**Supplementary material** for the article “Building prediction models with grouped data: a case study on the prediction of turnover intention”

Supplement I: Overview of variables, measures and descriptives – Employee questionnaires, N = 1454

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Measure | N items | α¹ | Example item | Scale2 | Reference | Sample descriptives | |
|  |  |  |  |  |  | **M** | **sd** |
| Intention to leave | 3 | ,888 | *“I sometimes think about changing employers”* | A | Valentine, Greller & Richtmeyer, 2006 | 2,19 | ,932 |
| Gender (male) | 1 |  |  |  |  | 57% |  |
| Age | 1 |  | *Year of birth* | years |  | 38,44 | 12,867 |
| Educational level > Ba | 1 |  |  |  |  | 38% |  |
| Management position | 1 |  |  | No/Yes |  | 24% |  |
| Hours/week - contract | 1 |  |  | hours |  | 31,43 | 12,39 |
| Contract type (1-2)2 | 1 |  |  | B |  | 83% |  |
| Leader-Member Exchange | 12 | ,889 | *“I like my supervisor very much as a person”* | A | Liden & Maslyn (1998) | 3,74 | ,426 |
| Information sharing | 2 | ,686 | *“Employees are informed about the operating results”* | C | Based on Kroon, et al. (2012) | 3,52 | 1,291 |
| Voice | 5 | ,774 | *“employees are involved in policy making”* | C | Based on Kroon, et al. (2012) | 3,05 | ,922 |
| Pay satisfaction | 3 | ,812 | *“I can make a decent living off my pay”.* | A | QEEW (2014) | 3,37 | ,776 |
| Perceived fairness | 16 | ,941 | *“The process used to conduct my performance appraisal is fair”* | A | Tsui, et al. (1997) | 3,37 | ,616 |
| Job proactivity | 5 | ,889 | *“In my work, I make suggestions to improve the way we work”* | A | Van Veldhoven & Dorenbosch (2008) | 3,94 | ,603 |
| Career opportunities | 3 | ,891 | *“I receive sufficient guidance in my career development”* | A | QEEW (2014) | 3,29 | ,918 |

1 α = Cronbach’s alpha, 2 Scale A: 1-5 (completey disagree –completely agree); B: 1 = Permanent, 2= Temporary with outlook on permanent, 3 = Temporary, 4 = On call; C: 1 -5 (not applicable to any employee – applicable to all employees)

Supplement II: Overview of variables, measures and descriptives – Owner-manager questionnaires (N = 199)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Measure | N items | α¹ | Example item | Scale2 | Reference | Sample descriptives | |
|  |  |  |  |  |  | **M** | **sd** |
| Number of employees | 1 |  | *“"What is the total number of employees, including cooperating owners and part timers?"* |  |  | 31,27 | 40,024 |
| Number of FTE current year | 1 |  | *“How many FTEs does the company have now?”* | FTE |  | 22,92 | 31,850 |
| Number of FTE last year | 1 |  | FTE |  | 20,67 | 28,057 |
| Availability works council | 1 |  | *“Does the company have a works council/employee representation?”* | No/Yes |  | 12,69% |  |
| Availability HR professional | 1 |  | *“Does the company employ a person specifically dedicated to human resources, such as a human resources manager?”* | No/Yes |  | 39,90% |  |
| Number of hierarchical levels | 1 |  | *“What is the largest number of hierarchical levels between the top and the shop floor?”* |  |  | 2,26 | 2,574 |
| Number of departments | 1 |  |  |  |  | 3,34 | 2,111 |
| Number of managers | 1 |  |  |  |  | 2,90 | 2,539 |
| Family business | 1 |  | *“Is the firm a FB according to the definition of the European Commission?”* | No/Yes |  | 60,47% |  |
| HRM: turnover | 1 |  | *“Compared to your leading competitors, how would you rate your organization's performance over the past two years on these indicators?”* | C | Guest, & Peccei(2001) | 2,11 | ,958 |
| HRM: attract well-qualified personnel | 1 |  | C | 3,15 | ,783 |
| HRM: retain key employees | 1 |  | C | 3,78 | ,706 |
| HRM: Absenteeism level | 1 |  | C | 2,08 | ,979 |
| HRM: Amount of labor disputes. | 1 |  | C | 1,52 | ,690 |
| HRM: quality of ideas and suggestions | 1 |  | C | 3,2 | ,736 |
| HRM: Contribution to innovation | 1 |  | C | 3,14 | ,847 |
| HRM: Involvement of employees. | 1 |  | C | 4,03 | ,658 |
| HRM: Flexibility of employees | 1 |  | C | 3,85 | ,744 |
| Availability of a supervisory board | 1 |  | *“Does your company have a supervisory/ advisory board?”* | No/Yes |  | 5,05% |  |
| Availability of an advisory board | 1 |  | No/Yes |  | 8,67% |  |
| Corporate entrepreneurship | 7 | ,824 | *“Our firm has introduced many new products or services over the past three years”* | A | Kellermanns & Eddleston (2006) | 3,10 | ,766 |
| Strategic planning | 13 | ,696 | *“We have a strategy to achieve our goals”* | A | Adapted from Kellermanns & Eddleston (2006), Pearce, Robbins & Robinson (1987), Powell (1992) | 3,54 | ,413 |
| Entrepreneurial Orientation | 9 | ,827 | *“I am usually the one who responds to actions initiated by competitors”* 3 | B | Kroon, van de Voorde & Timmers (2012) | 4,60 | ,942 |

1 α = Cronbach’s alpha. 2 Scale A: 1-5 (completey disagree –completely agree); B: Bipolar statements with a 7-point likert scale between both poles; C: 1-5 (Very low, low, average, high, very high). 3 Full item: “*Compared to your leading competitors, how would you rate your organization's performance over the past two years on these indicators” “In my role as entrepreneur/manager, I am usually the one who responds to actions initiated by competitors”*, or: “*In my role as entrepreneur/manager I am usually the one who starts actions that competitors respond to*”.

**Reference**

Guest, D. E., & Peccei, R. (2001). Partnership at work: Mutuality and the balance of advantage. *British Journal of Industrial Relations, 39*(2), 207–236. https://doi.org/10.1111/1467-8543.00197

Kellermanns, F. W., & Eddleston, K. A. (2006). Corporate entrepreneurship in family firms: A family perspective. *Entrepreneurship, Theory and Practice*, *30*(6), 809–830. https://doi.org/10.1111/etap.12114

Kroon, B., van de Voorde, K., & Timmers, J. (2012). High performance work practices in small firms: A resource-poverty and strategic decision-making perspective. *Small Business Economics*, *41*(1), 71–91. <https://doi.org/10.1007/s11187-012-9425-0>

Liden, R. C., & Maslyn, J. M. (1998). Multidimensionafity of Leader-Member Exchange : An Empirical Assessment through Scale Development. *Journal of Management*, *24*(1), 43–72. <https://doi.org/10.1177/014920639802400105>

Pearce, J. A., Robbins, D. K., & Robinson, R. B. (1987). The impact of grand strategy and planning formality on financial performance. *Strategic Management Journal*, *8*(2), 125–134. https://doi.org/10.1002/smj.4250080204

Tsui, A. S., Pearce, J. L., Porter, L. W., & Tripoli, A. M. (1997). Alternative approaches to the employee-organization relationship: Does investment in employees pay off? *Academy of Management Journal*, *40*(5), 1089–1121. https://doi.org/10.5465/256928

Van Veldhoven, M., & Dorenbosch, L. (2008). Age, proactivity and career development. *Career Development International*, *13*(2), 112–131. <https://doi.org/10.1108/13620430810860530>

Van Veldhoven, M. J. P. M., Prins, J., Van der Laken, P. A., & Dijkstra, L. (2014). QEEW 2.0 Questionnaire on the Experience and Evaluation of Work (QEEW)/ VBBA2. 0: Update van de standaard voor vragenlijstonderzoek naar werk, welbevinden en prestaties.