S. 2002. Subsidiary autonomy: The case of multinational subsidiaries in Malaysia. *Journal of International Business Studies*: 183-191.
- Eisenhardt, K. M., & Martin, J. A. 2000. Dynamic capabilities: what are they? *Strategic Management Journal*, 21(10-11): 1105-1121.
- Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. 1999. Evaluating the use of exploratory factor analysis in psychological research. *Psychological methods*, 4(3): 272.
- Feldman, S. P. 1989. The broken wheel: the inseparability of autonomy and control in innovation within organizations. *Journal of Management Studies*, 26(2): 83-102.
- Field, A. 2013. *Discovering statistics using IBM SPSS statistics*. London: Sage.
- Fincham, R. 2006. Knowledge work as occupational strategy: comparing IT and management consulting. *New Technology, Work and Employment*, 21(1): 16-28.
- Floyd, S., & Lane, P. 2000. Strategizing throughout the Organization: Managing Role Conflict in Strategic Renewal. *The Academy of Management Review*, 25(1): 154-177.
- Floyd, S., & Wooldridge, B. 1992. Middle management involvement in strategy and its association with strategic type: A research note. *Strategic Management Journal*, 13(S1): 153-167.
- Fritsch, M., & Schroeter, A. 2011. Why does the effect of new business formation differ across regions? *Small Business Economics*, 36(4): 383-400.
- Galbraith, J. R. 1973. *Designing complex organizations*: Addison-Wesley Longman Publishing Co., Inc.
- Gard, J., Baltes, G., Andersen, T. J., & Katzy, B. Forthcoming. Corporate venture management in small-medium sized enterprise: The roles and effects of autonomy and corporate policy. *Journal of Business Venturing*.
- Gard, J., Baltes, G., & Katzy, B. 2012a. *The impact of autonomy on growth: Semi-autonomous entrepreneurial teams in the context of established high-tech firms*. Paper presented at the NITIM - Networks, Information Technology & Innovation Management Munich.
- Gard, J., Baltes, G., & Katzy, B. 2012b. *Towards a concept of autonomy for teams developing a new business within existing companies*. Paper presented at the 18th International ICE Conference on Engineering, Technology and Innovation (ICE)
- Gard, J., Baltes, G., & Katzy, B. 2013a. An Integrating Model of Autonomy in Corporate Entrepreneurship, *IEEE International Technology Management Conference & 19th ICE Conference*. The Hague.
- Gard, J., Baltes, G., & Katzy, B. 2013b. Managing autonomy of teams in Corporate Entrepreneurship – Evidence from small and medium firms, *22nd International Conference on Management of Technology (IAMOT)*. Porto Alegre, Brazil.

-
- Garnier, G. H. 1982. Context and Decision Making Autonomy in the Foreign Affiliates of US Multinational Corporations. *Academy of Management Journal*, 25(4): 893-908.
- Garrett, R. P., & Covin, J. G. 2013. Internal Corporate Venture Operations Independence and Performance: A Knowledge-Based Perspective. *Entrepreneurship Theory and Practice*.
- Garrett, R. P., & Neubaum, D. O. 2013. Top management support and Initial strategic assets: A dependency model for internal corporate venture performance. *Journal of Product Innovation Management*, 30(5): 896-915.
- Garvin, D. A. 2004. What every CEO should know about creating new businesses. *Harvard Business Review*, 82(7/8): 18-21.
- Gebert, D., Boerner, S., & Lanwehr, R. 2003. The Risks of Autonomy: Empirical Evidence for the Necessity of a Balance Management in Promoting Organizational Innovativeness. *Creativity & Innovation Management*, 12(1): 41-49.
- Gerwin, D., & Moffat, L. 1997. Withdrawal of Team Autonomy during Concurrent Engineering. *Management Science*, 43(9): 1275-1287.
- Ghoshal, S., & Nohria, N. 1989. Internal differentiation within multinational corporations. *Strategic management journal*, 10(4): 323-337.
- Gilbert, C. G. 2005. Unbundling the structure of inertia: Resource versus routine rigidity. *Academy of Management Journal*, 48(5): 741-763.
- Gilson, L. L., Mathieu, J. E., Shalley, C. E., & Ruddy, T. M. 2005. Creativity and standardization: complementary or conflicting drivers of team effectiveness? *Academy of Management Journal*, 48(3): 521-531.
- Gimeno, J., Folta, T. B., Cooper, A. C., & Woo, C. Y. 1997. Survival of the fittest? Entrepreneurial human capital and the persistence of underperforming firms. *Administrative Science Quarterly*: 750-783.
- Ginsberg, A., & Hay, M. 1994. Confronting the challenges of corporate entrepreneurship: Guidelines for venture managers. *European Management Journal*, 12(4): 382-389.
- Glaister, K. W., Husan, R., & Buckley, P. J. 2003. Decision-making Autonomy in UK International Equity Joint Ventures. *British Journal of Management*, 14(4): 305-322.
- Glaser, B. G. A., & Strauss, A. L. A. 1967. *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Hawthorne, NY: Aldine Publishing Company.
- Gliem, J. A., & Gliem, R. R. 2003. *Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales*.
- Gous, H., Gard, J., Baltes, G., Schutte, C., & Gerber, A. 2011. Business architecture for inter-organisational innovation networks: A case study comparison from South Africa and Germany, 2011 *17th International Conference on Concurrent Enterprising (ICE)*.

- Greiner, L. 1997. Evolution and Revolution as Organizations Grow: A company's past has clues for management that are critical to future success. *Family Business Review*, 10(4): 397-409.
- Gulowsen, J. 1972 A measure of work-group autonomy In L. E. Davis, & J. C. Taylor (Eds.), *Design of jobs*: 374-390. Penguin: Harmondsworth.
- Gupta, A. K., & Govindarajan, V. 2000. Knowledge flows within multinational corporations. *Strategic Management Journal*, 21(4): 473-496.
- Gupta, A. K., Smith, K. G., & Shalley, C. E. 2006. The interplay between exploration and exploitation. *Academy of Management Journal*, 49(4): 693-706.
- Hackman, J. R. 1990. Creating More Effective Work Groups in Organizations. In J. R. Hackman (Ed.), *Groups That Work (and Those That Don't)*: 479-504. San Francisco, CA: Jossey-Bass.
- Hackman, J. R. 2002. *Leading Teams: Setting the Stage for Great Performances*: Harvard Business School Press.
- Hackman, J. R., & Oldham, G. R. 1975a. Development of the Job Diagnostic Survey. *Journal of Applied Psychology*, 60(2): 159-170.
- Hackman, J. R., & Oldham, G. R. 1975b. Development of the job diagnostic survey. *Journal of Applied Psychology*, 60(2): 159.
- Hackman, J. R., & Oldham, G. R. 1976. Motivation through the design of work: Test of a theory. *Organizational behavior and human performance*, 16(2): 250-279.
- Hart, S. L. 1992. An Integrative Framework for Strategy-Making Processes. *The Academy of Management Review*, 17(2): 327-351.
- Harzing, A. W. K. 1999. *Managing the Mutinationals: An International Study of Control Mechanisms*: Edward Elgar Pub.
- Hauptman, O., & Hirji, K. K. 1999. Managing integration and coordination in cross-functional teams: an international study of Concurrent Engineering product development. *R&D Management*, 29(2): 179-192.
- Hayes, A. F. 2009. Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs*, 76(4): 408-420.
- He, Z.-L., & Wong, P.-K. 2004. Exploration vs. Exploitation: An Empirical Test of the Ambidexterity Hypothesis. *Organization Science*, 15(4): 481-494.
- Hedlund, G. 1979. *Autonomy of subsidiaries and formalization of headquarters-subsidiary relationships in Swedish MNCs*: Stockholm school of economics, Institute of international business.
- Helfat, C., & Peteraf, M. 2009. Understanding dynamic capabilities: progress along a developmental path. *Strategic Organization*, 7(1): 91.

- Hennessey, B. A., & Amabile, T. 2010. Creativity. *Annual Review of Psychology*, 61: 569-598.
- Henry, C. 2003. *Microfinance poverty assessment tool*: World bank publications.
- Hill, R. M., & Hlavacek, J. D. 1972. The Venture Team: A New Concept in Marketing Organization. *Journal of Marketing*, 36(3): 44-50.
- Hill, S., & Birkinshaw, J. 2012. Ambidexterity and Survival in Corporate Venture Units. *Journal of Management*, 40(7): 1899-1931.
- Hitt, M. A., Nixon, R. D., Hoskisson, R. F., & Kochhar, R. 1999. Corporate Entrepreneurship and Cross-Functional Fertilization: Activation, Process and Disintegration of a New Product Design Team. *Entrepreneurship: Theory & Practice*, 23(3): 145-167.
- Horn, J. L. 1965. A rationale and test for the number of factors in factor analysis. *Psychometrika*, 30(2): 179-185.
- Hornsby, J., Kuratko, D., & Zahra, S. 2002a. Middle managers' perception of the internal environment for corporate entrepreneurship: assessing a measurement scale. *Journal of Business Venturing*, 17(3): 253-273.
- Hornsby, J. S., Kuratko, D. F., & Zahra, S. A. 2002b. Middle managers' perception of the internal environment for corporate entrepreneurship: assessing a measurement scale. *Journal of Business Venturing*, 17(3): 253-273.
- Jansen, J. J., Tempelaar, M. P., Van den Bosch, F. A., & Volberda, H. W. 2009. Structural differentiation and ambidexterity: The mediating role of integration mechanisms. *Organization Science*, 20(4): 797-811.
- Johnson, K. L. 2012. The Role of Structural and Planning Autonomy in the Performance of Internal Corporate Ventures. *Journal of Small Business Management*, 50(3): 469-497.
- Jones, K. A., & Wilemon, D. L. 1973. Emerging patterns in new-venture management. *Management Review*, 62(2): 59.
- Junni, P., Sarala, R., Taras, V., & Tarba, S. 2013. Organizational Ambidexterity and Performance: A Meta-Analysis. *The Academy of Management Perspectives*, 27(4): 299-312.
- Kaiser, H. F. 1960. The application of electronic computers to factor analysis. *Educational and psychological measurement*, 20: 141-151.
- Kanter, R. 1985. Supporting innovation and venture development in established companies. *Journal of Business Venturing*, 1(1): 47-60.
- Kanter, R. 1989. *When Giants Learn to Dance*. New York: Touchstone.
- Katzy, B., Baltes, G., & Gard, J. 2012. Concurrent process coordination of new product development by Living Labs – an exploratory case study. *International Journal of Product Development*, 17(Nos. 1/2).

- Katzy, B. R., Baltes, G. H., & Gard, J. 2014. Concurrent process coordination of new product development by Living Labs-an exploratory case study. *International Journal of Product Development*, 17(1): 23-42.
- Klein, J. A. 1991. A Reexamination of Autonomy in Light of New Manufacturing Practices. *Human Relations*, 44(1): 21-38.
- Klepper, S. 2001. Employee startups in high-tech industries. *Industrial and Corporate Change*, 10(3): 639-674.
- Koenker, R., & Bassett Jr, G. 1982. Robust tests for heteroscedasticity based on regression quantiles. *Econometrica: Journal of the Econometric Society*: 43-61.
- Koufteros, X., Vonderembse, M., & Jayaram, J. 2005. Internal and external integration for product development: the contingency effects of uncertainty, equivocality, and platform strategy. *Decision Sciences*, 36(1): 97-133.
- Kuratko, D. 2010. Corporate Entrepreneurship: An Introduction and Research Review. In Z. Acs, & D. Audretsch (Eds.), *Handbook of Entrepreneurship Research*, Vol. 5: 129-163. New York: Springer.
- Kuratko, D., Covin, J. G., & Garrett, R. P. 2009. Corporate venturing: Insights from actual performance. *Business Horizons*, 52(5): 459-467.
- Kuratko, D., Ireland, R., Covin, J. G., & Hornsby, J. 2005. A Model of Middle-Level Managers' Entrepreneurial Behavior. *Entrepreneurship Theory and Practice*, 29(6): 699-716.
- Lanaj, K., Hollenbeck, J., Ilgen, D., Barnes, C., & Harmon, S. 2012. The double-edged sword of decentralized planning in multiteam systems. *Academy of Management Journal*, 56(3): 735-757.
- Langfred, C. W., & Moya, N. A. 2004. Effects of task autonomy on performance: an extended model considering motivational, informational, and structural mechanisms. *Journal of Applied Psychology*, 89(6): 934.
- Lavie, D., Stettner, U., & Tushman, M. L. 2010. Exploration and Exploitation Within and Across Organizations. *Academy of Management Annals*, 4(1): 109-155.
- Lawrence, P. R., & Lorsch, J. W. 1967. Differentiation and Integration in Complex Organizations. *Administrative Science Quarterly*, 12(1): 1-47.
- Ledesma, R. D., & Valero-Mora, P. 2007. Determining the number of factors to retain in EFA: An easy-to-use computer program for carrying out parallel analysis. *Practical Assessment, Research & Evaluation*, 12(2): 1-11.
- Leonard, D., & Sensiper, S. 1998. The role of tacit knowledge in group innovation. *California Management Review*, 40(3).
- Lepak, D. P., Takeuchi, R., & Snell, S. A. 2003. Employment flexibility and firm performance: Examining the interaction effects of employment mode, environmental dynamism, and technological intensity. *Journal of Management*, 29(5): 681-703.

-
- Levinthal, D. A., & March, J. G. 1993. The myopia of learning. *Strategic Management Journal*, 14(S2): 95-112.
- Li, D.-y., & Liu, J. 2014. Dynamic capabilities, environmental dynamism, and competitive advantage: Evidence from China. *Journal of Business Research*, 67(1): 2793-2799.
- Lubatkin, M. H., Simsek, Z., Ling, Y., & Veiga, J. F. 2006. Ambidexterity and performance in small-to medium-sized firms: The pivotal role of top management team behavioral integration. *Journal of Management*, 32(5): 646-672.
- Lumpkin, G. T., Coglisier, C. C., & Schneider, D. R. 2009. Understanding and Measuring Autonomy: An Entrepreneurial Orientation Perspective. *Entrepreneurship Theory and Practice*, 33(1): 47-69.
- Lumpkin, G. T., & Dess, G. G. 1996. Clarifying the Entrepreneurial Orientation Construct and Linking It to Performance. *The Academy of Management Review*, 21(1): 135-172.
- MacMillan, I., Block, Z., & Narasimha, P. 1986. Corporate venturing: alternatives, obstacles encountered, and experience effects. *Journal of Business Venturing*, 1(2): 177-191.
- Manolopoulos, D. 2006. The Concept of Autonomy in the Subsidiary Management Research. *Journal of Transnational Management*, 11(4): 45-62.
- March, J. 1991a. Exploration and exploitation in organizational learning. *Organization Science*, 2: 71-87.
- March, J. G. 1991b. Exploration and exploitation in organizational learning. *Organization Science*, 2(1): 71-87.
- McDonough, E. F. 2000. Investigation of Factors Contributing to the Success of Cross-Functional Teams. *Journal of Product Innovation Management*, 17(3): 221-235.
- McGrath, R. G. 1995. Advantage from adversity: Learning from disappointment in internal corporate ventures. *Journal of Business Venturing*, 10(2): 121-142.
- McGrath, R. G. 2001. Exploratory Learning, Innovative Capacity and Managerial Oversight. *The Academy of Management Journal*, 44(1): 118-131.
- McGrath, R. G., Keil, T., & Tukiainen, T. 2012. Extracting value from corporate venturing. *MIT Sloan Management Review*, 48(1).
- McGrath, R. G., & Kim, J. 2013. *Innovation, Strategy, and Hypercompetition*: Oxford University Press.
- Miller, D. 1987. The structural and environmental correlates of business strategy. *Strategic Management Journal*, 8: 55-76.
- Mintzberg, H. 1973. Strategy-Making in Three Modes. *California Management Review*, 16(2): 44-53.
- Mintzberg, H. 1978. Patterns in Strategy Formation. *Management Science*, 24(9): 934-948.

- Mintzberg, H. 1994. The Fall and Rise of Strategic Planning. *Harvard Business Review*, 72(1): 107-114.
- Mintzberg, H., & Waters, J. A. 1985. Of strategies, deliberate and emergent. *Strategic Management Journal*, 6(3): 257-272.
- Morris, M. H., Davis, D. L., & Allen, J. W. 1994. Fostering Corporate Entrepreneurship: Cross-Cultural Comparisons of the Importance of Individualism versus Collectivism. *Journal of International Business Studies*, 25(1): 65-89.
- Murphy, L. M., & Edwards, P. L. 2003. *Bridging the valley of death: Transitioning from public to private sector financing*: National Renewable Energy Laboratory.
- Newburry, W., & Zeira, Y. 1999. Autonomy and Effectiveness of Equity International Joint Ventures (EIJVs): An Analysis based on EIJVs in Hungary and Britain. *Journal of Management Studies*, 36(2): 263-285.
- Niemiec, C. P., Ryan, R. M., & Deci, E. L. 2010. Self-determination theory and the relation of autonomy to self-regulatory processes and personality development. In R. H. Hoyle (Ed.), *Handbook of personality and self-regulation*: 169–191: Wiley-Blackwell.
- Nonaka, I. 1988. Toward Middle-Up-Down Management: Accelerating Information Creation. *Sloan Management Review*, 29(3): 9-18.
- O'Reilly, C. A., & Tushman, M. L. 2004. The ambidextrous organization. *Harvard Business Review*, 82(4): 74-83.
- O'Reilly, C. A., & Tushman, M. L. 2013. Organizational ambidexterity: Past, present, and future. *The Academy of Management Perspectives*, 27(4): 324-338.
- O'Connor, B. P. 2000. SPSS and SAS programs for determining the number of components using parallel analysis and Velicer's MAP test. *Behavior research methods, instruments, & computers*, 32(3): 396-402.
- Oates, D. 1971. Diversification through venture management. *Management Review*, 60 (2): 64-66.
- Osborne, J. W. 2008. *Best practices in quantitative methods*. London: Sage.
- Ozgen, E., & Baron, R. A. 2007. Social sources of information in opportunity recognition: Effects of mentors, industry networks, and professional forums. *Journal of business venturing*, 22(2): 174-192.
- Pallant, J. 2010. SPSS Survival Manual 4th edition-A step by step guide to data analysis using the SPSS program. *Österrike: Allen & Unwin Book Publisher*.
- Pallant, J. 2013. *SPSS survival manual*: McGraw-Hill Education (UK).
- Parker, S. K. 1998. Enhancing role breadth self-efficacy: the roles of job enrichment and other organizational interventions. *Journal of Applied Psychology*, 83(6): 835.

- Parker, S. K. 2014. Beyond motivation: Job and work design for development, health, ambidexterity, and more. *Annual review of psychology*, 65: 661-691.
- Parker, S. K., & Sprigg, C. A. 1999. Minimizing strain and maximizing learning: The role of job demands, job control, and proactive personality. *Journal of Applied Psychology*, 84(6): 925-939.
- Patton, M. Q. 2002. *Qualitative evaluation and research methods*. London: SAGE.
- Penrose, E. T. 1959. *The Theory of the Growth of the Firm*. Blackwell.
- Perrow, C. 1967. A Framework for the Comparative Analysis of Organizations. *American Sociological Review*, 32(2): 194-208.
- Phan, P. H., Wright, M., Ucbasaran, D., & Tan, W.-L. 2009. Corporate entrepreneurship: Current research and future directions. *Journal of Business Venturing*, 24(3): 197-205.
- Pitelis, C. N. 2007. A behavioral resource-based view of the firm: the synergy of Cyert and March (1963) and Penrose (1959). *Organization Science*, 18(3): 478-490.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. 2003. Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5): 879.
- Popper, K. R. 1954. Degree of confirmation. *The British Journal for the Philosophy of Science*, 5(18): 143-149.
- Postawa, A. 2012. *Best Practice Guide on Sampling and Monitoring of Metals in Drinking Water*. Iwa Publishing.
- Pryce, G. 2002. Heteroscedasticity: Testing and correcting in SPSS. *University of Glasgow*.
- Quinn, J. 1985. Managing innovation: controlled chaos. *Harvard Business Review*, 63(3): 73-84.
- Raisch, S. 2008. Balanced structures: designing organizations for profitable growth. *Long Range Planning*, 41(5): 483-508.
- Raisch, S., & Birkinshaw, J. 2008. Organizational Ambidexterity: Antecedents, Outcomes, and Moderators. *Journal of Management*, 34(3): 375-409.
- Raisch, S., Birkinshaw, J., Probst, G., & Tushman, M. L. 2009. Organizational ambidexterity: Balancing exploitation and exploration for sustained performance. *Organization Science*, 20(4): 685-695.
- Rauch, A., Wiklund, J., Lumpkin, G. T., & Frese, M. 2009. Entrepreneurial Orientation and Business Performance: An Assessment of Past Research and Suggestions for the Future. *Entrepreneurship Theory and Practice*, 33(3): 761-787.
- Rosen, M. 1991. Coming to Terms with the Field: Understanding and Doing Organizational Ethnography*. *Journal of Management Studies*, 28(1): 1-24.

- Sathe, V. 1985. Managing an Entrepreneurial Dilemma: Nurturing Entrepreneurship and Control in Large Corporations. *Frontiers in Entrepreneurial Research*: 636-657.
- Sathe, V. 1989. Fostering Entrepreneurship in The Large, Diversified Firm. *Organizational Dynamics*, 18(1): 20.
- Schuler, R. 1986. Fostering and facilitating entrepreneurship in organizations: Implications for organization structure and human resource management practices. *Human Resource Management*, 25(4): 607-629.
- Shalley, C. E., & Gilson, L. L. 2004. What leaders need to know: A review of social and contextual factors that can foster or hinder creativity. *The Leadership Quarterly*, 15(1): 33-53.
- Shane, S., & Stuart, T. 2002. Organizational endowments and the performance of university start-ups. *Management Science*, 48(1): 154-170.
- Simon, M., & Houghton, S. M. 1999. Succeeding at Internal Corporate Venturing: roles needed to balance autonomy and control. *Journal of Applied Management Studies*, 8(2): 145.
- Simsek, Z., & Heavey, C. 2011. The mediating role of knowledge-based capital for corporate entrepreneurship effects on performance: A study of small- to medium-sized firms. *Strategic Entrepreneurship Journal*, 5(1): 81-100.
- Sobh, T. M. 2008. *Advances in Computer and Information Sciences and Engineering*: Springer Science & Business Media.
- Sorrentino, M., & Williams, M. L. 1995. Relatedness and corporate venturing: Does it really matter? *Journal of Business Venturing*, 10(1): 59-73.
- Spector, P. E. 1986. Perceived Control by Employees: A Meta-Analysis of Studies Concerning Autonomy and Participation at Work. *Human Relations*, 39(11): 1005-1016.
- Stopford, J., & Baden-Fuller, C. 1994. Creating corporate entrepreneurship. *Strategic Management Journal*, 15(7): 521-536.
- Strauss, A., & Corbin, J. 1994. Grounded theory methodology. *Handbook of qualitative research*: 273-285.
- Strehle, F., Katzy, B. R., & Davila, T. 2010. Learning capabilities and the growth of technology-based new ventures. *International Journal of Technology Management*, 52(1): 26-45.
- Strehle, F. T. 2006. *Dynamic Capabilities and the Growth of Technology-Based New Ventures*. Leiden University The Netherlands.
- Susman, G. I., & Dean, J. W. 1992. Development of a model for predicting design for manufacturability effectiveness. *Integrating design and manufacturing for competitive advantage*: 207-227.
- Swanson, D. A., & Tayman, J. 2012. *Subnational population estimates*: Springer Science & Business Media.

-
- Tabachnick, B. G., & Fidell, L. S. 2007. *Using Multivariate Statistics*: Pearson Education, Limited.
- Tam, C., Thomas, K., & Zhang, H. 2007. *Decision making and operations research techniques for construction management*: City University of HK Press.
- Taylor, M. P. 1999. Survival of the fittest? An analysis of self-employment duration in Britain. *The Economic Journal*, 109(454): 140-155.
- Teece, D. 2012. Dynamic capabilities: routines versus entrepreneurial action. *Journal of Management Studies*, 49(8): 1395-1401.
- Teece, D., & Pisano, G. 1994. The Dynamic Capabilities of Firms: an Introduction. *Industrial and Corporate Change*, 3(3): 537-556.
- Thompson, J. 1966. *Organizations in Action: Social Science Administration Theory*. New York: McGraw-Hill.
- Thompson, J. 1967. *Organizations in action: Social science bases in administrative behavior*. New York: McGraw-Hill.
- Thornhill, S., & Amit, R. 2000. A dynamic perspective of internal fit in corporate venturing. *Journal of Business Venturing*, 16: 25-50.
- Turner, B. A. 1983. The use of grounded theory for the qualitative analysis of organizational behaviour. *Journal of Management Studies*, 20(3): 333-348.
- Unsworth, K. L., & Clegg, C. W. 2010. Why do employees undertake creative action? *Journal of Occupational and Organizational Psychology*, 83(1): 77-99.
- Van Praag, C. M. 2003. Business survival and success of young small business owners. *Small Business Economics*, 21(1): 1-17.
- Venkatraman, N., & Ramanujam, V. 1986. Measurement of business performance in strategy research: a comparison of approaches. *Academy of Management Review*, 11(4): 801-814.
- Volberda, H. W., Baden-Fuller, C., & Van den Bosch, F. A. J. 2001. Mastering Strategic Renewal: Mobilising Renewal Journeys in Multi-unit Firms. *Long Range Planning*, 34(2): 159-178.
- Volmer, J., Spurk, D., & Niessen, C. 2012. Leader–member exchange (LMX), job autonomy, and creative work involvement. *The Leadership Quarterly*, 23(3): 456-465.
- Wang, A. C., & Cheng, B. S. 2010. When does benevolent leadership lead to creativity? The moderating role of creative role identity and job autonomy. *Journal of Organizational Behavior*, 31(1): 106-121.
- Webster, A. 2013. *Introductory Regression Analysis: With Computer Application for Business and Economics*: Routledge.

- Weinzimmer, L. G., & Nystrom, P. C. 2015. The search for opportunities by small business owners. *Journal of Small Business Strategy*, 7(3): 1-14.
- Wernerfelt, B. 1984. A resource-based view of the firm. *Strategic Management Journal*, 5(2): 171-180.
- Yin, R. K. 2009. *Case Study Research: Design and Methods*: Sage Publications.
- Zahra, S., & Hayton, J. 2008. The effect of international venturing on firm performance: The moderating influence of absorptive capacity. *Journal of Business Venturing*, 23(2): 195-220.
- Zhang, X., & Bartol, K. M. 2010. Linking empowering leadership and employee creativity: The influence of psychological empowerment, intrinsic motivation, and creative process engagement. *Academy of Management Journal*, 53(1): 107-128.
- Zwick, W. R., & Velicer, W. F. 1986. Comparison of five rules for determining the number of components to retain. *Psychological Bulletin*, 99(3): 432.

APPENDICES

The list of Appendices consists of sixteen parts as given below.

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APPENDIX A1: FIRST SERIES OF INTERVIEWS FOR THE CASE STUDY RESEARCH

The table below shows the first series of interviews that was conducted for the research outlined in Chapter 3. Interviews were conducted with six corporate managers in six companies in three industries (Information Technology, Automotive Supplier and Photovoltaic Industry). The date of the interviews are given in the last column.

Company	Interviewee	Industry	Date
Company 1	Corporate Manager	Information Technology	27.05.2011
Company 2	Corporate Manager	Automotive Supplier	06.09.2011
Company 3	Corporate Manager	Information Technology	24.05.2011
Company 4	Corporate Manager	Photovoltaic Industry	31.05.2011
Company 5	Corporate Manager	Information Technology	30.05.2011
Company 6	Corporate Manager	Information Technology	18.07.2011

APPENDIX A2: SECOND SERIES OF INTERVIEWS FOR THE CASE STUDY RESEARCH

The table below shows the second series of interviews that was conducted for the research outlined in Chapter 3. Interviews were conducted with three corporate managers and four venture managers in 5 companies. The companies 2, 3 4 and 5 are the same than in the first series of interviews. Company 7 was interviewed for the first time.

Company	Interviewee	Industry	Date
Company 2	Corporate Manager	Automotive Supplier	14.03.2012
Company 3	Venture Manager	Information Technology	07.09.2011
Company 4	Venture Manager	Photovoltaic	14.09.2011
Company 4	Venture Manager	Photovoltaic	02.11.2011
Company 5	Corporate Manager	Information Technology	06.09.2011
Company 5	Venture Manager	Information Technology	30.04.2012
Company 7	Corporate Manager	Information Technology	16.05.2012

APPENDIX B: LIST OF INTERVIEWS TO EVALUATE THE MEASURES

The table below shows the managers that were interviewed to evaluate the measurement scales as described in Chapter 4. The interviews are conducted with corporate managers and venture managers in six companies. The companies 4, 5 and 7 were already part of the interviews conducted for the Chapter 3 (see Appendices A1 and A2). The companies 8, 9 and 10 were interviewed for the first time. In company 7, interviews were conducted with two corporate managers (corporate manager 1 and corporate manager 2) and two venture managers (venture manager 1 and venture manager 2). The companies are part of four industries (Information Technology, Media Industry, Consulting Industry and Photovoltaic Industry). The date of the interviews are given in the last column.

Company	Evaluation Study	Industry	Date
Company 7	Venture Manager 1	Information Technology	16.05.2012
Company 5	Venture Manager	Information Technology	22.05.2012
Company 8	Corporate Manager	Media Industry	29.05.2012
Company 8	Venture Manager	Media Industry	29.05.2012
Company 9	Corporate Manager	Information Technology	30.05.2012
Company 10	Corporate Manager	Consulting Industry	30.05.2012
Company 7	Corporate Manager 1	Information Technology	31.05.2012
Company 7	Corporate Manager 2	Information Technology	31.05.2012
Company 7	Venture Manager 1	Information Technology	01.06.2012
Company 7	Venture Manager 2	Information Technology	01.06.2012
Company 4	Venture Manager	Photovoltaic Industry	26.06.2012
Company 5	Corporate Manager	Information Technology	26.06.2012

APPENDIX C: LIST OF CORPORATIONS

The following table lists the names of the companies that are part of the data set used for data analysis performed in the Chapters 5 and 6. The data refers to the survey answers given by the venture managers. In six cases (marked in italics), two answers were received from the same company. In all six cases, the survey was answered by different respondents. This is evaluated (a) by the entered access codes and (b) the email address that the respondents entered at the end of the questionnaire to receive the results of the study. The access code (individually created for each participant and thus linked to a specific name) in combination with the entered email address enabled us to clearly identify the participants.

1. 4C Group AG	22. <i>Devoteam Danet GmbH</i>
2. 7P ERP Consulting GmbH	23. <i>Devoteam Danet GmbH</i>
3. Abilis GmbH	24. d-fine GmbH
4. ABIT GmbH	25. ECG Erdgas-Consult GmbH
5. <i>Albat + Wirsam Software GmbH</i>	26. EFK Entwicklungsgesellschaft für Kommunikationssysteme mbH
6. <i>Albat + Wirsam Software GmbH</i>	27. Empalis Consulting GmbH
7. ALPHA Business Solutions AG	28. EXCON Externe Controlling Services GmbH
8. ams.Solution AG	29. FAS AG
9. Artundweise GmbH	30. Fun Communications GmbH
10. ASCAD GmbH	31. GFOS Gesellschaft für Organisationsberatung und Softwareentwicklung mbH
11. Avantgarde Business Solutions GmbH	32. goetzpartners Management Consultants GmbH
12. b+m Informatik AG	33. Hönigsberg & Düvel Datentechnik GmbH
13. Bauserve GmbH	34. Habel GmbH & Co. KG
14. BINSERV Gesellschaft für interaktive Konzepte und neue Medien mbH	35. HGV Hanseatische Gesellschaft für Verlagsservice mbH
15. Binserv GmbH	36. IKOR Management- und Systemberatung GmbH
16. CAS Software AG	37. Incadea GmbH
17. CGI Deutschland Ltd. & Co. KG	38. Interbrand Zintzmeyer & Lux GmbH
18. COC AG	39. iTEC Services GmbH
19. Consileon Business Consultancy GmbH	
20. CTI Consulting AG	
21. DAKOSY Datenkommunikationssystem AG	

CONTINUING THE LIST OF CORPORATIONS

40. iteratec GmbH	62. prevero AG
41. ITZ Informationstechnologie GmbH	63. PRION GmbH
42. iXOS Software AG	64. PROFI Engineering Systems AG
43. J&M Management Consulting GmbH	65. realtime AG
44. Janz IT AG	66. Renostar GmbH
45. KCS.net Deutschland GmbH	67. Sachsen DV Betriebs- und Servicegesellschaft mbH
46. <i>Kerkhoff Consulting GmbH</i>	68. Sage bäurer GmbH
47. <i>Kloepfel Consulting GmbH</i>	69. SanData Solutions GmbH
48. Koch Media GmbH	70. Schema Consulting GmbH
49. Korn Ferry International GmbH	71. <i>Schleupen AG</i>
50. <i>KWP team HR GmbH</i>	72. <i>Schleupen AG</i>
51. <i>KWP team HR GmbH</i>	73. SEAL Systems AG
52. matrix technology AG	74. secunet Security Networks AG
53. Miebach Consulting GmbH	75. SimPlan AG
54. Moser GmbH & Co. KG	76. Star Cooperation GmbH
55. Namics (Deutschland) GmbH	77. Tagueri AG
56. ODAV AG Gesellschaft für Informatik und Telekommunikation	78. Telecomputer Gesellschaft für Datenverarbeitung mbH
57. OPITZ CONSULTING München GmbH	79. arxes-tolina GmbH
58. ORBIS AG	80. TriFinance GmbH
59. PanDacom Networking AG	81. TTS Training GmbH
60. parameta Projektberatung GmbH & Co. KG	82. TXS GmbH
61. pit-cup GmbH	83. UBH Software & Engineering GmbH
	84. <i>VEDA GmbH</i>
	85. <i>VEDA GmbH</i>
	86. Weiss IT Solutions GmbH
	87. WERBAS AG

APPENDIX D1: INVITATION E-MAIL

Appendix D1 provides the invitation email that was send to the participants of the study. The invitation introduces the study, highlights the benefits for participants, defines corporate ventures, provides the link that directs to the questionnaire and provides the code to access it.

Sehr geehrter Damen und Herren,

der Aufbau neuer Geschäftsfelder ist für mittelständische, deutsche IT- und Beratungsdienstleister im globalen Wettbewerb existentiell. Wie diese Fähigkeit verbessert werden kann – das untersuchen die Hochschule Konstanz und die Universität Leiden. Auftraggeber ist das Bundesministerium für Bildung und Forschung (BMBF).

- Wir laden Sie ein sich an unserer Untersuchung zu beteiligen. Als Gegenleistung bieten wir Ihnen:
- Die Studienergebnisse, die das optimale Maß an Autonomie für den Geschäftsaufbau zeigen
- Eine individuelle Analyse der Situation Ihres Unternehmens
- Ein Benchmark mit dem „Best in Class“ deutscher IT- und Beratungsdienstleiter
- Ermäßigte Teilnehmergebühren für einen internationalen Expertenworkshop in Den Haag

Eine Einladung zu einem exklusiven Roundtable in München mit Geschäftsführern namhafter deutscher Unternehmen des Mittelstandes

Aktuelle Untersuchungen zeigen, dass neue Geschäftsfelder im Mittelstand erfolgreich durch teilautonome Teams aufgebaut werden können. Diese Teams werden zu Beginn oftmals provisorisch besetzt, mit der Aufgabe eine Geschäftsidee zu prüfen und weiterzuentwickeln. Im Laufe des Projekts etablierten sich daraus oftmals Business Units mit zusätzlichem Wachstumspotential. Je nachdem in welcher Phase sich die Geschäftsentwicklung befindet, benötigen diese Teams unterschiedlich stark ausgeprägte Autonomie.

In dieser Studie untersuchen wir, welche Art von Autonomie in welchem Maß optimal für die Geschäftsentwicklung in den einzelnen Reifephasen ist.

Hierzu bitten wir Sie um Ihr Expertenwissen und 15-20 Minuten Ihrer Zeit.

Kopieren Sie diesen Sicherheitscode **BAFsyUfV** und beginnen Sie unter folgendem Link mit der Umfrage:

https://qtrial.qualtrics.com/SE/?SID=SV_3eXPj6dvw1Zhr

Ihre Angaben werden selbstverständlich vertraulich behandelt und anonymisiert. Für Rückfragen stehen wir Ihnen jederzeit gerne zur Verfügung. Sie erreichen uns per e-mail unter jeromegard@htwg-konstanz.de oder telefonisch unter +49 7531 206 412.

Mit freundlichen Grüßen

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APPENDIX D2: COVER LETTER

Appendix D2 shows the start page of the survey. It defines the focus of the study, defines corporate ventures and the challenge to manage them successfully and highlights the benefits for participants.

 HOCHSCHULE KONSTANZ TECHNIK, WIRTSCHAFT UND GESTALTUNG	 Universiteit Leiden	 Bundesministerium für Bildung und Forschung
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Liebe/r Teilnehmer/in,

die Hochschule Konstanz (HWTG) führt gemeinsam mit der Universität Leiden (Niederlande) eine vom Bundesministerium für Bildung und Forschung (BMBF) unterstützte Studie durch. Untersucht werden soll die Frage, wie mittelständische Unternehmen der IT-Branche (in Deutschland) durch den Aufbau neuer Geschäftsfelder nachhaltig Wachstum erzeugen.

Es hat sich gezeigt, dass ein erfolgreicher Weg für den Mittelstand darin besteht, neue Geschäftsfelder durch teilautonome Unternehmerteams aufzubauen. Diese Teams haben beispielsweise die Aufgabe neue Kunden zu akquirieren, erste Projekte durchzuführen, Marketingkonzepte und Vertriebsstrategien zu entwickeln. Aus den anfangs oftmals provisorisch zusammengestellten Teams entwickeln sich nicht selten eigenständige Business Units mit zusätzlichem Wachstumspotential.

Die Herausforderung besteht für das Management nun darin,

- a) diese Teams mit ausreichend Handlungs- und Entscheidungsautonomie auszustatten ohne die Kontrolle über die Stoßrichtung und Aktivitäten des Teams zu verlieren und
- b) bestimmte Expertise (z.B. Vertrieb, Kundenservice oder Marketing, Controlling) im Team selbst auszubilden und andere (z.B. R&D) gezielt durch die Regelorganisation bereitzustellen

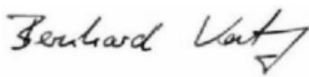
Es ist unbestritten, dass diese Aspekte der Autonomie eine Determinante für den Erfolg für den Aufbau neuer Geschäftsfelder sind. Offen ist hingegen die Frage, wie viel Autonomie in welcher Phase der Geschäftsfeldentwicklung (von der Idee bis zur etablierten Business Unit) optimal für den Erfolg einer Geschäftsentwicklung ist.

Es ist das Ziel dieser Studie eine Antwort auf diese Frage zu finden. Wir bitten Sie daher sich rund 20 Minuten Zeit zur Beantwortung der nachfolgenden Fragen zu nehmen.

Als Gegenleistung erhalten Sie

1. Die Ergebnisse dieser Studie, die zeigen wie viel Autonomie in den einzelnen Reifephasen einer Geschäftsfeldentwicklung optimal für den Erfolg ist
2. Ein Benchmark der/s Teams Ihres Unternehmens mit dem „Best in Class“ der IT-Branche in Deutschland
3. Eine Gegenüberstellung der Autonomie der teilnehmenden Teams Ihres Unternehmens
4. Um 150 Euro reduzierte Teilnehmergebühren für die international renommierte IEEE ITMC & ICE Konferenz 2013 in Den Haag (Niederlande)

Wir bedanken uns recht herzlich für Ihre Teilnahme und die Unterstützung der mit dieser Studie verbundenen Doktorarbeit von M.Eng Dipl.-Ing. Jérôme Gard.

Prof. Dr. Guido Baltes und University of Applied Sciences Konstanz 	Prof. Dr. Bernhard Katzy Graduate School of Science University Leiden (Niederlande) 
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APPENDIX E1: QUESTIONNAIRE – GERMAN VERSION

Appendix E1 shows the questionnaire used to collect data. The survey was conducted in German. The questionnaire is therefore provided in its original language. An English version is reported in Appendix E2. The questionnaire consists of two parts. E1.1 is the screener which gathers general information on the participant. E1.2 gathers information on corporate venture management.

E1.1 – Screener (8 Fragen)

Screener – Frage 1	
Bitte geben Sie Ihre aktuelle Position im Unternehmen an:	
☐	Aufsichtsrat
☐	Vorstand
☐	Geschäftsführer
☐	Leiter der Abteilung Business Development
☐	Abteilungs- oder Divisionsleiter
☐	Teamleiter/Projektleiter
☐	Mitarbeiter
☐	Sie haben eine andere Position. Bitte geben Sie diese nachfolgend an:

Screener – Frage 2	
Wie lange sind Sie in Ihrer jetzigen Position in diesem Unternehmen bereits tätig?	
☐	weniger als 1 Jahr
☐	zwischen 1-2 Jahren
☐	zwischen 2-3 Jahren
☐	zwischen 3-5 Jahren
☐	Länger als 5 Jahre

Screener – Frage 3	
Gibt es in Ihrem Unternehmen Teams, die aktuell ein neues Geschäftsfeld aufbauen oder Teams, die in den letzten 3 Jahren ein neues Geschäftsfeld aufgebaut haben?	
☐	Ja, es gibt ein oder mehrere Teams, die aktuell ein neues Geschäftsfeld aufbauen
☐	Ja, wir haben ein oder mehrere Teams die in den letzten 3 Jahren ein Geschäftsfeld aufgebaut haben
☐	Nein, solche Teams gibt es in meinem Unternehmen aktuell nicht

Screenener – Frage 4

Haben Sie in der Vergangenheit Erfahrungen mit dem Aufbau eines neuen Geschäftsfelds durch Teams gemacht?

- | | |
|-----------------------|--|
| ☐ | Ja, ich habe den Aufbau eines neuen Geschäftsfelds in der Vergangenheit mitbegleitet |
| ☐ | Nein, ich habe keine Erfahrung mit dem Aufbau eines neuen Geschäftsfelds durch Teams |

Screenener – Frage 5

Wie groß ist die Anzahl der Teams, die in Ihrem Unternehmen derzeit ein neues Geschäftsfeld aufbauen?

Anzahl der Teams:

- | | |
|-----------------------|-----|
| ☐ | 1 |
| ☐ | 2 |
| ☐ | 3 |
| ☐ | 4 |
| ☐ | 5 |
| ☐ | 6 |
| ☐ | 7 |
| ☐ | 8 |
| ☐ | 9 |
| ☐ | 10 |
| ☐ | >10 |

Screenener – Frage 6

Wie groß ist die Anzahl der Teams, die in Ihrem Unternehmen in den letzten 3 Jahren ein neues Geschäftsfeld aufgebaut haben?

Anzahl der Teams:

- | | |
|-----------------------|-----|
| ☐ | 1 |
| ☐ | 2 |
| ☐ | 3 |
| ☐ | 4 |
| ☐ | 5 |
| ☐ | 6 |
| ☐ | 7 |
| ☐ | 8 |
| ☐ | 9 |
| ☐ | 10 |
| ☐ | >10 |

Screener – Frage 7	
Wie groß ist die Anzahl der Teams, die in den letzten 5 Jahren den Aufbau eines neuen Geschäftsfelds abgebrochen haben?	
Anzahl der Teams:	
☐	1
☐	2
☐	3
☐	4
☐	5
☐	6
☐	7
☐	8
☐	9
☐	10
☐	>10

Screener – Frage 8	
Welche der nachfolgenden Aussagen trifft eher auf Sie zu?	
☐	Ich bin aktuell Leiter eines Teams, das die Aufgabe hat ein neues Geschäftsfeld aufzubauen
☐	Ich bin aktuell Leiter eines Teams bzw. einer Business Unit das/die in den letzten 3 Jahren bereits ein Geschäftsfeld aufgebaut hat
☐	Ich bin aktuell der Vorgesetzte des Leiters eines Teams das aktuell ein neues Geschäftsfeld aufbaut
	Ich bin der Vorgesetzte des Leiters eines Teams das in den letzten 3 Jahren bereits ein neues Geschäftsfeld aufgebaut hat
☐	Ich bin aktuell Mitarbeiter in einem Team das aktuell ein neues Geschäftsfeld aufbaut oder in den letzten 3 Jahren aufgebaut hat
☐	Mit dem Aufbau eines Geschäftsfelds durch ein Team habe ich aktuell nichts zu tun. Allerdings habe ich dazu in der Vergangenheit Erfahrungen gemacht
☐	Mit dem Aufbau eines Geschäftsfelds durch ein Team habe ich noch nie Erfahrungen gemacht

E1.2 – Venture Manager (16 Fragen)

Venture Manager – Frage 1	
Bitte geben Sie an, in welcher Beziehung Ihr Team (verantwortlich für den Aufbau des neuen Geschäftsfelds) mit Ihrem Unternehmen steht.	
☐	Das neue Geschäftsfeld wird im Unternehmen aufgebaut
☐	Das neue Geschäftsfeld wird außerhalb des Unternehmens aufgebaut und ist im Grunde eine eigene Organisation
☐	Das neue Geschäftsfeld wird in Kooperation mit einem oder mehreren anderen Unternehmen aufgebaut
☐	Das Geschäftsfeld wurde ursprünglich von einem anderen Unternehmen aufgebaut und später von uns übernommen
☐	Gibt es eine andere Art der Beziehung? Bitte nachfolgend kurz beschreiben:

Venture Manager – Frage 2 (# der Mitarbeiter des Corporate Ventures)	
Aus welcher Anzahl an Vollzeitmitarbeitern besteht Ihr Team aktuell?	
Anzahl der Mitarbeiter:	

Venture Manager – Frage 3 (Umsatz des Corporate Venture)	
In welchem Bereich lag der Umsatz (in €) Ihres Teams im letzten abgelaufenen Geschäftsjahr?	
Umsatzbereich im letzten abgelaufenen Geschäftsjahr:	
☐	0-50 T-€
☐	50-100 T-€
☐	100-500 T-€
☐	500-1000 T-€
☐	1 Mio.-3 Mio. €
☐	3 Mio.-10 Mio. €
☐	über 10 Mio. €

Venture Manager – Frage 4 (# der Mitarbeiter des Unternehmens)	
Wie hoch ist die Anzahl der Vollzeitmitarbeiter, die aktuell in Ihrem Unternehmen beschäftigt sind?	
Anzahl der Mitarbeiter:	

Venture Manager – Frage 5 (Umsatz des Unternehmens)	
In welchem Bereich lag der Umsatz (in €) Ihres Unternehmens im letzten abgelaufenen Geschäftsjahr?	
Umsatzbereich des Unternehmens im letzten abgelaufenen Geschäftsjahr	
☐	< 2 Mio. €
☐	2 Mio. – 10 Mio. €
☐	10 Mio. – 50 Mio. €
☐	> 50 Mio. €

Venture Manager – Frage 6 (Reifegrad)	
Bitte geben Sie an, bis zu welcher Reifephase Ihr Team bis heute gekommen ist.	
☐	Erste Reifephase: Es wurden erste Investitionen getätigt
☐	Zweite Reifephase: Es wurden erste Umsätze erwirtschaftet
☐	Dritte Reifephase: Das Geschäftsfeld wurde profitabel

Venture Manager – Frage 7 (Reifegrad)		
Bitte geben Sie ungefähr an, wann Ihr Team die nachfolgenden Reifephasen erreicht hat.		
	Jahr	Quartal
Erste Reifephase (A): Die Entscheidung wurde getroffen das neue Geschäftsfeld aufzubauen		
Erste Reifephase (B): Es wurden erste Investitionen getätigt		
Zweite Reifephase: Es wurden erste Umsätze erwirtschaftet		
Dritte Reifephase: Das Geschäftsfeld wurde profitabel		

Venture Manager – Frage 8 (Erfahrung)

Wie viele Jahre Erfahrung hat Ihr Team in Summe bis heute (Sie eingeschlossen, Ihre Vorgesetzten ausgeschlossen) mit dem Aufbau neuer Geschäftsfelder?

- | | |
|-----------------------|--------------------|
| ☐ | weniger als 1 Jahr |
| ☐ | 1-2 Jahre |
| ☐ | 2-3 Jahre |
| ☐ | 3-4 Jahre |
| ☐ | 4-5 Jahre |
| ☐ | 5-6 Jahre |
| ☐ | 6-7 Jahre |
| ☐ | 7-8 Jahre |
| ☐ | 8-9 Jahre |
| ☐ | 9-10 Jahre |
| ☐ | 10-15 Jahre |
| ☐ | 15-20 Jahre |
| ☐ | Mehr als 20 Jahre |

Venture Manager – Frage 9 (Dynamik des Umfelds)

Vor dem Hintergrund des Geschäftsumfeldes in dem der Geschäftsaufbau stattfindet, geben Sie bitte an, wie schnell sich die unteren Aspekte in den letzten 5- 10 Jahren verändert haben.

	Überhaupt keine Veränderung					Sehr schnelle Veränderung
	1	2	3	4	5	6
Technologie	○	○	○	○	○	○
Wettbewerb	○	○	○	○	○	○
Innovationsrate	○	○	○	○	○	○
Marktumfeld	○	○	○	○	○	○

[illegible]

Venture Manager – Frage 13 (Entscheidungs-Autonomie)

Wie häufig sind Sie bei Entscheidungen hinsichtlich des Geschäftsaufbaus in den nachfolgenden Bereichen auf die Zustimmung von Vorgesetzten angewiesen.

[illegible]

Venture Manager – Frage 14 (Functionale Autonomie)						
Bitte geben Sie an, ob Expertise bezüglich der nachfolgenden Bereiche eher in Ihrem Team vorhanden ist, oder eher extern vom Unternehmen oder anderweitig bereitgestellt wird.						
	Expertise wird primär extern bereitgestellt					Expertise ist primär im Team vorhanden
	1	2	3	4	5	6
Marketing (z.B. Vermarktung neuer Produkte und Dienstleistungen)	☐	☐	☐	☐	☐	☐
HR (z.B. Qualifizierung, Recruiting neuer Mitarbeiter)	☐	☐	☐	☐	☐	☐
Sales (z.B. Vertriebsaktivitäten)	☐	☐	☐	☐	☐	☐
Kundenservice (z.B. Support und Service)	☐	☐	☐	☐	☐	☐
Controlling (z.B. Projekt-Controlling, Erfolgsrechnung)	☐	☐	☐	☐	☐	☐
Juristische Belange (z.B. Geschäftsbeziehungen, Patente)	☐	☐	☐	☐	☐	☐
Projektmanagement (z.B. Definition von Meilensteinen und Key Performance Indikatoren)	☐	☐	☐	☐	☐	☐
Forschung und Entwicklung (z.B. Entwicklungs- und Programmierungsaktivitäten)	☐	☐	☐	☐	☐	☐

Venture Manager – Frage 15 (Priorität exploitativer Ziele)	
In welcher Reihenfolge priorisieren Ihre Vorgesetzten die nachfolgenden Aspekte in der aktuellen Reifephase Ihrer Geschäftsentwicklung. Ordnen Sie die nachfolgenden Aspekte der Priorität nach, nutzen Sie dazu die Drag & Drop Funktion (klicken und ziehen). (1=unwichtig für meine Vorgesetzten, 6=wichtig für meine Vorgesetzten).	
1	Mein Team soll neue Marktsegmente identifizieren
2	Mein Team soll innovative Produkte und Dienstleistungen finden und nutzbar machen
3	Mein Team soll neue Ideen entwickeln, indem wir außerhalb gängiger Lösungsansätze denken
4	Mein Team soll die bestehende Kundenbasis tiefer durchdringen
5	Mein Team soll Routinen für Abläufe und Tätigkeiten entwickeln, damit wir effizienter arbeiten
6	Mein Team soll die Qualität verbessern und die Kosten reduzieren

[illegible]

APPENDIX E2: QUESTIONNAIRE – ENGLISH VERSION

Appendix E2 provides the English version of the questionnaire used to collect data. The survey was originally conducted in German. The German version is reported in Appendix E1. The questionnaire consists of two parts. E1.1 is the screener which gathers general information on the participant. E1.2 gathers information on corporate venture management.

E2.1 – Screener (8 Questions)

Screener – Question 1	
Please indicate your current position in the company:	
☐	Board of Directors
☐	Executive Board
☐	Chief Executive
☐	Head of the Business Development Department
☐	Head of another Department
☐	Project Manager/ Team Leader
☐	Employee
☐	You are in another position? Please describe below:

Screener – Question 2	
How long are you in the current position in the company?	
☐	Less than 1 year
☐	Between 1-2 years
☐	Between 2-3 years
☐	Between 3-4 years
☐	Longer than 5 years

Screener – Question 3	
Is there a teams in your company that currently develops a new business, or did so during the past 3 years?	
☐	Yes, there are one or more teams that are currently developing a new business
☐	Yes, we had one or more teams that developed a new business in the past 3 years.
☐	No, there are no such teams in our company

Screener – Question 4	
Have you made experience in the past with teams that development a new business?	
☐	Yes, I have accompanied teams that developed a new businesses in the past.
☐	No, I don't have any experience with the development of a new business through teams.

Screener – Question 5	
What is the number of teams that are currently developing a new business in your company?	
Number of Teams:	
☐	1
☐	2
☐	3
☐	4
☐	5
☐	6
☐	7
☐	8
☐	9
☐	10
☐	>10

Screener – Question 6	
What is the number of teams that developed a new business in your company in the past 3 years?	
Number of Teams:	
☐	1
☐	2
☐	3
☐	4
☐	5
☐	6
☐	7
☐	8
☐	9
☐	10
☐	>10

Screener – Question 7	
What is the number of teams that terminated the development of a new business in the past 5 years?	
Number of Teams:	
☐	1
☐	2
☐	3
☐	4
☐	5
☐	6
☐	7
☐	8
☐	9
☐	10
☐	>10

Screener – Question 8	
Which of the following statements applies to you personally?	
☐	I am currently the leader of a team that has the task to develops a new business
☐	I am currently the leader of a team that already has developed a new business in the past 3 years
☐	I am currently the supervisor of the leader of a team that currently develops a new business
	I am the supervisor of the leader of a team that already developed a new business in the past 3 years
☐	I am currently member of a team that currently develops a new business or that already did so in the past 3 years
☐	I have currently no relation with a team that develops a new business. However, I have made some experience in the past
☐	I have never made any experience with a team that develops a new business

E2.2 – Venture Managers (16 Questions)

Venture Manager – Question 1	
What relation does your team (developing a new business) have with the company?	
☐	The new business is developed within the company
☐	The new business is developed outside the company and is basically an own organization
☐	The new business is developed in cooperation with one or more other companies
☐	The new business was initially developed by another company and was later acquired by our company
☐	Does the team have another relation with the company? Please describe the relationship below:

Venture Manager – Question 2 (# of Employees in the Corporate Venture)	
What is the total number of the full time equivalent employees (FTEs) of your team?	
Number of Employees:	

Venture Manager – Question 3 (Turnover of the Corporate Venture)	
Which of the following ranges applies to the turnover (€) that your team has made in the previous year?	
Turnover in the previous year:	
☐	0-50 K-€
☐	50-100 K-€
☐	100-500 K-€
☐	500-1000 K-€
☐	1-3 Mio. €
☐	3-10 Mio. €
☐	über 10 Mio. €

Venture Manager – Question 4 (# of Employees in the Corporation)	
What is the total number of the full time equivalent employees (FTEs) in your company?	
Number of Employees:	

Venture Manager – Question 5 (Turnover of the Corporation)	
Which of the following ranges applies to the turnover (€) that your company has made in the previous year?	
Turnover in the previous year:	
☐	< 2 Mio. €
☐	2 Mio. – 10 Mio. €
☐	10 Mio. – 50 Mio. €
☐	> 50 Mio. €

Venture Manager – Question 6 (Maturity Stage)	
Please indicate the maturity stage that your team reaches today.	
☐	First Stage: Investments in the new business were made
☐	Second Stage: First turnover was achieved
☐	Third Stage: The new business reached break-even

Venture Manager – Question 7 (Maturity Stage)		
Please indicate when your team has reached the following stages.		
	Year	Quarter
First Stage (A): The decision was made to develop a new business		
Second Stage (B): First investments in the new business were made		
Second Stage: First turnover was achieved		
Third Stage: Break-even was reached		

How many years of experience (including you and excluding your supervisor) does your team have with the development of a new business?

- ### Venture Manager – Question 9 (Environmental Dynamism)

Considering the business environment in which the new business is developed, please indicate how quickly the following aspects have changed in the past 5-10 years.

	Very quick change					
	No change at all					
	1	2	3	4	5	6
Technology	○	○	○	○	○	○
Competition	○	○	○	○	○	○
Pace of Innovation	○	○	○	○	○	○
Market conditions	○	○	○	○	○	○

[illegible]

Venture Manager – Question 11 (Strategic Autonomy)

How frequently can you make decisions concerning the development of the new business without the approval of your supervisor(s)?

[illegible]

Venture Manager – Question 12 (Functional Importance)

Please indicate the importance of each of the eight business functions for the successful development of the new business

	Very little influence on success						Critical for success
	1	2	3	4	5	6	
Marketing	○	○	○	○	○	○	
Human Resource Development	○	○	○	○	○	○	
Sales	○	○	○	○	○	○	
Service	○	○	○	○	○	○	
Finance and Controlling	○	○	○	○	○	○	
Legal Affairs	○	○	○	○	○	○	
Project Management	○	○	○	○	○	○	
Research and Development	○	○	○	○	○	○	

Venture Manager – Question 13 (Decision Autonomy)

How frequently do you need to seek the approval of your supervisor(s) when making decisions in the following business functions?

[illegible]

Venture Manager – Question 14 (Functional Autonomy)

Please indicate whether expertise with respect to the following business functions is available within the team or provided externally

	Expertise is primarily provided externally					Expertise is primarily available in the team
	1	2	3	4	5	6
Marketing	○	○	○	○	○	○
Human Resource Development	○	○	○	○	○	○
Sales	○	○	○	○	○	○
Service	○	○	○	○	○	○
Finance and Controlling	○	○	○	○	○	○
Legal Affairs	○	○	○	○	○	○
Project Management	○	○	○	○	○	○
Research and Development	○	○	○	○	○	○

Venture Manager – Question 15 (Exploitation Priority)

In which order does your supervisor prioritize the following aspects in the current maturity stage of the new business. Please use the Drag & Drop function to order the following aspects according to the priority of your supervisor.

(1=not important to my supervisor, 6= important to my supervisor).

1	My team is forced to identify new market segments
2	My team is forced to explore innovative solution or services for commercialization
3	My team is forced to look for novel ideas by thinking “outside the box”
4	My team is forced to penetrate more deeply into the existing customer base
5	My team is forced to increase the levels of routinization of operations
6	My team is forced to improve quality and lower cost

Venture Manager – Question 16 (Corporate Venture Success)

Please assess the extent to which the following aspects concerning the development of the new business are true

[illegible]

APPENDIX F: CORRELATION MATRIX OF THE FOUR AUTONOMY SCALES

The following table reports the correlations between the items of the four autonomy scales functional autonomy (items 22-29), decision autonomy (items 14-21), strategic autonomy (items 8-13) and job autonomy (items 1-7).

Item	22	23	24	25	26	27	28	29	14	15	16	17	18	19	20	21	8	9	10	11	12	13	1	2	3	4	5	6	7
22	1																												
23	,186	1																											
24	,393**	-,051	1																										
25	,149	,161	,231*	1																									
26	,218*	,351**	,064	,338**	1																								
27	,001	,118	,121	-,037	,331**	1																							
28	,167	,134	-,073	,195	,392**	,168	1																						
29	-,045	,258*	-,230*	,087	,144	,222*	,409**	1																					
14	,338**	-,040	,308**	,309**	,127	,056	,094	-,081	1																				
15	-,097	,132	-,072	,112	,060	,183	,145	,209	,331**	1																			
16	,113	-,136	,440**	,167	-,146	,115	-,035	-,038	,542**	,220*	1																		
17	-,092	-,086	,260*	,288**	-,097	,102	-,020	,012	,316**	,367**	,481**	1																	
18	-,160	,085	-,067	,059	,255*	,182	,061	,146	,173	,341**	,140	,458**	1																
19	-,074	-,049	,068	,072	-,014	,048	-,037	,029	,232*	,368**	,263*	,347**	,576**	1															
20	-,114	,089	,024	-,104	,032	,178	,154	,107	,138	,350**	,190	,564**	,525**	,319**	1														
21	-,142	,084	-,211*	-,055	-,044	,042	,145	,369**	,092	,098	,017	,275**	,337**	,217*	,537**	1													
8	-,156	-,007	-,062	,096	,042	,000	-,052	,165	-,003	,028	,062	,176	,291**	,083	,140	,268*	1												
9	,088	,103	,161	,108	,124	,141	,015	-,090	,264*	,281**	,194	,307**	,139	,118	,273*	,189	,383**	1											
10	-,075	-,010	,053	,178	,022	-,172	-,044	-,034	-,053	,303**	-,043	,213*	,213*	,070	,292**	,116	,292**	,382**	1										
11	,023	-,064	,359**	,144	-,062	-,008	-,001	-,079	,239*	,241*	,414**	,303**	,041	,072	,077	,093	,284**	,471**	,234*	1									
12	-,096	-,093	,338**	,235*	-,075	,149	-,093	,012	,195	,305**	,435**	,463**	,172	,140	,128	,142	,347**	,381**	,225*	,739**	1								
13	,269*	,055	,300**	,236*	,168	,185	,163	-,015	,367**	,214*	,267*	,267*	,182	-,003	,109	,136	,251*	,517**	,271*	,483**	,522**	1							
1	-,131	-,043	,081	,130	,133	,035	-,051	-,121	,239*	,258*	,270*	,178	,188	,182	,196	,193	,236*	,437**	,325**	,369**	,405**	,274*	1						
2	-,201	-,122	-,083	,060	,152	,004	,059	,057	-,154	,048	-,017	,064	,128	,038	,173	,186	,235*	,150	,340**	,128	,154	,032	,454**	1					
3	-,208	-,177	-,047	-,027	,040	,026	-,039	-,005	-,079	,155	,052	,101	,163	,125	,214*	,193	,259*	,283**	,335**	,160	,259*	,134	,449**	,762**	1				
4	-,108	-,196	,173	,024	-,037	-,132	-,022	-,180	-,022	,147	,010	,145	,099	,175	,129	,112	,071	,211*	,377**	,161	,158	,082	,337**	,609**	,588**	1			
5	,008	-,085	,242*	,069	,145	,058	,024	-,171	,020	-,028	,168	,134	,033	,082	,087	,031	,186	,282**	,242*	,169	,209	,180	,351**	,392**	,404**	,579**	1		
6	,153	-,017	,001	-,040	,292**	,024	,173	,018	,067	,113	,017	-,060	,089	-,071	,110	,058	,310**	,311**	,273*	,059	,049	,232*	,285**	,286**	,330**	,285**	,462**	1	
7	,226*	-,045	,159	-,055	,033	-,069	,020	,013	,069	,103	,112	,027	,059	-,043	,095	,046	,396**	,209	,229*	,210	,153	,154	,264*	,326**	,325**	,356**	,340**	,662**	1

** . Correlation is significant at level of $p \leq .01$; * . Correlation is significant at level of $p \leq .05$

APPENDIX G: SYNTAX USED TO RUN THE PARALLEL ANALYSIS

Appendix G provides the Syntax used to perform the parallel analysis. The syntax is developed and published by Brian O'Connor. The publication of the syntax can be found in the following reference: O'Connor, B. P. (2000). SPSS and SAS programs for determining the number of components using parallel analysis and Velicer's MAP test. *Behavior Research Methods, Instrumentation, and Computers*, 32, 396-402. The syntax reads as follows.

* Parallel Analysis Program For Raw Data and Data Permutations.

* To run this program you need to first specify the data for analysis and then RUN, all at once, the commands from the MATRIX statement to the END MATRIX statement.

* This program conducts parallel analyses on data files in which the rows of the data matrix are cases/individuals and the columns are variables; Data are read/entered into the program using the GET command (see the GET command below); The GET command reads an SPSS data file, which can be either the current, active SPSS data file or a previously saved data file; A valid filename/location must be specified on the GET command; A subset of variables for the analyses can be specified by using the "/ VAR =" subcommand with the GET statement; There can be no missing values.

* You must also specify:

the # of parallel data sets for the analyses; the desired percentile of the distribution and random data eigenvalues; whether principal components analyses or principal axis/common factor analysis are to be conducted, and whether normally distributed random data generation or permutations of the raw data set are to be used in the parallel analyses.

* Permutations of the raw data set can be time consuming; Each parallel data set is based on column-wise random shufflings of the values in the raw data matrix using Castellán's (1992, *BRMIC*, 24, 72-77) algorithm; The distributions of the original raw variables are exactly preserved in the shuffled versions used in the parallel analyses; Permutations of the raw data set are thus highly accurate and most relevant, especially in cases where the raw data are not normally

distributed or when they do not meet the assumption of multivariate normality (see Longman & Holden, 1992, *BRMIC*, 24, 493, for a Fortran version); If you would like to go this route, it is perhaps best to (1) first run a normally distributed random data generation parallel analysis to familiarize yourself with the program and to get a ballpark reference point for the number of factors/components; (2) then run a permutations of the raw data parallel analysis using a small number of datasets (e.g., 100), just to see how long the program takes to run; then (3) run a permutations of the raw data parallel analysis using the number of parallel data sets that you would like use for your final analyses; 1000 datasets are usually sufficient, although more datasets should be used if there are close calls.

* These next commands generate artificial raw data (500 cases) that can be used for a trial-run of the program, instead of using your own raw data; Just select and run this whole file; However, make sure to delete the artificial data commands before attempting to run your own data.

```
set mxloops=9000 printback=off width=80 seed = 1953125.
matrix.
```

* Enter the name/location of the data file for analyses after "FILE ="; If you specify "FILE = *", then the program will read the current, active SPSS data file; Alternatively, enter the name/location of a previously saved SPSS data file instead of "*"; you can use the "/ VAR =" subcommand after "/ missing=omit" subcommand to select variables for the analyses. GET raw / FILE = * / missing=omit / VAR = Q34.16_1, Q34.16_2, Q34.16_3, Q34.16_4, Q34.16_5, Q34.16_6, Q34.16_7, Q34.16_8
Q34.10_1, Q34.10_2, Q34.10_3, Q34.10_4, Q34.10_5, Q34.10_6, Q34.10_7
Q34.11_1, Q34.11_2, Q34.11_3, Q34.11_4, Q34.11_5, Q34.11_6
Q.15_1u, Q.15_2u, Q.15_3u, Q.15_4u, Q.15_5u, Q.15_6u, Q.15_7u, Q.15_8u.

* Enter the desired number of parallel data sets here.

```
compute ndatsets = 1000.
```

* Enter the desired percentile here.

```
compute percent = 95.
```

* Enter either

1 for principal components analysis, or

2 for principal axis/common factor analysis.

```
compute kind = 2 .
```

* Enter either

1 for normally distributed random data generation parallel analysis, or

2 for permutations of the raw data set.

compute randtype = 2.

***** End of user specifications. *****

compute ncases = nrow(raw).

compute nvars = ncol(raw).

* principal components analysis & random normal data generation.

do if (kind = 1 and randtype = 1).

compute nm1 = 1 / (ncases-1).

compute vcv = nm1 * (sscp(raw) - ((t(csum(raw))*csum(raw))/ncases)).

compute d = inv(mdiag(sqrt(diag(vcv)))).

compute realeval = eval(d * vcv * d).

compute evals = make(nvars,ndatsets,-9999).

loop #nds = 1 to ndatsets.

compute x = sqrt(2 * (ln(uniform(ncases,nvars)) * -1)) &*

cos(6.283185 * uniform(ncases,nvars)).

compute vcv = nm1 * (sscp(x) - ((t(csum(x))*csum(x))/ncases)).

compute d = inv(mdiag(sqrt(diag(vcv)))).

compute evals(:,#nds) = eval(d * vcv * d).

end loop.

end if.

* principal components analysis & raw data permutation.

do if (kind = 1 and randtype = 2).

compute nm1 = 1 / (ncases-1).

compute vcv = nm1 * (sscp(raw) - ((t(csum(raw))*csum(raw))/ncases)).

compute d = inv(mdiag(sqrt(diag(vcv)))).

compute realeval = eval(d * vcv * d).

compute evals = make(nvars,ndatsets,-9999).

loop #nds = 1 to ndatsets.

compute x = raw.

loop #c = 1 to nvars.

loop #r = 1 to (ncases - 1).

compute k = trunc((ncases - #r + 1) * uniform(1,1) + 1) + #r - 1.

compute d = x(#r,#c).

compute x(#r,#c) = x(k,#c).

compute x(k,#c) = d.

```

end loop.
end loop.
compute vcv = nm1 * (sscp(x) - ((t(csum(x))*csum(x))/ncases)).
compute d = inv(mdiag(sqrt(diag(vcv)))).
compute evals(:,#nds) = eval(d * vcv * d).
end loop.
end if.

* PAF/common factor analysis & random normal data generation.
do if (kind = 2 and randtype = 1).
compute nm1 = 1 / (ncases-1).
compute vcv = nm1 * (sscp(raw) - ((t(csum(raw))*csum(raw))/ncases)).
compute d = inv(mdiag(sqrt(diag(vcv)))).
compute cr = (d * vcv * d).
compute smc = 1 - (1 &/ diag(inv(cr)) ).
call setdiag(cr,smc).
compute realeval = eval(cr).
compute evals = make(nvars,ndatsets,-9999).
compute nm1 = 1 / (ncases-1).
loop #nds = 1 to ndatsets.
compute x = sqrt(2 * (ln(uniform(ncases,nvars)) * -1) ) &*
           cos(6.283185 * uniform(ncases,nvars) ).
compute vcv = nm1 * (sscp(x) - ((t(csum(x))*csum(x))/ncases)).
compute d = inv(mdiag(sqrt(diag(vcv)))).
compute r = d * vcv * d.
compute smc = 1 - (1 &/ diag(inv(r)) ).
call setdiag(r,smc).
compute evals(:,#nds) = eval(r).
end loop.
end if.

* PAF/common factor analysis & raw data permutation.
do if (kind = 2 and randtype = 2).
compute nm1 = 1 / (ncases-1).
compute vcv = nm1 * (sscp(raw) - ((t(csum(raw))*csum(raw))/ncases)).
compute d = inv(mdiag(sqrt(diag(vcv)))).
compute cr = (d * vcv * d).
compute smc = 1 - (1 &/ diag(inv(cr)) ).
call setdiag(cr,smc).
compute realeval = eval(cr).
compute evals = make(nvars,ndatsets,-9999).
compute nm1 = 1 / (ncases-1).
loop #nds = 1 to ndatsets.

```

```

compute x = raw.
loop #c = 1 to nvars.
loop #r = 1 to (ncases - 1).
compute k = trunc( (ncases - #r + 1) * uniform(1,1) + 1 ) + #r - 1.
compute d = x(#r,#c).
compute x(#r,#c) = x(k,#c).
compute x(k,#c) = d.
end loop.
end loop.
compute vcv = nm1 * (sscp(x) - ((t(csum(x))*csum(x))/ncases)).
compute d = inv(mdiag(sqrt(diag(vcv)))).
compute r = d * vcv * d.
compute smc = 1 - (1 &/ diag(inv(r)) ).
call setdiag(r,smc).
compute evals(:,#nds) = eval(r).
end loop.
end if.

* identifying the eigenvalues corresponding to the desired percentile.
compute num = rnd((percent*ndatsets)/100).
compute results = { t(1:nvars), realeval, t(1:nvars), t(1:nvars) }.
loop #root = 1 to nvars.
compute ranks = rnkorder(evals(#root,:)).
loop #col = 1 to ndatsets.
do if (ranks(1,#col) = num).
compute results(#root,4) = evals(#root,#col).
break.
end if.
end loop.
end loop.
compute results(:,3) = rsum(evals) / ndatsets.

print /title="PARALLEL ANALYSIS:".
do if (kind = 1 and randtype = 1).
print /title="Principal Components & Random Normal Data Generation".
else if (kind = 1 and randtype = 2).
print /title="Principal Components & Raw Data Permutation".
else if (kind = 2 and randtype = 1).
print /title="PAF/Common Factor Analysis & Random Normal Data Generation".
else if (kind = 2 and randtype = 2).
print /title="PAF/Common Factor Analysis & Raw Data Permutation".
end if.

```

```

compute specifs = {ncases; nvars; ndatsets; percent}.
print specifs /title="Specifications for this Run:"
  /rlabels="Ncases" "Nvars" "Ndatsets" "Percent".
print results
  /title="Raw Data Eigenvalues, & Mean & Percentile Random Data Eigenvalues"
  /clabels="Root" "Raw Data" "Means" "Prctyle" /format "f12.6".

do if (kind = 2).
  print / space = 1.
  print /title="Warning: Parallel analyses of adjusted correlation matrices".
  print /title="eg, with SMCs on the diagonal, tend to indicate more factors".
  print /title="than warranted (Buja, A., & Eyuboglu, N., 1992, Remarks on parallel".
  print /title="analysis. Multivariate Behavioral Research, 27, 509-540.).".
  print /title="The eigenvalues for trivial, negligible factors in the real".
  print /title="data commonly surpass corresponding random data eigenvalues".
  print /title="for the same roots. The eigenvalues from parallel analyses".
  print /title="can be used to determine the real data eigenvalues that are".
  print /title="beyond chance, but additional procedures should then be used".
  print /title="to trim trivial factors.".
  print / space = 2.
  print /title="Principal components eigenvalues are often used to determine".
  print /title="the number of common factors. This is the default in most".
  print /title="statistical software packages, and it is the primary practice".
  print /title="in the literature. It is also the method used by many factor".
  print /title="analysis experts, including Cattell, who often examined".
  print /title="principal components eigenvalues in his scree plots to determine".
  print /title="the number of common factors. But others believe this common".
  print /title="practice is wrong. Principal components eigenvalues are based".
  print /title="on all of the variance in correlation matrices, including both".
  print /title="the variance that is shared among variables and the variances".
  print /title="that are unique to the variables. In contrast, principal".
  print /title="axis eigenvalues are based solely on the shared variance".
  print /title="among the variables. The two procedures are qualitatively".
  print /title="different. Some therefore claim that the eigenvalues from one".
  print /title="extraction method should not be used to determine".
  print /title="the number of factors for the other extraction method.".
  print /title="The issue remains neglected and unsettled.".
end if.

compute root    = results(:,1).
compute rawdata = results(:,2).
compute percntyl = results(:,4).

```

```
save results /outfile= 'C:\Users\jgard\Desktop\Dissertation\Daten\Business Developer\Parallel  
Analysis\screedata.sav' / var=root rawdata means percentyl .  
end matrix.
```

* plots the eigenvalues, by root, for the real/raw data and for the random data; This command works in SPSS 12, but not in all earlier versions.

```
GET file= 'C:\Users\jgard\Desktop\Dissertation\Daten\Business Developer\Parallel  
Analysis\screedata.sav'.
```

```
TSPLIT VARIABLES= rawdata means percentyl /ID= root /NOLOG.
```

APPENDIX H: PRINCIPAL COMPONENT ANALYSIS WITH THREE VARIABLES

Appendix H provides the results of the principal component analysis, including the reduced six-item scale for job autonomy (items 2-7), the reduced four-item scale for strategic autonomy (items 9, 11, 12 and 13) and the seven items measuring corporate venture success (items 14-20).

Item	Component		
	1	2	3
2	.805		
3	.764		
4	.783		
5	.655		
6	.620		
7	.619		
9			.604
11			.863
12			.843
13			.748
14		.850	
15		.752	
16		.765	
17		.831	
18		.782	
19		.776	
20		.831	

^a Varimax rotated component matrix

^b Table includes all component loadings above the .30 cut-off point

^c Results after erasing item 1 for job autonomy and items 1 and 3 for strategic autonomy

^d The items 8 to 13 refer to the strategic autonomy scale, the items 1 to 7 refer to the job autonomy scale and the items 14 to 20 refer to the strategic autonomy scale

APPENDIX I: ANOVA FOR TESTING NON-RESPONSE BIAS

The analysis of variance (ANOVA) compares (a) the turnover and (b) the number of employees of firms that did not respond to the survey and of those firms that responded to the survey. The descriptive statistics (Table 1) show that non-responding firms have with 15.1 million Euro on average (mean) a higher turnover and are with 86 employees smaller than responding firms. Responding firms have on average a turnover of 13.3 million Euro and 93 employees. However, the analysis of variance (Table 2) shows that these differences are not significant. Thus, we may state that non-responding firms and responding firms are not different.

Descriptives

Turnover	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min.	Max.
					Lower Bound	Upper Bound		
Non-Responding Firms	2097	15.1245	27.3320	.5968	13.9540	16.2950	.03	549.30
Responding Firms	72	13.3086	11.6406	1.3718	10.5732	16.0440	3.30	60.00
Total	2169	15.0642	26.9588	.5788	13.9290	16.1993	.03	549.30
# of Employees								
Non-Responding Firms	2363	86.02	70.031	1.441	83.20	88.85	0	650
Responding Firms	77	93.62	65.346	7.447	78.79	108.46	27	335
Total	2440	86.26	69.889	1.415	83.49	89.03	0	650

Analysis of Variance

Turnover	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	229.524	1	229.524	.316	.574
Within Groups	1575423.354	2167	727.007		
Total	1575652.878	2168			
# of Employees					
Between Groups	4310.641	1	4310.641	.882	.348
Within Groups	11908747.103	2438	4884.638		
Total	11913057.744	2439			

APPENDIX J1: ANOVA TO TEST SOURCE BIAS ON CORPORATE VENTURE SUCCESS

The analysis of variance (ANOVA) compares the venture manager's and corporate manager's assessment of corporate venture success. The descriptive statistics (Table 1) shows that venture managers assess corporate venture success with 30.4 on average higher than the corporate managers with 29.6. However, the analysis of variance (Table 2) shows that these differences are not significant. Thus, we may conclude that the assessment of corporate venture success does not distinguish among venture managers and corporate managers.

Descriptives

Corporate Venture Success	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Venture Manager	87	30.3908	6.8528	.7347	28.9303	31.8513	7.00	42.00
Corporate Manager	287	29.5645	6.8194	.4025	28.7721	30.3568	14.00	42.00
Total	374	29.7567	6.8270	.3530	29.0625	30.4508	7.00	42.00

Analysis of Variance

Corporate Venture Success	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	45.588	1	45.588	.978	.323
Within Groups	17339.270	372	46.611		
Total	17384.858	373			

APPENDIX J2: ANOVA FOR TESTING SOURCE BIAS ON STRATEGIC AUTONOMY

The analysis of variance (ANOVA) compares the assessment of the strategic autonomy venture managers enjoy, given by the venture managers and the corporate managers. The descriptive statistics (Table 1) shows that venture managers assess the strategic autonomy on average higher (18.3) than the corporate managers (14.6). The analysis of variance (Table 2) shows that these differences are significant at $p < .001$. Thus, we may conclude that the assessment of strategic autonomy differs between venture managers and corporate managers.

Descriptives

Corporate Venture Success	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Venture Manager	87	18.3218	5.6967	.6107	17.1077	19.5360	5.00	30.00
Corporate Manager	289	14.6851	5.9191	.3481	13.9998	15.3704	5.00	30.00
Total	376	15.5266	6.0587	.3124	14.9122	16.1410	5.00	30.00

Analysis of Variance

Corporate Venture Success	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	884.400	1	884.400	25.678	.000
Within Groups	12881.335	374	34.442		
Total	13765.734	375			

APPENDIX J3: ANOVA FOR TESTING SOURCE BIAS ON JOB AUTONOMY

The analysis of variance (ANOVA) compares the assessment of the job autonomy venture managers enjoy, given by the venture managers and the corporate managers. The descriptive statistics (Table 1) shows that venture managers assess the job autonomy on average higher (33.3) than the corporate managers (31.1). The analysis of variance (Table 2) shows that these differences are significant at $p < .01$. Thus, we may conclude that the assessment of job autonomy differs between venture managers and corporate managers.

DESCRIPTIVES

Corporate Venture Success	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Venture Manager	87	33.2529	5.7712	.6187	32.0229	34.4829	15.00	42.00
Corporate Manager	289	31.1142	5.7455	.3379	30.4490	31.7794	10.00	42.00
Total	376	31.6090	5.8143	.2998	31.0194	32.1986	10.00	42.00

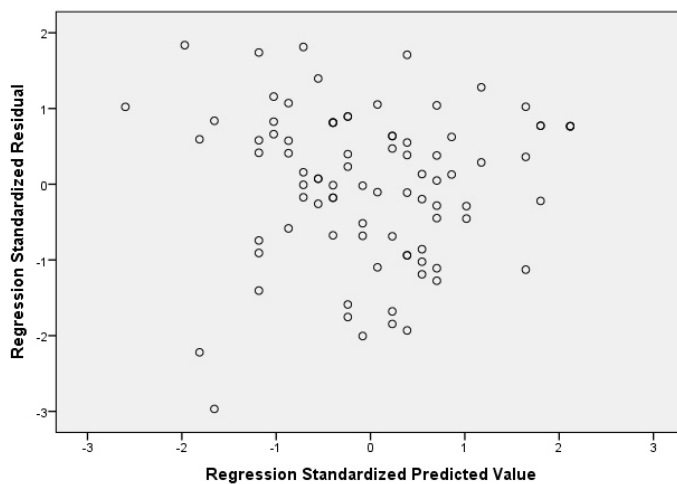
Analysis of Variance

Corporate Venture Success	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	305.861	1	305.861	9.246	.003
Within Groups	12371.669	374	33.079		
Total	12677.529	375			

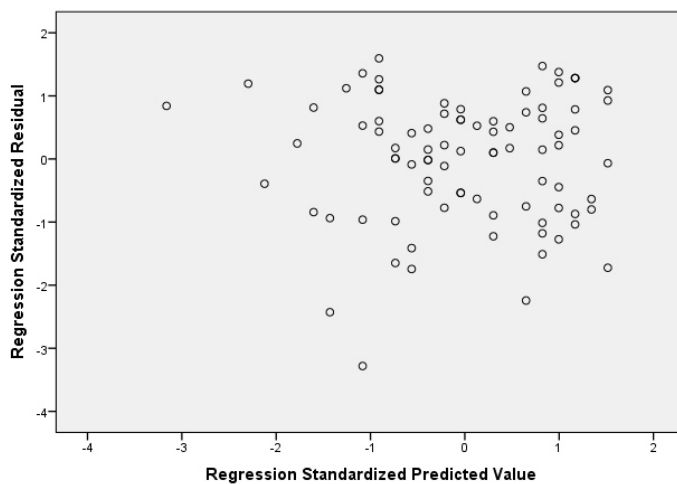
APPENDIX K: RESIDUAL PLOTS OF THE VARIABLES USED IN THE REGRESSION**ANALYSIS**

Residual plots using standardized residuals (y-axis) with standardized predictor values (x-axis) are generated for the two main variables (strategic autonomy and job autonomy), the moderator variable (exploitation priority) and the control variables (environmental dynamism, maturity stage, team experience, total employees, total sales and team size) using corporate venture success as the independent variable. The nine residual plots are illustrated below.

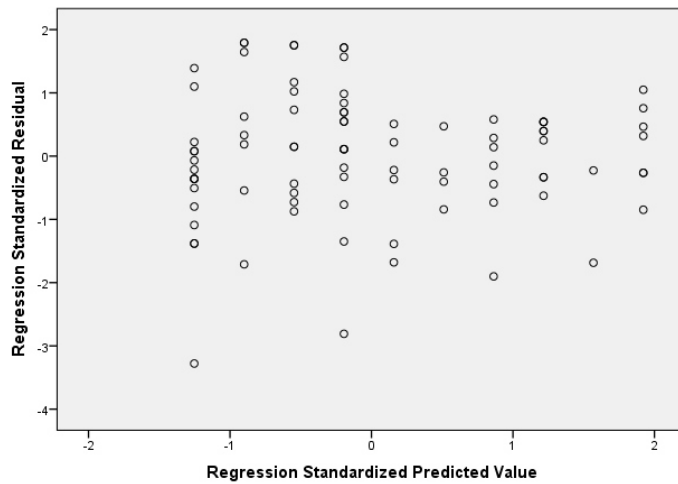
K1: Strategic autonomy on corporate venture success



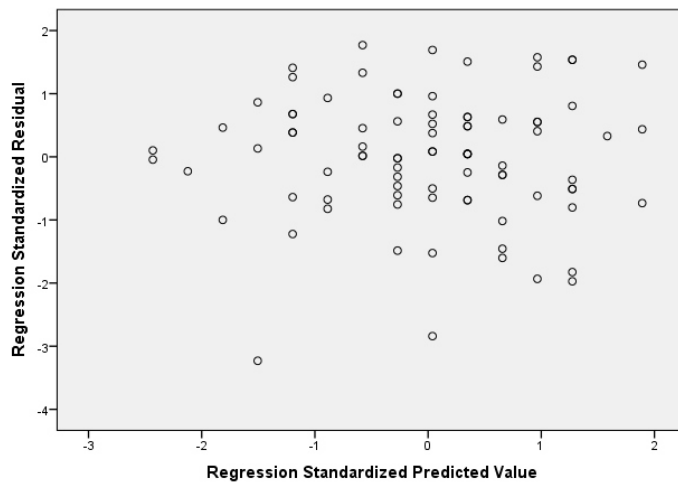
K2: Job autonomy on corporate venture success



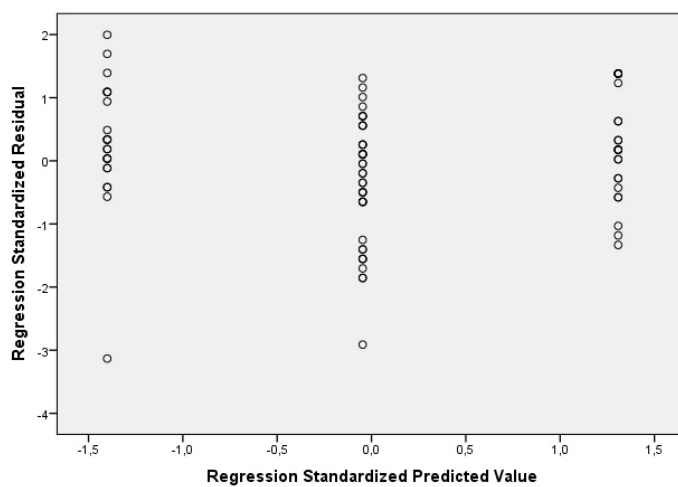
K3: Exploitation Priority on corporate venture success



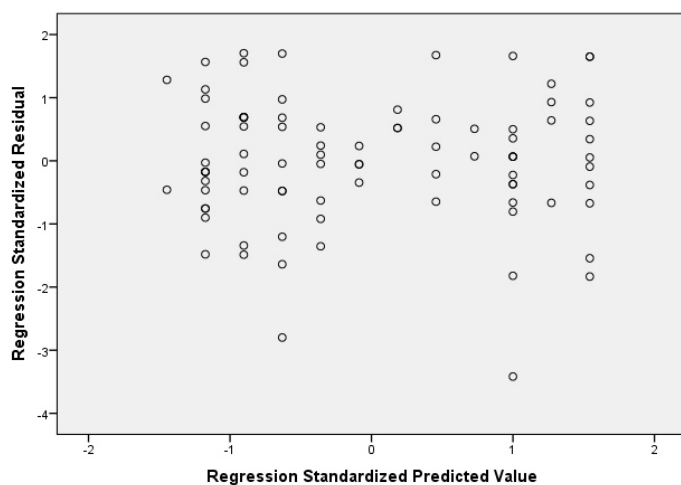
K4: Environmental Dynamism on corporate venture success



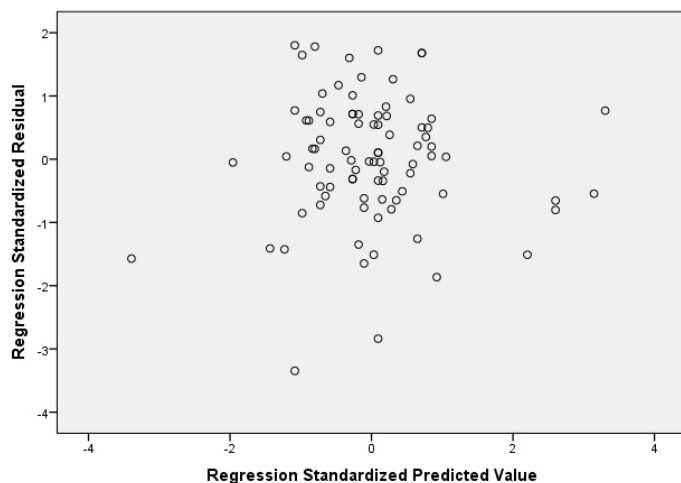
K5: Maturity Stage on corporate venture success



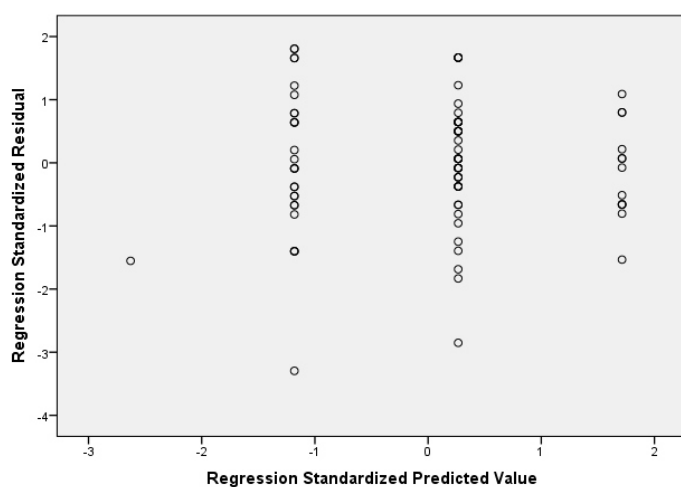
K6: Team Experience on corporate venture success



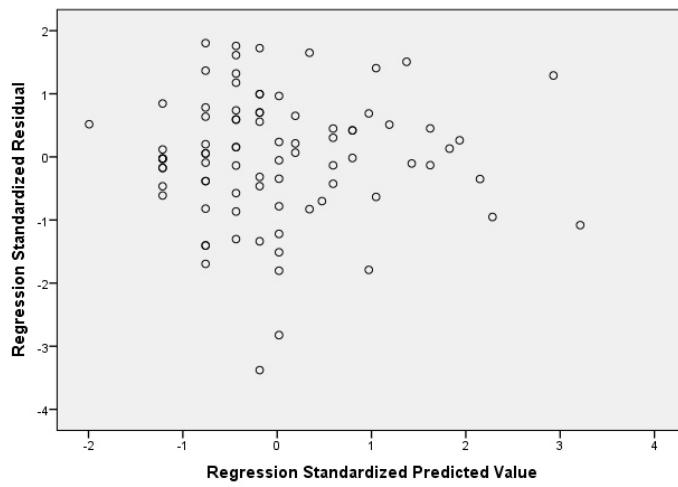
K7: Total employees on corporate venture success



K8: Total sales on corporate venture success



K9: Team Size on corporate venture success



APPENDIX L: SYNTAX USED TO RUN THE HETEROSCEDASTICITY ANALYSIS

Appendix K provides the Syntax used to perform the heteroscedasticity analysis. The syntax is developed by Gwilym Pryce and acknowledged as an official SPSS macro. The syntax reads as follows.

* BREUSCH-PAGAN & KOENKER TEST MACRO *
* See 'Heteroscedasticity: Testing and correcting in SPSS'
* by Gwilym Pryce, for technical details.
* Code by Marta Garcia-Granero 2002/10/28.

* The MACRO needs 3 arguments:
* the dependent, the number of predictors and the list of predictors
* (if they are consecutive, the keyword TO can be used) .

* (1) MACRO definition (select an run just ONCE).

```
DEFINE bpktest(!POSITIONAL !TOKENS(1) !/POSITIONAL !TOKENS(1) !/POSITIONAL  
!CMDEND).
```

* Regression to get the residuals and residual plots.

```
REGRESSION
```

```
/STATISTICS R ANOVA
```

```
/DEPENDENT !1
```

```
/METHOD=ENTER !3
```

```
/SCATTERPLOT=(*ZRESID,*ZPRED)
```

```
/RESIDUALS HIST(ZRESID) NORM(ZRESID)
```

```
/SAVE RESID(residual) .
```

```
do if $casenum=1.
```

```
print /"Examine the scatter plot of the residuals to detect"
```

```
/"model misspecification and/or heteroscedasticity"
```

```
/"
```

```
/"Also, check the histogram and np plot of residuals "
```

```
/"to detect non normality of residuals "
```

```
/"Skewness and kurtosis more than twice their SE indicate non-normality "
```

```
end if.
```

* Checking normality of residuals.

```
DESCRIPTIVES
```

```
VARIABLES=residual
```

```
/STATISTICS=KURTOSIS SKEWNESS .
```

* New dependent variable (g) creation.

```
COMPUTE sq_res=residual**2.
```

```
compute constant=1.
```

```

AGGREGATE
/OUTFILE='tempdata.sav'
/BREAK=constant
/rss = SUM(sq_res)
/N=N.
MATCH FILES /FILE=*
/FILE='tempdata.sav'.
EXECUTE.
if missing(rss) rss=lag(rss,1).
if missing(n) n=lag(n,1).
compute g=sq_res/(rss/n).
execute.
* BP&K tests.
* Regression of g on the predictors.
REGRESSION
/STATISTICS R ANOVA
/DEPENDENT g
/METHOD=ENTER !3
/SAVE RESID(resid) .
*Final report.
do if $casenum=1.
print /" BP&K TESTS"
/" =====".
end if.
* Routine adapted from Gwilym Pryce.
matrix.
compute p=!2.
get g /variables=g.
get resid /variables=resid.
compute sq_res2=resid**2.
compute n=nrow(g).
compute rss=msum(sq_res2).
compute ii_1=make(n,n,1).
compute i=ident(n).
compute m0=i-((1/n)*ii_1).
compute tss=transpos(g)*m0*g.
compute regss=tss-rss.
print regss
/format="f8.4"
/title="Regression SS".
print rss
/format="f8.4"
/title="Residual SS".

```

```

print tss
/format="f8.4"
/title="Total SS".
compute r_sq=1-(rss/tss).
print r_sq
/format="f8.4"
/title="R-squared".
print n
/format="f4.0"
/title="Sample size (N)".
print p
/format="f4.0"
/title="Number of predictors (P)".
compute bp_test=0.5*regss.
print bp_test
/format="f8.3"
/title="Breusch-Pagan test for Heteroscedasticity"
+ " (CHI-SQUARE df=P)".
compute sig=1-chicdf(bp_test,p).
print sig
/format="f8.4"
/title="Significance level of Chi-square df=P (H0:"
+ "homoscedasticity)".
compute k_test=n*r_sq.
print k_test
/format="f8.3"
/title="Koenker test for Heteroscedasticity"
+ " (CHI-SQUARE df=P)".
compute sig=1-chicdf(k_test,p).
print sig
/format="f8.4"
/title="Significance level of Chi-square df=P (H0:"
+ "homoscedasticity)".
end matrix.
!ENDDEFINE.

```

* (2) Sample data (replace by your own)*.

INPUT PROGRAM.

- VECTOR x(20).
- LOOP #I = 1 TO 50.
- LOOP #J = 1 TO 20.

```
- COMPUTE x(#J) = NORMAL(1).  
- END LOOP.  
- END CASE.  
- END LOOP.  
- END FILE.  
END INPUT PROGRAM.  
execute.
```

* x1 is the dependent and x2 TO x20 the predictors.

* (3) MACRO CALL (select and run).

```
BPKTEST x1 19 x2 TO x20.
```
