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Original article

Work ability psychological variables in workers of the pharmaceutical industry, and the importance of internal marketing

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Abstract. *Background and aim*: Internal Marketing is also positively related to job satisfaction. However, there is a gap in the literature on the influence of Internal Marketing (IM) on Work Ability (WA) in the workers of the Pharmaceutical Industry. The aim of our study is to assess this interaction, demonstrating evidence that the Internal Marketing's five dimensions affect, positively or negatively the WA in workers of the Pharmaceutical Industry. *Methods:* We collected data (N = 150) from workers of Pharmaceutical Industry mean age of 37.86 years (*SD*=10.788), through internal advertisements at the university posted on information dissemination panels, e-mail databases and through the social LinkedIn network. The Statistical Package R-Studio program was used for statistical analysis. *Results*: We verified that the group with Poor WA had a lower average value of Perceived IM than the group with Good WA. *Conclusions:* This study seems to indicate that promoting IM protocols helps increase WA among pharmaceutical industry workers. (www.actabiomedica.it)

Key words: Job Satisfaction, Pharmaceutical Industry, Work Ability, Psychological variables, Internal Marketing

Introduction

Internal Marketing (IM) is considered the "missing half" of the external Marketing program of organizations since it allows the implementation of internal strategies that complement the external focus. In this sense, the model of Berry in 1970 launched the basis and defined an important concept, the employer is perceived as an internal client, with the need to use with him the internal market techniques, considered a priority the tasks must be compared to a product. This relationship enhances the involvement of the employee such as their satisfaction with reflexes on the external client satisfaction (1). The evolution of this concept incorporated the notion that the information must assume a horizontal level, thereby the procedures of the company should be sufficiently flexible to allow the employees to be motivated and to enhance their work and earnings (2). In the same way, and from a more strategic point of view, the internal marketing concept is based, therefore, on human factors and the assumption that a company´s employees are one of its main assets (3). The application of the IM multi-dimension model shows the equilibrium between the focus on internal clients and external clients, which can enhance the organizations marketing objectives on external clients (4).

Thus, IM proposes the idea that one of the major goals of management is to plan and build proper, close, and flexible relationships with internal parts, to

improve internal processes in a continuous basis. IM view on organizations can be seen as individualistic, as far as it highlights the crucial importance of the individual both inside and outside the organization, as a sense of production source, which, however, operates through a strategic prism (5). The IM is based on an angular interpretation of human resources (6) and this approach is aligned with the personal element of Services Marketing-Mix (7-8) and internal and border relationships identified in the Services Marketing triangle (9). This perspective is based on the belief that external Marketing success depends upon the company's ability to satisfy and motivate employees, and the ability to do it is the main role of IM (10-12). In the same train of thought, the IM influence positively the employees and allows the company to establish healthy, lasting, and productive relationships with their members and it is through internal communication that understanding, coordination and cooperation are achieved, enabling the growth and development of organizations (13). Thus, the entire organization must be built on a solid foundation of information and communication and not just on a hierarchy of authority. The distribution of information is thus one of the prerequisites for converging attitudes and behaviors of employees with the company's goals assuming relevance in the way that organizations transfer information from one entity to another, being particularly important for employees. Another key element refers to accountability levels, through either feedback or taking into consideration the internal clients' needs (14-15). Thus, five essential dimensions in IM: Creation of face-to-face Formal Information, Creation of Formal Writing Information, Accountability, Creation of Informal Information and Distribution of Information, and identifying relationships between the concept of IM and certain organizational factors (employees' behavior, employees' retention, employees' condescension, competitive position, and customer satisfaction). This study led to the development of the IMO Scale, an instrument that has been proved to be reliable and valid (7). Hereby, variables such as internal communication, job satisfaction and interpersonal relations have been mentioned as essential to internal organizational operations and consequently for its productivity and image in the market (5,14). On the other hand, increased job satisfaction has been shown through intervention programs of IM, and it has demonstrated its influence in the industrial sector (16).

Some studies have shown a correlation between job satisfaction and performance whose results indicate that increased job satisfaction implies a positive effect on work performance and job satisfaction and job performance. similarly, job satisfaction leads employees to keep high levels of performance in their tasks (17-19).

Ilmarinen's model suggests that WA is determined based on human resources and job features, being the human resources an association between health (physical, cognitive, and social abilities), education and skills, values, and attitudes of the individual and both its satisfaction and motivation at work (20). These elements are related with physical and mental demands of the task, with workers and administration and with the working environment, whose interconnections result in the individual's work ability. The WA is the basis of human well-being and it does not remain constant throughout working life, being affected by multiple factors (21). Thus, the deterioration of the ability to work is related with the lack of recognition and self-esteem, inadequate conditions in internal environment, prolonged labor time and sedentary lifestyle which indicates that the WA level of a working population can prevent both permanent disability and sick absence (22).

Industrial facilities are challenging places characterized by specialization, the use of specific tools, technological complexity in constant update and dealing with procedures and emerging technologies, so the risks and the permanent change to the nature of work requires constant adjustments. Very much must be done so that work remains a positive and healthy experience for workers throughout their career (23).

As we have seen, there are evidence that IM positively influences job satisfaction, which in turn, is also positively related to work performance. However, there are no studies that show the direct influence of IM in Work Ability. The overall goal of our study is to examine this relationship by thoroughly investigate how IM and the five dimensions of IM Orientation influence the WA in a Pharmaceutical industry individuals.

Materials and methods

Participants

The recruitment of professionals working in the pharmaceutical industry was carried out through internal advertisements at the university posted on information dissemination panels, e-mail databases and through the social LinkedIn network**.** The collected sample was 150 participants workers of Pharmaceutical Industry, consisting of 60 women's and 90 men's, aged between 20 and 61 years, with an average age of 37.86 ± 10.788. The average working years of this sub-sample is 15.55 ± 11.50) and only 29.6% of the participants have, at least, completed high school education. After the consent of the responsible entities, all subjects gave their informed consent with absolute guarantee of anonymity. The participants completed the protocol privately with researcher's support, confirmed having read, understood, and allow to participate in the present study, were debriefed upon completion, and the protocol was carried out in accordance with the ethical and applicable research regulations and guidelines.

Measures

We used the Internal Marketing Orientation Scale Portuguese version (IMOS) (7,24) with 16 statements (five factors). Participants were asked how much they agreed (1 = strongly disagree and 7 = strongly agree). The first factor, called Creation of Formal face-to-face Information, consists in Items 1 to 3 and has an internal consistency of 0,80. The second factor, Creation of Written Formal Information, comprises the items 4 to 6 and has an internal consistency of 0.75. The third factor, Accountability, consists in items 7-9 and has an internal consistency of 0.79. The fourth factor, Creation of Informal Information, consists in items 10 to 13 and has an internal consistency of 0.81. The last factor, Distribution of Information, contains the items 14 to 16 and has an internal consistency of 0.78. The factor structure of the Portuguese version shows the same five factors identified in the original scale. In terms of internal consistency, the English version reveals satisfactory levels of internal consistency, namely: 0.87 for Creation of Formal face to face Information factor, 0.79 for Creation of Formal Written Information factor, 0.93 in Accountability dimension, 0.84 for Distribution of Information factor and, finally, 0.93 in Creation of Informal Information factor.

We also used the Work Ability Index (WAI) Portuguese version (25-26). This scale consists in 7 items - that are preceded by a section of general data, in which individuals register the date, sex, age, marital status, education level, occupation, a brief description of what they do at work and their workplace – aiming to determine the WAI, defining it into four levels: poor, moderate, good, and excellent. In item 1, which relates the current WA with the best ability revealed throughout life until the assessment moment, individuals compare the current WA as they perceive it with their maximum self-perceived ability, on a 0 – 10 scale. Item 2, to assess the current WA regarding job requirement, rates the current ability to work (2 – 10 points) in two points: one referring to the physical demands (muscular enforcement) and the other referring to the mental demands (intellectual imposition) of the job. The score of this item requires a weighting factor from both points, demanding the use of a specific formula that meets the individual's job requirements and the number of answers in subparagraphs of physical and mental demands. The scale had good internal consistency *Cronbach's Alpha* = 0.79.

Ethics procedures and institutional review board statement

The protocol was carried out in accordance with the Declaration of Helsinki, and ethics applicable regulations and guidelines, and was approved by the Institutional Review Board of the Consumer Neurosciences LAB (CNL) (protocol code 25.1/2021). All subjects confirmed having understood and allow participate in the present study, gave them Informed Consent Statement. The study was carried out on a voluntary basis, without affecting any type of therapy or change in the lives of the participants, and all participants were informed that this study was intended only for academic purposes and be subject to analysis and discussion of results in the scientific community.

Analysis

The Statistical Package *R-Studio* program was used to perform the statistical analysis**.** Given the sample size (n > 30), considered as a "big sample" in statistical literature, we are allowed to use parametric tests for all variables being studied without checking if the distribution of the variables "fit" a normal distribution curve, that is, to verify the occurrence of the violation of normality assumption (27). As main analysis, we used measures of central tendency, using t-tests for independent samples (ratio between WA and IM) and mixed linear regressions (testing IM's predictive ability).

Results

Perceived IM in Industry and WA

The distribution of participants by the 4 levels of the WAI defined by the literature was highly heterogeneous 62 participants classified with Excellent WA, 72 participants with Good, 13 with Moderate and only 3 with Poor). Three new groups were created, using the percentiles 30 and 70 of the WAI Total. Thus, we get a group of "Poor WA", with 49 participants, a group of "Moderate WA", with 51 participants and the group "Good WA" with 50 participants. Being common in scientific practice, the analyses are performed using only the extreme groups (49 participants from Poor WA and 50 participants of Good WA). The mean (M), standard deviation (SD), the minimum (Min) and maximum (Max) of each group, in the variables of IM Perceived, Face-to-Face Communication of Information, Communication of Formal Writing Information, Accountability, Communication of Informal Information and Information Distribution (Table 1).

We conclude that the group with Poor WA had lower average value of Perceived IM than the group with Good WA. This outcome, which was documented by "visual analysis data", was also found for all variables that compose the Perceived IM: Creation of Face-to-Face Information, Creation of Written Formal Information, Accountability, Creation of Informal Information and Distribution of Information. To check whether these differences in the absolute values assume statistical significance, a t-test for independent samples was performed to Perceived IM and to each of its components. Given the results of this statistical inference test, statistically significant differences we observed in all variables studied (Table 1).

Regarding Perceived IM, the inferential test showed that the Poor WA group has an average value of Perceived IM significantly lower than that the one obtained by the Good WA group (t (97) = 8.325, p < 0.001, large size of Cohen's effect d = 1.673; 95% CI [1.211, 2.129]) (Figure 1 - Panel 1). Similarly, the

Table 1. Descriptive statistics of each Work Ability group in IM variables.

		N	M	DP
Perceived Internal Marketing	Poor WA	49	4.663	0.758
	Good WA	50	5.720	0.067
Creation of Face-to-face information	Poor WA	49	5.002	1.085
	Good WA	50	5.841	1.086
Creation of Written Formal Information	Poor WA	49	4.361	1.119
	Good WA	50	5.393	0.111
Accountability	Poor WA	49	4.905	1.063
	Good WA	50	5.813	0.697
Creation of Informal information	Poor WA	49	4.648	0.792
	Good WA	50	5.827	0.688
Distribution of Information	Poor WA	49	4.386	0.925
	Good WA	50	5.575	0.836

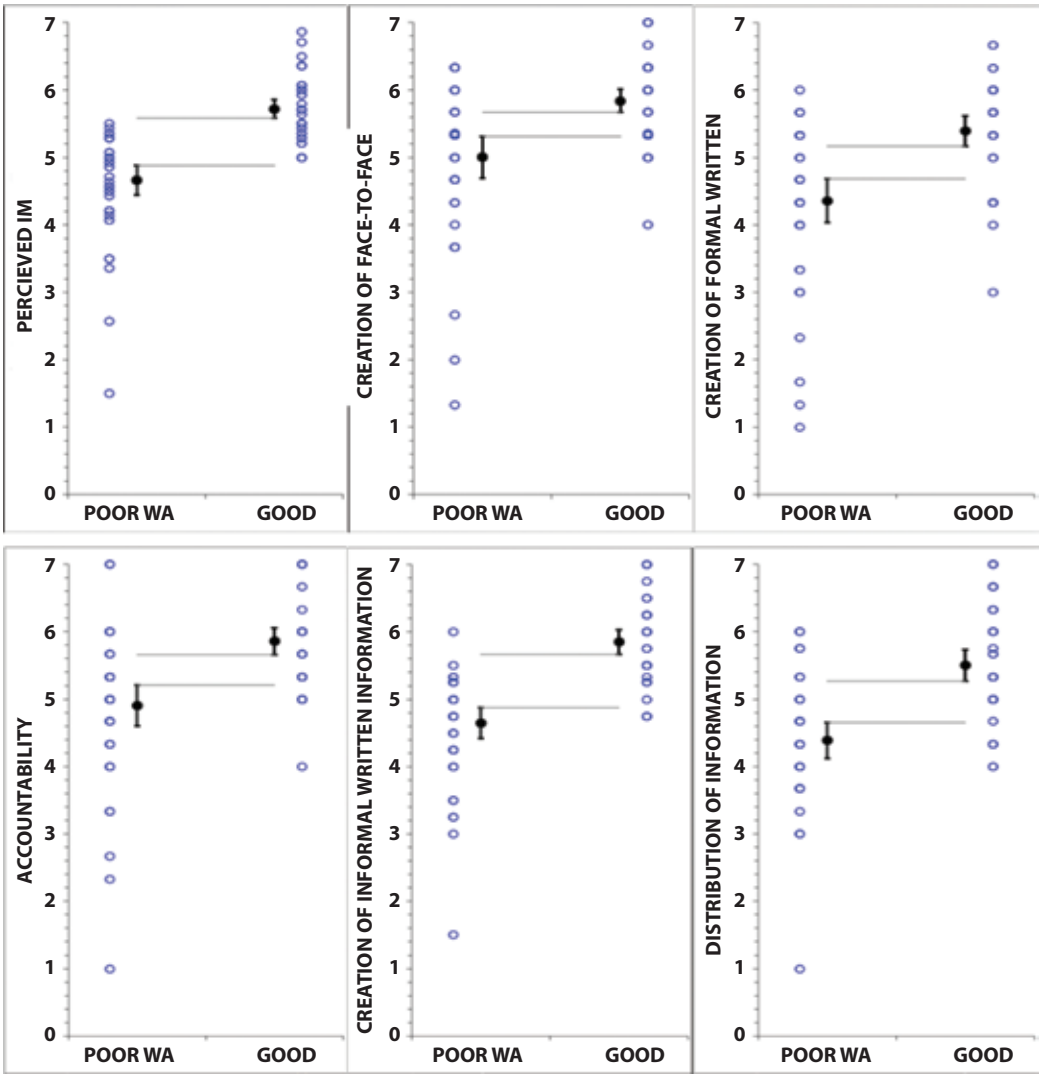

Figure 1. Illustrative panels of the differences between the groups of Good and Poor Work Ability in the variables: Perceived IM (Panel - 1); Creation of face-to-face information (Panel - 2); Creation of Formal Written Information (Panel - 3); Accountability (Panel - 4); Creation of Informal Information (Panel - 5); Distribution of Information (Panel – 6).

Poor WA group got an average value in Creation of Face-to-Face Information significantly lower than the one registered by Good WA group (t (97) = 4.748, p < 0.001, large size of Cohen's effect d = 0.954; 95% CI [0.536, 1.368]) (Figure 1 - Panel 2).

The Poor WA group also registered an average value of Creation of Written Formal Information significantly lower than the obtained by the Good WA group (t (97) = 5.330, p < 0.001, large size of Cohen's effect d = 1.071; 95% CI [0.647, 1.491]) (Figure 1 - Panel 3).

Regarding accountability, the results were in the same direction as the previous variables (t (97) = 5.284, p < 0.001, large size of Cohen's effect d = 1.062; 95% CI [0.638, 1.481]) (Figure 1 - Panel 4). Differences in the same direction and with statistical significance were reported between the Good and Poor WA group in the Creation of Written Informal Information (t (97) = 8.302, p < 0.001, large size of Cohen's effect d = 1.669; 95% CI [1.207, 2.124]) (Figure 1 - Panel 5). For the variable Distribution of Information, the Poor WA group again made an average value significantly

Table 2. Multiple linear regression with the IM variables as predictors of Work Ability.

	B	SE B	β
(Constant)	22.306	2.041	
Perceived IM	5.583	0.726	0.917*

Note. *R^2= 0.406 .*p<0.001*

lower than that obtained by the Good WA group (t (97) = 6.372, p <0.001, large size of Cohen's effect d = 1.281; 95% CI [0.845, 1.711]) (Figure 1 - Panel 6).

To assess whether the IM and its sub-components are effective predictors of WA, it was carried out a multiple linear regression using stepwise method (Table 2).

We found that, considering the produced regression model, only the variable Perceived IM was considered a significant predictor of the ability to work with a value B of 5.583. This value indicates that if the Perceived IM increases one (1) unit (e. g. passes from 4 to 5 on a 1-7 scale) the WA increases 5.583, enough for, for instance, the worker to pass from Moderate to Good Work Ability. Similarly, if the Perceived IM increases two (2) units, the WA increases 11.166, enough to, for example, the employee to pass from Moderate to Excellent WA.

Discussions and implications

Job satisfaction appears to increase through the implementation of IM programs in enterprises, particularly the industrial ones (16,28). This satisfaction showed, many times, related with job performance (17-19, 29-30). However, job performance and IM practices were not directly related. Due to this nature, the objective of this study was to explore the relationship between IM and WA in an industrial environment.

In fact, there are statistically significant differences between the groups of Poor WA group and Good WA group in IM's score and all its components. In detail, the group with Poor WA had lower average value of Perceived IM than the group with Good WA. This result was expected, considering that, despite the absence of direct evidence for this direct relationship, increasing job satisfaction by a higher level of IM would lead to a better performance indicator of WA. This was also noticed in all variables that constitute the Perceived IM: Creation of Face-to-Face Information, Creation of Written Formal Information, Accountability, Creation of Informal Information and Distribution of Information. This outcome meets the IMO paradigm, which states that the dimensions that are part of IM are important for the internal environment and job satisfaction's growth (6,7). This result can also be explained that link variables of internal communication, job satisfaction and interpersonal relations as key to the organization's internal operations and consequently for its productivity and market image (5,14). Regarding the predictive analysis, IM proved to be a significant predictor of WA. This result further supports the relationship expected. Thus, the results of this study seem to indicate that promoting IM protocols in companies helps to increase the WA of employees. Still, this result must be taken carefully since we cannot be mistaken by the reverse causality. Additional studies need to be conducted to further explore this subject by, for example, manipulating other psychosocial factors at work and not focusing on job satisfaction only, which is one of the limitations of this study.

Limitations and future directions

There are issues for consideration in the present study. The concept of multidimensional can behave the dimension of Work/Family Balance (WFB), this study directly does not measure this question. As a future note it would be interesting to study this dimension through psychosocial factors indexing the scale Copenhagen Psychosocial Questionnaire (COPSOQ).

Conclusions

Our findings suggest that promoting IM protocols in health companies helps to increase the WA of employees once its IM proved to be a significant predictor of WA. The variables of internal communication, job satisfaction and interpersonal relations are key to the organization's internal operations and consequently for its productivity and market image. Thus, by investing in IM, companies may increase job

satisfaction by a higher level of IM, which would lead to a better performance indicator of WA.

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