

Innovation in management: towards the open manager

Innovazione nel management: verso l'open manager

Paolo Bruttini, Michele Gallo, Paolo Mariani and Tullio Menini

Abstract This study focuses on the manager's professional work. In particular, the main focus is to detect the possible new approach in the managerial behavior able to define this professional figure and a first idea of 'open manager'. Kindness, empathy and sharing of objectives are characteristics that could revolutionize the figure of the leader. A transformation that moves away from the old models in favour of a horizontal and participatory organization of power. For this reason, the successful leader is able to interact the human dimension of employees and guide them towards a shared goal.

Abstract Questo studio si concentra sul lavoro professionale del manager. In particolare, l'obiettivo principale è quello di individuare il possibile nuovo approccio nel comportamento manageriale in grado di definire questa figura professionale e una prima immagine di "manager aperto". Gentilezza, empatia e condivisione degli obiettivi sono caratteristiche che potrebbero rivoluzionare la figura del leader. Una trasformazione che allontana i vecchi modelli a favore di un'organizzazione orizzontale e partecipativa del potere. Per questo motivo, il leader di successo è in grado di intercettare la dimensione umana dei collaboratori e di guidarli verso un obiettivo condiviso.

Key words: Labour Market, Open Manager, Rasch Analysis

Paolo Bruttini

Università degli Studi di Udine; e-mail: bruttini.paolo@spes.uniud.it

Michele Gallo

Università degli Studi di Napoli L'Orientale; e-mail: mgallo@unior.it

Paolo Mariani

Università degli Studi di Milano-Bicocca; e-mail: paolo.mariani@unimib.it

Tullio Menini

Università degli Studi di Napoli L'Orientale; e-mail: menini@unior.it

1 Scenario

The great wave of globalization has produced a profound impact on organizations from many points of view. A change as essential as ever to enable those who lead a business today to cope with the difficulties, rethinking management in entirely new ways and logics. Moreover, with the new century, one of the most interesting strategic perspectives in strategic and industrial development research has been developing, namely the phenomenon called Open Innovation [3]. Indeed, it has been realized that there can be an open way of developing innovation, through connections and collaborations with research centers, professionals and companies outside the organization, with a view to creating a mutually beneficial alliance.

In recent years, it is also applied to the enterprise in its complexity, to relationships with employees and to the way management interprets its role [2]. Thus, Open Organization is understood as a complex of practices that can be traced back to organizational models, systems of work team functioning and managerial behaviors that seek to provide a concrete response to the need for companies to adapt quickly and evolve, based on market needs (customers and tensions with competitors). It is a fragmented, multifaceted, largely unstructured movement [4] that identifies itself in various "buzz words" such as heterarchy, agility, teal and openness precisely.

2 Data description

Data was collected by Fondirigenti and Confindustria in 2020 through a structured questionnaire distributed to a set of Italian companies and filled in by a managerial internal figure. The total number that responded was equal to 383 managers (non-probabilistic sample). The questionnaire was made up of two sections:

- in the first section there were questions concerning the context in which the firms operate, such as economic sector, dimension, geographical area, as well as the main social demographic characteristics of managers, such as gender, age, education level, respectively.
- in the second section there were thirty items describing the managers' business behaviors and attitudes, useful for defining the concept of 'openness' characterizing the figure of the open manager. So, in the second section of the questionnaire, there are 30 different statements. Items were formulated as a 4point Likert scale, with responses ranging from 1 to 4 where 1 stands for "totally disagree" and 4 stands for "totally agree".

3 Methodology

The Rasch dichotomous model can be applied wherever discrete data is obtained with the intention of measuring an attribute or qualitative trait. The Rasch dichotomous model specifies the probability, P , that person n of ability B_n succeeds on item i of difficulty D_i . “Success” means “exhibits more of our intended latent variable.” “Failure” means “exhibiting less of our intended variable”. So, we must score the observations in accordance with this intention, no matter what values are assigned to the observation during data collection. P is the probability of success, and $1 - P$ is the probability of failure. Success or failure must always happen, when we add their probabilities, they must sum to 1. In other words, success is a score of “1”, and failure is a score of “0” on an item. Then the Rasch dichotomous model specifies the probability P_{ni1} , of the person n of ability B_n scores 1 on item i of difficulty D_i while with P_{ni0} the probability of scoring 0. For “qualitatively ordered data” “Success” means “more of what we are looking for” “Failure” means “less of what we are looking for”. The difference between “Success” and “Failure” is qualitative. The ordering of these different qualities is indicated by scoring them “1” and “0”. “1” “indicates more of the latent variable”. “0” “indicates less of the latent variable”. In the Rasch model, the probability of a correct answer is modeled as a logistic function of the difference between the person and item parameter. We have already talked about dichotomous data, such as “Right or Wrong”. “Dichotomous” means “two cuts” in Greek. In performance assessment and attitude surveys, we encounter rating scales, such as the first “none, some, plenty, and all” and the second “strongly disagree, disagree, agree, and strongly agree” [1,5].

4 Results

After processing the fit statistics report how well the data corresponded to the measure estimates. The results of the analysis are summarized and reported in the table 1. Reliability statistics report the reproducibility of the measures.

The concept of reliability is defined by the ratio we now express as:

$$\text{Reliability} = \text{True Variance} / \text{Observed Variance}.$$

Kuder-Richardson KR-20, Cronbach Alpha, etc. are all estimates of this ratio.

They are estimates because we can't know the “true” variance, we must infer it in some way. In Rasch situations, we also have an item reliability.

This reports how reproducible the item difficulty order is for the set of items for this sample of people.

OUTFIT means “Outlier-sensitive fit statistic”. OUTFIT is a conventional Pearson chi-square fit statistic divided by its degrees of freedom. This is more sensitive to unexpected remarks by people on items that are relatively very easy or very difficult for them.

The INFIT mean-square is the information-weighted average of the squared residuals.

INFIT means “Inlier-pattern-sensitive fit statistic”, or more technically, “Information-weighted fit statistic”. This is more sensitive to unexpected patterns of people's observations of items that are roughly targeted at them (and vice versa).

Table 1 Summary statistics**SUMMARY OF 383 MEASURED PERSONS**

	RAW SCORE	COUNT	MEASURE	MODEL ERROR	INFIT		OUTFIT	
					MNSQ	ZSTD	MNSQ	ZSTD
MEAN	99.4	30	1.46	0.3	1.03	0.1	0.99	-0.1
S.D.	7.2	0	0.62	0.04	0.37	1.3	0.35	1.2
MAX.	117	30	3.88	0.6	2.68	4.4	2.93	4.6
MIN.	73	30	-0.3	0.23	0.32	-3.6	0.31	-3.6

CRONBACH ALPHA (KR-20) PERSON RAW SCORE RELIABILITY = 0.76

SUMMARY OF 30 MEASURED ITEMS

	RAW SCORE	COUNT	MEASURE	MODEL ERROR	INFIT		OUTFIT	
					MNSQ	ZSTD	MNSQ	ZSTD
MEAN	1269	383	0	0.08	1	0.1	0.99	0
S.D.	119.3	0	0.59	0.01	0.12	1.6	0.15	1.9
MAX.	1457	383	1.42	0.12	1.33	4.6	1.33	4.6
MIN.	958	383	-0.99	0.06	0.88	-1.6	0.81	-2.2

ITEM RELIABILITY = 0.98

The parameters of the model characterize the competence of the interviewees and the difficulty of the items as collocations on a continuous latent variable. The proposed representation of the results allows us to have at the same time the measure of the behaviors considered prevalent in the definition of OM, and of the adherence of the managers interviewed to these behaviors. In the variable map (Fig.1) it is possible to notice three groups of items: the uppermost ones, circled in red, which are distant from the others represent the statements less condvisibile by the OM (the most difficult).

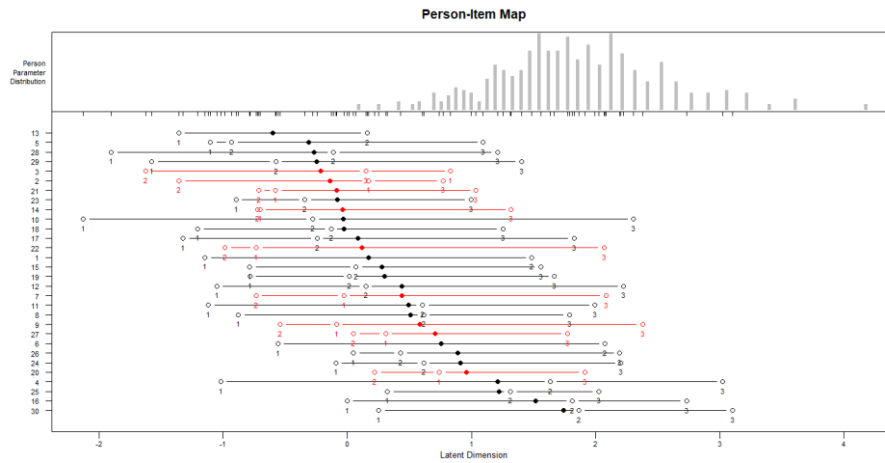


Fig. 1 Person and item parameters (items 1-30)

There are several diagnostics for the analysis of the individual items. By way of example, the measures of the thresholds between categories and curves are calculated. The baseline value of 1.0 for INFIT and OUTFIT is very close to the value in the table (Fig.2).

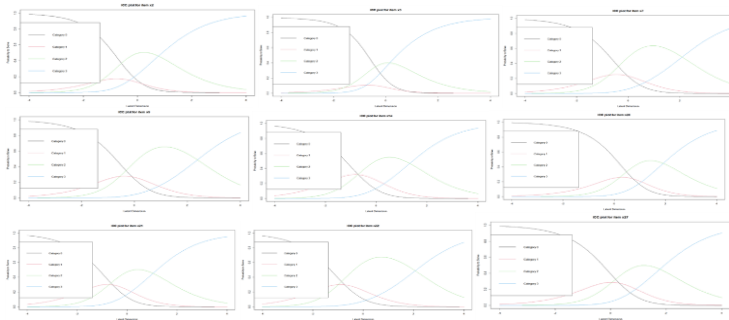


Fig. 2 Category probabilities - item x2, x3, x7, x9, x14, x20, x21, x22 e x27. Black (0): “Strongly disagree”; red (1): “Partially disagree”; green (2): “Partially agree”; blue (3): “Strongly agree”

5 Conclusions and Further extension

The results of the analysis can be used to predict how likely the manager will be to be open in his activities, based on the pattern of responses to the questionnaire. The guidelines for the managerial staff in the selection phase are useful for a fruitful collaboration or for calibrating training interventions on certain aspects of possible improvement of the company management. Using the data collected in the first part

Bruttini P., Gallo M., Mariani P. and Mennini T.

of the questionnaire, it is possible to compare groups of subjects with different personal characteristics. The study lends itself to further analysis and application in management and training.

References

1. Bond, T., Yan, Z., and Heene, M.: Applying the Rasch model: Fundamental measurement in the human sciences”, Routledge (2020)
2. Bruttini, P.: Città dei capi. Milano. IPSOA (2014)
3. Chesbrough, H.: The logic of open innovation: managing intellectual property. California management review, 45(3), 33-58 (2003)
4. Laloux, F., Poireaux, G. N., & Blanchard, P.: Reinventing Organizations-Vers des communautés de travail inspirées. Diateino (2015)
5. Rasch, G.: Probabilistic models for some intelligence and attainmenttests, MESA Press (1993)