

# Measuring innovative practices for workplace safety, health and well-being in Tunisia during the COVID-19 pandemic

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Received 8 December 2020

Accepted 24 January 2021

## Abstract.

**BACKGROUND:** At the beginning of the health crisis, a growing number of Tunisian companies adopted innovative practices for organizing production and work associated with the spread of teleworking. These digital transformations correspond to both economic and social developments.

**OBJECTIF:** This study holds promise as an ergonomic device that may inform organizational orientations setting and guide future research around causal pathways influencing innovative practices implementation for workplace safety.

**METHOD:** Following the conclusions of Gallie and Zhou in 2013, [24] showing from a factorial analysis that the items selected belong to two dimensions, two health indicators were constructed from the answers to the following study.

**RESULTS:** The empirical analysis performed on database of Best Places to Work confirms the structure of employee recognition expectation in Tunisia. This structure varies about the reconciliation between professional life and family. Then, the results of a mediation-moderation model highlight the decisive role of recognition in the construction of occupational health in the COVID-19 context, especially when greater involvement is expected from employees.

**CONCLUSION:** The innovative practices are applied in all regions of Tunisia at different levels and implemented at the first five certified companies to meet the various needs of employees. Its four pillars encompass social, mental, physical and financial well-being.

Keywords: Occupational health and safety, well-being, stakeholders, Human Resource management, COVID-19 pandemic



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## 1. Introduction

The COVID-19 pandemic is putting pressure on workers in ways that test not only their well-being and privacy, but also that of our society. The World Health Organization (WHO) found that 45% of health employees in China suffer from stress, while the prevalence of burn-out in Ethiopia tripled in April alone. The Coronavirus has created a mandate and an opportunity for us to expand our mental health offering. Long before COVID-19, Zurich realized that there were an increasing number of challenges in the workplace and the working environment, which led it to develop a global wellness framework. According to an investigative survey published in January 2017 by

the TAP agency in Tunisia, 98% of long-term leaves in the public service are linked to illness psychiatric patients and generate a loss for the State estimated at 172,000 working days per year. This is the equivalent of 4.6 million dinars of losses per year: “In the months that followed the revolution, the number of consultations increased by 20% at Razi Hospital, in Manouba and suicide attempts have almost quintupled” [1].

Another survey published in 2017 and conducted on a sample of 300 people representative of Ariana governorate, showed that the prevalence of at least one psychiatric disorder was 52%. Compared to 2005, this survey finds a slight decrease for depressive disorders 35% vs. 31% and anxiety disorders from 37% to 33%. The increase in prevalence has been discreet for pipes addictive and more significant for psychotic syndromes and risk suicidal”.

Finally, according to the latest Global Happiness Report, World Happiness Report (WHR) of the OECD, Tunisia is positioned, in 2020; at the 128th place in the world out of 153 countries in terms of citizen, happiness in 2017 it was ranked 102nd rank [2].

Regarding COVID-19 specifically, a study targeting 900 Tunisians showed that “40% of them do not consider this disease to be serious. 65% underestimate the speed and severity of the contagion” . . . this “could explain their careless, negligent, even deviant and irresponsible behavior”. A recent study revealed the negative effects of quarantine on the mental health of citizens [3]. These include the onset of symptoms of post-traumatic stress disorder, confusion and anger. This study shows, in particular, that when the date of the end of containment is not defined, the psychological impact is greater. These uncertainties and these abrupt changes create an entirely new and difficult climate to manage. Another search that focused on the effects of population containment showed that mass quarantine is likely to arouse community anxiety, for many reasons:

- This measure shows that the authorities consider the situation to be serious and likely to get worse;
- The implementation of this constraint mainly for the benefit of those who found outside affected cities reduced confidence;
- The belief that the authorities are acting in the interests of those who are inside;
- Quarantine means loss of control and a feeling of being trapped, who will be strengthened if families are separated;

- Rumors play an important role: the desire to know the facts will intensify and the absence of clear messages will increase fear and push people to seek information from less reliable sources.
- High anxiety leads to rapid congestion of health services with patients who do not necessarily carry the virus.
- The confinement of some zones also ergonomic risk creating a stigmatization of their inhabitants, who are socially rejected, discriminated against in their workplace and who may suffer violence and attacks targeting their property.

Many programs have found a natural resonance in the COVID-19 situation, especially those aimed at supporting mental health. During the Tackle, Your Feelings program in Ireland and Australia, athletic models reinforce the message “there is nothing wrong with not going” [4]. Other programs have also known international success such as the best places to work program, this program allows the certification of the best employers. Indeed, participation in the Best Places to Work For program will allow companies to increase the motivation of their employees and to measure their level of satisfaction and commitment [5].

Many firms will be rebalancing their priorities in the coming months, so that resilience becomes just as important to their strategic thinking as cost and efficiency. Likewise, the weight of global competition and demographic change will continue to affect the way people balance their family and professional life [6]. These new trends have made the labor market more dynamic and have brought with them the emergence of more varied forms of work and new jobs, requiring new skills. They also have the potential to contribute to the widening of gender inequalities and to question the measures taken by the state for a long time [7]. Thus, the regulatory frameworks and solidarity practices established on the labor market may need to be adapted to ensure the sustainability of the welfare state and to guarantee adequate protection for employees during the COVID-19 pandemic [8]. The multiple definitions of these innovative practices are marked by a certain plasticity. For [9] only teamwork is the subject of a consensus as an innovative managerial practice. However, [10] do not include it in what they call “innovative practices” in which, on the other hand, we find versatility, flexibility, participation, quality standards and computerization.

155 For others, “performance management” is based  
156 on the four essential innovations of working in  
157 autonomous teams, the existence of quality circles,  
158 incentive compensation and training [11]. According  
159 to [12], author has a more extensive conception of  
160 what he calls the “performance paradigm” and which  
161 combines two generic sets, namely “alternative work  
162 practices” and “employee involvement” practices.

163 These changes are often presented as part of a logic  
164 of exceeding taylorian work organizations, charac-  
165 terized in particular by their double vertical and  
166 horizontal division of work, which results in the  
167 strong prescription and fragmentation of tasks. The  
168 implementation of teamwork, information sharing,  
169 participation in decision-making or even the reduc-  
170 tion of the prescription of work would contribute to  
171 this overshoot [13]. Incentives such as the system-  
172 atic use of bonuses sometimes double the managerial  
173 systems aimed at increasing employee involvement.  
174 High Performance Workplace Organizations would  
175 be beneficial to employees, who would have the  
176 opportunity to mobilize their knowledge, express  
177 their creativity or even enhance their skills as in  
178 businesses. Most economic studies conclude that the  
179 productivity has improved following the adoption of  
180 innovative practices across Spanish regions [14].

181 However, in the field of critical sociology and phi-  
182 losophy, the spirit of these innovative practices has  
183 often been summed up as a “putting to work of subjec-  
184 tivity” which the principles of scientific organization  
185 aimed on the contrary to oust [15]. Several authors  
186 have thus seen in the wake of the “knowledge econ-  
187 omy” an ability of capitalism to survive by the “total  
188 mobilization” of workers [16], their “second degree  
189 exploitation” [17] or the “managerial superhuman-  
190 ization” [18].

191 The invention of the concept of constrained auton-  
192 omy reflects the contradictions between a logic of  
193 “liberation” from work and a logic of submission  
194 through the control of the resources made available to  
195 work. Therefore, after having long opposed the real  
196 importance and scope of the post-Taylorist devices,  
197 sociologists have today reached a minimal consensus,  
198 which can be summed up using two propositions. A  
199 new ergonomic framework has now been imposed,  
200 the main characteristic of which is to grant more  
201 autonomy to employees while placing them in a sit-  
202 uation of increased stress [19].

203 In fact, the study whose empirical foundations find  
204 their source in ergonomic survey data clearly reflect  
205 the ambivalence of the effects of this health crisis on  
206 the work experience of employees. According to [20],

207 authors summarize the state of the field by describ-  
208 ing on the one hand the current of “mutual gains”, for  
209 which employers and employees are also beneficia-  
210 ries of the introduction of these innovative practices,  
211 and on the other the “critical perspective” whereby  
212 profits are made by companies to the detriment of  
213 their employees. Other authors prefer to suggest an  
214 opposition between “the motivation hypothesis” and  
215 “the intensification hypothesis”. For the first, enrich-  
216 ment of work increases satisfaction and therefore  
217 motivation, while the second describes enrichment  
218 as an intensification, which decreases job satisfac-  
219 tion [21].

220 The purpose of this paper is to present a model of  
221 safety workplace innovative practices, which focuses  
222 on working conditions as well as quality of live at  
223 work, health and well-being in Tunisia. Its validation  
224 is based on data collected from the database of best  
225 places to work; whose findings highlight the decisive  
226 role of recognition in the construction of occupa-  
227 tional health in a COVID-19 context. This manuscript  
228 is organized in two parts. Firstly, we present the  
229 theoretical foundations of this model, and then the  
230 description of the ergonomic methods used to develop  
231 this instrument. In the second part we discuss the  
232 results of the empirical analyzes, before explaining  
233 the ergonomic implications and future research pro-  
234 posed in the end.

## 235 2. Conceptual framework

236 “Participation” is often described as being at the  
237 heart of the changes that took place in the 1980s in  
238 Europe and the United States [22]. However, [23]  
239 recall that “when we observe the new practices actu-  
240 ally implemented, their underlying rationality is not  
241 always as obvious as what the theoretical models  
242 suggest”.

243 In addition, the theme of participation, in the broad  
244 sense of the means available to employees to influ-  
245 ence their activity and their work situation [24].  
246 However, this theme is far from being presented under  
247 the seal of the evidence so much the very term is  
248 charged with an ambivalent meaning and has been the  
249 subject of conflicting uses [25]. The innovative prac-  
250 tices that are put under this suitcase depend not only  
251 on the actors but also on the national contexts [26].

252 The distinction between direct and indirect par-  
253 ticipation is quite clear, these two forms being  
254 regularly presented as opposite or competitive [27].  
255 The first, which will be discussed in this manuscript,

concern situations in which employees are personally involved in decisions concerning their activity, while indirect participation qualifies the influence that employees exercise through representatives, notably union representatives [28].

According to [24] beyond schools and disciplines, there is a striking consensus around the idea that employee participation is important for the quality of work, the nature of forms of direct participation does not is no less controversial. The sociologist thus recalls that the neo-Marxian perspective values the control of employees over the task while from the management point of view it is mainly semi-autonomous teams and the reinforcement of communication between supervisors and their subordinates who count [29].

Although the effects of digital transformation on the quality of work are contrasted, there is a consensus around the beneficial nature of those of participation, despite the ergonomic risks which are possibly associated in terms of longer working hours, work intensity and long-term endangerment of physical and mental health [29]. Thus, from data representative of British employees, Gallie concludes that the effects of autonomy are both stronger and more significant than those of managerial consultation on psychological well-being at work [29].

The conclusions of [24] at European level are similar: participation in the task and in the organization of work have positive effects on health and well-being at work. The authors show in fact that in the organizations that provide the most control over work, employees less often consider that they are risking their health and safety at work, declare the highest levels of psychological well-being and lowest rates of stress and absenteeism.

Participation would therefore be essentially a factor of health at work within the framework of the "Scandinavian socio-technical model" characterized by self-control and the weakness of rhythm constraints. The concomitance in the Nordic countries of high levels of participation and health at work could thus give the impression of a direct relationship between these two variables, which would be valid whatever the organizational context. In [24] is shown in fact that the Nordic countries Denmark, Sweden and Finland stand out clearly from the other European countries in terms of participation. According to the authors, the countries of the continental group Austria, Belgium, France, Germany, Luxembourg and the Netherlands are thus wrongly perceived as models of employee involvement since they much less often

have the feeling of being able to influence the way of doing their work [24].

By taking the case of employees in the private sector in Tunisia during the COVID-19 pandemic, we would like to extend these reflections here by introducing recognition into the relationships between participation and health at work. Does greater control over work improve health? Is it not rather, when participation supports recognition that it contributes to the process of building occupational health?

Three sets of indicators are necessary, and in the present research were retain the same measures as proposed in [24] which is a report on the involvement of employees where the levels of task, organization and strategy are distinguished. The latter, in line with the perspectives described above, perceive participation as the result of multiple determinants having consequences on the learning of new things at work, the motivation of employees, the improvement of working and employment conditions well-being at work, as summarized in Fig. 1.

### 3. Methodology

The methodology is based on a neutral and objective study of the Tunisian company's innovative practices. The Best Places to Work for in Tunisia program is an initiative of the Best Companies Group USA Institute in various countries around the world, in partnership with several local institutional organizations which pays tribute to Tunisian companies offering the best working environment and which know how to attract and retain the best employees [5]. The ranking of the best employers is made based on a neutral and objective study carried out among a significant sample of employees of companies all sizes included who answer a questionnaire on their perception of their working conditions during the COVID-19 pandemic, the culture of the company, Human Resource management, development and professional recognition. This survey is supplemented by an ergonomic assessment of innovative practices within the Tunisian company. Ergonomic assessment survey is important to measure the ergonomic risk factors and evaluate the risk level of ergonomics exist in the working environment during the COVID-19 pandemic.

Once the data extracted from the report of the best places to work for in Tunisia program, it was a question of selecting the questions to represent the four recognition registers to test the solidity of the study by using a factorial analysis. In total, nine questions

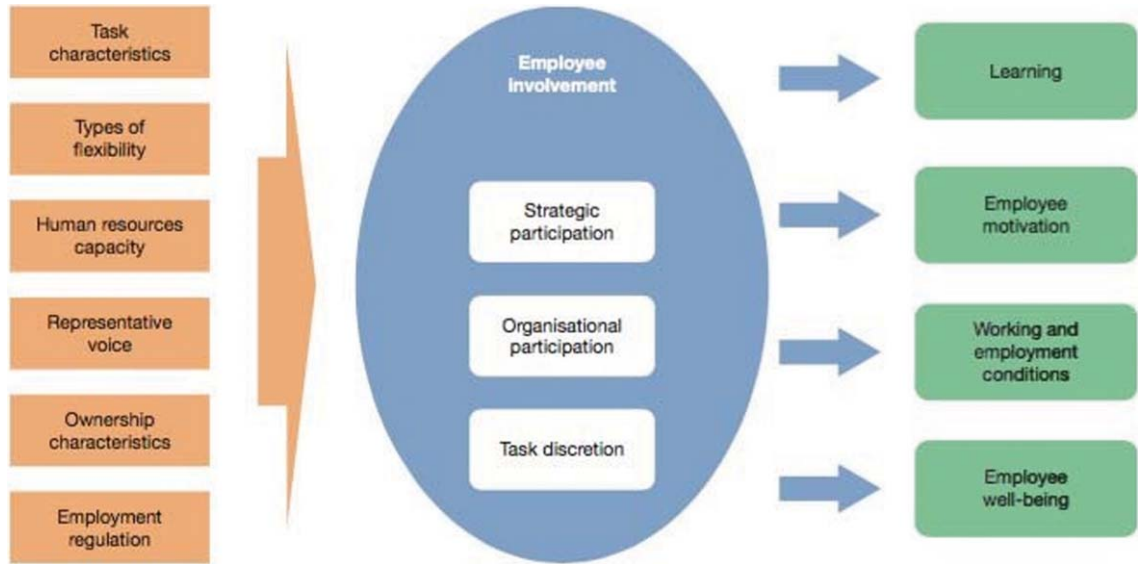


Fig. 1. Determinants and consequences of the participation [24].

likely to represent, albeit imperfectly, the recognition registers have been preserved.

Since the analyzes have so far focused only on employees in the private sector in Tunisia, our sample excludes the self-employed as well as employees in the public sector. To select these questions, we returned to the study where the systematic coding of the interviews allowed us to distinguish four major registers in which recognition expectations are expressed, then, through an analysis of the material, to propose some of the problems specific to each of these registers.

### 3.1. Design of the survey

The participation indicator at the task level includes three questions to which respondents could answer yes or no:

- Are you able to choose or change the order of your tasks? Yes/No
- Are you able to choose or change your working methods? Yes/No
- Are you able to choose or change your work rate or speed? Yes/No

In terms of participation in the organization, two questions are retained:

- Can you influence the decisions that are important to your work? (never, rarely, sometimes, most of the time, always)

- Are you involved in improving the work organization or work processes of your department or organization? (never, rarely, sometimes, most of the time, always)

Following the conclusions presented in [24] that were shown from a factorial analysis, the items selected belong to two dimensions, and two health indicators were constructed from the answers to the following question:

“During the COVID-19 pandemic, have you suffered from one or more of the following health problems?” The physical health indicator physical variable includes the following items:

- Hearing problems,
- Skin problems,
- Back pain,
- Muscle pain in the upper limbs, neck and / or upper limbs,
- Muscle pain in the lower limbs,
- Headache, eyestrain,
- Stomach pain,
- Lower respiratory tract infections,
- Cardiovascular illnesses,
- Injuries.

For the construction of the psychic health indicator psychic variable, the following items were retained:

- Depression or anxiety,
- General fatigue,
- Insomnia.

In the research presented by [24], authors use a single health indicator in addition to the subjective well-being and absence indicator. We preferred to make a distinction, which roughly overlaps with that which separates musculoskeletal disorders (MSD) from psychosocial risks (PSR), the first constituting, as [30] recall the “first cause of occupational disease”. “While the second” fall under priority actions in occupational health policy.

By using an ergonomic measure that is more related to physical health and another more related to mental health, we are not ignoring the now established interactions that unite these two dimensions [31]. In 2013, the interdisciplinary perspectives on work and health journal devoted to an issue of “MSDs and psychosocial factors” which highlights the links between work stress, mental repression and musculoskeletal disorders [32] and shows that the organization of work affects both physical and mental health. Intensification of work is notably a factor in MSD, along with the repetitive nature of work:

“Old practice, repetitive work cannot alone explain the MSD observed during the COVID-19 pandemic. It can be considered as a sign of the intensification of work. Epidemiologists blame the worsening of time constraints, in office jobs as on some industrial positions. The urgency forced to operate in the fastest way, always using the same muscles; or to intervene in awkward postures at the cost of intense punctual efforts. The reduction in informal break times is particularly harmful. Finally, the tension caused by time pressure plays a role in the appearance of pathologies by itself.

However, it is a question of promoting a joint approach to prevention of MSDs and RPS, in particular with regard to the search for “organizational determinants that can be at the origin of intense physical and mental stresses in the workplace [33].

### 3.2. *Sample size*

Multi-stage sampling was used in this study. The main purpose of multi-stage sampling is to select samples, which are concentrated in a few geographical regions [34]. Once again, this saves time and money. First, positive sampling was used to select the first five Tunisian companies, using secondary data from the report of the “Best Places to Work For” in Tunisia program. 100 private sector employees were identified 20 from each of the selected companies. Simple random sampling was used to reach

Table 1  
Summary of the distribution of indicators

Indicators	Min	Max	Average	Standard deviation
Task	-1.43	1.02	0.00	1.00
Organization	-1.44	1.90	0.00	1.00
Recognition	-3.97	1.97	0.00	1.00
Physical	-1.21	3.78	0.00	1.00
Psychic	-1.03	2.01	0.00	1.00

the sample of selected companies. The desired sample size was determined according to the formulations in [35] and [36]. Since there is no estimate available of the proportion of the target population assumed to have the characteristics of interest, 50% was used. In this survey, the target proportion of the population was assumed to have the characteristics of firms certified the best places to work, which are companies that use innovative practices for safety, health and well-being at work in Tunisia.

## 4. **Result**

We first present the findings of the survey, which allowed us to measure the dimensionality of the constructs and the internal consistency of these scales. Then, we report the results of the factor analysis, which allowed us to visualize the effect of different determinants on our variable of interest. Finally, we will interpret the results obtained in this study. Table 1 summarizes the distribution of the five indicators that will be used to study the relationships between health, participation and recognition.

Moreover, it is a question of specifying the nature of the relationships between multiple variables, the literature having notably emphasized that the terms “moderator” and “mediator” were used without distinction [37].

However, from the point of view that we have of a phenomenon, the distinction between a moderating variable and a mediating variable is essential. Indeed, a moderation model supposes on the one hand a direct relation between A and B and on the other hand, admits the existence of other variables, which can influence the direction and this, is typically the case for variables such as gender, age or socio-professional category, which modify the effect of A or B.

499 Thus, giving employees more control over their  
500 work would promote their health because it would  
501 put them in favorable conditions for building a feel-  
502 ing of recognition. In our case, a “full mediation”  
503 model therefore requires that four conditions could  
504 be satisfied [38]:

- 505 – There exists an effect of participation on
- 506 health:  $c$ ;
- 507 – Participation has an effect on recognition:  $a$ ;
- 508 – Recognition has an effect on health:  $b$ .

509 It is rare that the relationship between A and B,  $c$ '  
510 disappears completely when we consider the medi-  
511 ating role of a third variable. When direct effect  
512 persists, even if it has weakened, we speak of “par-  
513 tial mediation”. Thus, “while a partial mediation is  
514 less impressive than a complete mediation, it never-  
515 theless gives us a theoretical indication on how the  
516 independent variable affects the dependent variable”  
517 [38].

518 If there were a direct effect between participa-  
519 tion and health at work, it would remain to consider  
520 the hypothesis of a moderator effect of recognition,  
521 which would positively modulate the effects of a  
522 greater implication in work on health employees.

523 Schematically, the mediation model represents  
524 health as a process where a greater grip on work pro-  
525 motes the construction of the feeling of recognition,  
526 which is considered as a determinant of health. The  
527 recognition-moderation model assumes that partici-  
528 pation is a direct determinant of health. In this case,  
529 recognition would reinforce the positive effects of  
530 participation, or reduce the deterioration of health.  
531 In summary, “the moderators rather represent inter-  
532 nal or external characteristics which are antecedent  
533 to the process studied, while the mediators reveal it  
534 in its temporal dimension” [37].

535 Developed at the University of Ghent, notably by  
536 Rosseel, the lavaan library enables structural equa-  
537 tions to be produced quite simply, representing both  
538 mediation and moderation relationships [39]. Thus,  
539 we were able to confirm the hypotheses of recognition  
540 as a mediator and as a moderator of the relationship  
541 between health and participation in work.

542 Before to describe the results obtained for these  
543 three models, let us add that variables were introduced  
544 to consider the characteristics of individuals and their  
545 employers, whose role was underlined in the central  
546 part of the study. Therefore, gender, age, seniority,  
547 length of contract, diploma, profession, and sector  
548 was retained as variables for “control”.

## 5. Discussion

549 The results obtained concerning the effect of par-  
550 ticipation on health show that in Tunisia during the  
551 COVID-19 pandemic, more participation does not  
552 imply being in better health, neither physical nor  
553 mental since no coefficient is negative. On the con-  
554 trary, participation at the task level seems to have a  
555 rather negative impact on mental health.

556 The absence of coefficients suggesting a directly  
557 positive relationship between participation and health  
558 in this model invites doubts, for employees in the  
559 private sector, of the reality of the “win-win” model  
560 where it would increase the grip of employees on  
561 their work so that their health improves. This result  
562 is consistent with French work on increasing mental  
563 load [43], which results at least in part from “com-  
564 panies are calling on the initiative of their employees  
565 more than in the past to better respond to customer  
566 demand and to improve their productivity. The coun-  
567 terpart of this greater responsibility and this greater  
568 involvement in the company is a relative increase in  
569 mental load at work” [41].

570 However, this result is problematic regarding the  
571 theoretical definition of the mediation model pro-  
572 posed by Baron and Kenny [49]. A mediation model  
573 supposes an effect and that one can measure, in  
574 the simple model, a significant effect between the  
575 two terms studied. Hence, our first results are either  
576 not significant, or in the opposite direction to that  
577 expected.

578 Therefore, we can make the hypothesis, largely  
579 compatible with the literature, of the existence of con-  
580 tradictory effects of participation on health according  
581 to the organization and working conditions [42]. In  
582 fact, the increase in mental load that accompanies  
583 the greater involvement of employees has ambiva-  
584 lent effects on health: “The impact of the feeling  
585 of responsibility can be positive, if the employees  
586 feel valued, and their work is enriched, or negative,  
587 when the mental load becomes source of stress, itself  
588 creator of pathologies [43]. The mental burden as  
589 identified in the survey therefore does not prejudice  
590 the pathogenic nature or not of the stress perceived  
591 by the employees” [41].

592 Our initial hypothesis that the links between par-  
593 ticipation and health are positive if they are part of  
594 a process that improves recognition. Then, it would  
595 be verified if the introduction of mediation made this  
596 direct effect meaningful. Mediation through recogni-  
597 tion would play the role of revealing the direct effect  
598 of participation on health.

Table 2  
Comparative table of effects participation in health with and without mediation

Psychic health	M1	M2	M3
Task	0.076	0,108	0,107
Organization	0.032	0,082	0,083
Recognition		0.330	0,327
Recognition * Task			0.039
Recognition * Organization			0.021
Physical health			
Task	0.045	0,071	0,069
Organization	0.056	0,034	0,036
Recognition		0.259	0,254
Recognition * Task			0.059
Recognition * Organization			0.035
Recognition			
Task		0.099	0.099
Organization		0.347	0.347

The results of the mediation model described are reported in column M2 of the Table 2. They largely confirm this hypothesis since most of the direct effects of participation on health become significant.

As in the simple model, the effect of participation at the level of the task on mental health is negative but this time it is stronger and significant only by 1%. The direction of the relationship between organizational participation and mental health changes meaning and becomes significant. Thus, while no coefficient was significant for physical health, participation at the task level appears to have a rather negative effect on health when the mediating role of recognition is considered. The link between organizational participation and physical health points in the same direction but is not significant.

The effects expected in the mediation model are all obtained. On the one hand, the two forms of participation, represented by the letter a, have positive and significant effects on recognition, especially regarding participation at the organizational level. As a reminder, this indicator includes both the influence that the employee considers having on the important decisions concerning his work and in the improvement of work organization or work processes of the service.

On the other hand, the expected effects of recognition on physical and mental health are clearly confirmed. With high and significant coefficients, recognition is indeed an important factor in occupational health. However, we recall that our recognition indicator, conceived as the sum of the scores in each

of the dimensions of the factor analysis, reports on the degree of satisfaction of recognition expectations in the registers of activity, relationships, reward and of the person. The strength of the link observed therefore underlines the importance of the possibility of establishing a positive relationship with oneself in the construction of health.

A last model was tested to explore the hypothesis of the effect and moderator of recognition. However, the literature review suggests that recognition, in the form of a good word from the superior, for example, could compensate for the deleterious effects of increased involvement. In this case, one might expect that the effects of participation at the task and organizational level, in interaction with recognition, would be significantly negative, that is, they indicate a decrease in health problems.

These results suggest that, in the case of employees' participation, apart from its role in building the feeling of recognition, is rather a factor of deterioration of health in the current state recognition obtained by employees.

The fact that in total the increase in the grip those employees have on their work is not synonymous with an improvement in their health during the COVID-19 period according to the data studied. In fact, in the research of [24] authors show that on a European scale, employees who work in organizations where they feel they have control over their task less often report the feeling of stress (like [32]). On the contrary, the study concludes that the effects are not significant, or even negative in the case of the relationship between control over the task and mental health.

## 6. Conclusion

Participation would contribute to occupational health on the condition of being introduced in an organizational context favorable to recognition. Thus, in this research which aims to provide empirical elements to the controversy between critical perspectives and mutual gains, Kalmi and Kauhanen take great care to emphasize that they believe that the positive results they obtain are more to be put on account of the context as innovations in themselves. Therefore, the authors point out that transformations are more likely to be made for the benefit of employers as well as employees if the latter are strongly represented, are involved in co-determination, are protected against dismissals and if the company is marked by a high level of interpersonal trust [20].



With its centralized collective bargaining system, an important tradition in terms of participation, strong job security and, culturally, a high level of interpersonal trust, associated with a low perceived conflict between employees and employers, Tunisia seems to be a very different context from the other countries. Therefore, the model obtained leads to a hierarchy of the effects of the innovative practices on occupational health during the COVID-19 pandemic. These effects are unaltered by the process of digitalisation [44]. Ergonomic evaluations should be designed and tailored in such a way as to capture all relevant transformations in an adequate manner [45]. We do not provide a full ergonomic evaluation framework in this opinion, but we do reflect on important elements. Monitoring can also complement ergonomic evaluations by observing general trends in how health crisis evolves [46]. Therefore, we recommend starting any ergonomic assessment with a full description of the relevant innovative practices. Its use and aims, addressing elements like the ones above to give a full overview of this practices, its intended use, costs and consequences on occupational health, and its most relevant comparator, to be able to select an appropriate ergonomic assessment strategy and key outcomes to include. Furthermore, important frameworks and practical guides for this ergonomic assessment must be proposed in futur research. These can serve as a starting point both for practical ergonomic assessment studies and for further development of ergonomic assessment frameworks. In ergonomic assessment, the development phase of the digital transformation as well as implementation of the innovative practices, are crucial elements in health crisis [47]. Combinations of different ergonomic assessment devices may be required to provide relevant data to decision makers at different contexts. Careful selection and justification of the innovative practices is warranted.

## References

- [1] World Health Organization (WHO). Situation report, 18. Feb 7 2020. [Online] Available: [https://www.who.int/docs/default-source/coronaviruse/transcripts/transcript-coronavirus-press-conference-full-7feb2020-final.pdf?Sfvrns=3beba1c0\\_2](https://www.who.int/docs/default-source/coronaviruse/transcripts/transcript-coronavirus-press-conference-full-7feb2020-final.pdf?Sfvrns=3beba1c0_2), [Accessed November 25, 2020].
- [2] OECD, World Happiness Report, (WHR), [Online] Available: <https://www.tunisienumerique.com/tunisie-epidemie-du-coronavirus-les-aspects-psychologiques>, [Accessed November 25, 2020].
- [3] Brooks, Samantha K, PhD; Rebecca K Webster, PhD; Louise E Smith, PhD; Lisa Woodland, MSc; Prof Simon Wessely, FMedSci; Prof Neil; Greenberg, FRCPsych; et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence, *The Lancet*. 2020; 395(10227):P912-920, March 14, 2020.
- [4] The Z Zurich Foundation, (ZZF), [Online] Available: <https://www.tackleyourfeelings.com/>, [Accessed November 25, 2020].
- [5] The global workplace research firm, Best Companies Group (BCG) USA. [Online] Available: <https://bestplaceto-workfor.org/steps-to-certification>, [Accessed November 25, 2020].
- [6] Khanchel H, Kahla KB. Representation of the Articulation between Spheres of Life. *Business and Management Research*, 8, 10. DOI: 10.5430/bmr.v8n2p10, 2019a
- [7] Al-Jedaiah M. Gender Inequality and Human Resource Management (HRM) Practices in Jordanian Commercial Banks. *International Journal of Human Resource Studies*. 2020;10:369. 10.5296/ijhrs.v10i1.16178.
- [8] Khanchel H. "Regulation of Social Times during the COVID-19 Period: A Replication and Extension of the Work Activity Regulation Model," *Business and Management Research*, Business and Management Research, Sciedu Press. 2020;9(3):14-24.
- [9] Osterman, P. "Work Reorganization in an Era of Restructuring: Trends in Diffusion and Effects on Employee Welfare". *Industrial and Labor Relations Review*. 2000;53(2):179-96.
- [10] Askenazy P, Eve C. "Innovative Work Practices, Information Technologies, and Working Conditions: Evidence for France". *Industrial Relations*. 2010;49(4):544-65.
- [11] Appelbaum E, Hoffer Gittel J, et C. Leana. "High-Performance Work Practices and Sustainable Economic Growth". Center for Economic and Policy Research Report. 2011.
- [12] Godard J. "A Critical Assessment of the High-Performance Paradigm". *British Journal of Industrial Relations*. 2004; 42(2):349-78.
- [13] Green F, Steven McIntosh. "The intensification of work in Europe". *Labour Economics*. 2001;8(2):308-291.
- [14] García-Pozo A, Campos Soria J, Nuñez A. Technological innovation and productivity across Spanish regions. *The Annals of Regional Science*. 2021;10.1007/s00168-020-01044-9.
- [15] Gallie D. "Welfare Regimes, Employment Systems and Job Preference Orientations". *European Sociological Review*. 2007;23(3):279-93.
- [16] Rebecca E, Ulrike D, Lars-Erik M. Moving on up in the information society ? A longitudinal analysis of the relationship between Internet use and social class mobility in Britain. *The Information Society*. 2018;34(5):316-27.
- [17] Lallement M. "Régulation des temps sociaux en France et en Suède". *Economies et sociétés*. 2002;(31):1349-67.
- [18] Lallement M. "L'emploi des sociologues". In Amélie Pouchet, dir. *Sociologies du travail: quarante ans après*, Elsevier, Amsterdam, Londres, 2001, pp. 173-190.
- [19] Kadir B. Broberg O, Conceição C. Current Research and Future Perspectives on Human Factors and Ergonomics in Industry 4.0. *Computers & Industrial Engineering*. 2019; 137:106004. 10.1016/j.cie.2019.106004.
- [20] Kalmi P, Antti K. "Workplace Innovations and Employee Outcomes: Evidence from Finland". *Industrial Relations*. 2008;47(3):430-59.

- 793 [21] Khanchel H, Kahla KB. "Job dissatisfaction and turnover  
794 crises in Tunisia", *Business and Management Research*,  
795 Sciedu Press, vol. 8 3, pages 53-73, September. 2019b.
- 796 [22] Pot F, Steven D, Oeij P. "Social innovation of work and  
797 employment". In H.-W Franz, J. Hochgerner, et J. Howaldt,  
798 (dirs.), *Challenge Social Innovation. Potential for Business*,  
799 *Social Entrepreneurship, Welfare an Civil Society*, pp. 261-  
800 274. Springer, Berlin. 2012.
- 801 [23] Greenan N, Jacques M. "Les changements organisationnels,  
802 l'informatisation des entreprises et le travail des salariés".  
803 *Revue économique*. 2006;57(6):1137-75.
- 804 [24] Gallie D, Ying Z. *Work organisation and employee involve-*  
805 *ment in Europe*. Publications Office of the European Union,  
806 Luxembourg, 2013.
- 807 [25] Bérourd S. "Perspectives critiques sur la participation dans  
808 le monde du travail: éléments de repérage et de discussion".  
809 *Participations*. 2013;5:5-32.
- 810 [26] Wilkinson A, Paul JG, Mick M. *The Oxford Handbook of Parti-*  
811 *cipation in Organizations*. Oxford University Press,  
812 Oxford. 2010.
- 813 [27] Lallement M. "Sur les moyens de faire descendre la  
814 démocratie dans l'entreprise". In Odile Piriou et Pierre  
815 Lénéel, (dirs.), *Les états de la démocratie. Comprendre la*  
816 *démocratie au-delà de son utopie*, pp. 51-70. Hermann,  
817 Paris. 2011.
- 818 [28] Kandathil G, Joseph J. Normative Underpinnings of Direct  
819 Employee Participation Studies and Implications for Develop-  
820 ing Ethical Reflexivity: A Multidisciplinary Review.  
821 *Journal of Business Ethics*. 2019;157. 10.1007/s10551-017-  
822 3689-x.
- 823 [29] Gallie D. "Direct participation and the quality of work".  
824 *Human Relation*. 2013;66(4):453-73.
- 825 [30] Caroly S, Pascal S, et Nicole Vézina. "Marge de manœuvre  
826 et pouvoir d'agir dans la prévention des TMS et des RPS".  
827 *Le travail Humain*. 2015;78(1):1-8.
- 828 [31] Dufour C, et al. 'Occupational Health and Safety Division of  
829 Responsibility: A Conceptual Model for the Implementation  
830 of the OHSAS 18001:2007 Standard'. 1 Jan. 2020:549-63.
- 831 [32] Betke K, Basińska M, Andruszkiewicz A. Sense of Coher-  
832 ence and Strategies for Coping with Stress among Nurses.  
833 10.21203/rs.3.rs-91555/v1. 2020
- 834 [33] Popescu S, et al. 'A Structured Framework for Identifying  
835 Risks Sources Related to Human Resources in a 4.0 Working  
836 Environment Perspective'. 1 Jan. 2020:511-27.
- 837 [34] Ackoff RL. *Statistics in Operations Research and Operations*  
838 *Research in Statistics*. McCloskey J. F. & Trefethen F.  
839 N., eds. in *Operations Research for Management*, 117-133.  
840 Johns Hopkins University Press: Baltimore. 1954.
- 841 [35] Fisher RA. *Statistical Methods and Scientific Inference*, 3rd  
842 ed. London: Hafner Press. 1973.
- [36] Riungu C, Njehia B, Mutai B. Effects of supermarkets on  
843 fresh fruit and vegetables small-scale farmers in central  
844 Kenya. *Sky Journal of Business Administration and Man-*  
845 *agement*. 2013;15:47-58. 846
- [37] Rascle N, Sandrin I. "Médiateurs et modérateurs: implica-  
847 tions théoriques et méthodologiques dans le domaine du  
848 stress et de la psychologie de la santé". *Le travail Humain*.  
849 2001;64(2):97-118. 850
- [38] Brauer M. "L'identification des processus médiateurs dans  
851 la recherche en psychologie". *L'année psychologique*.  
852 2000;4:661-81. 853
- [39] Rosseel Y. "lavaan: An R Package for Structural Equation  
854 Modeling". *Journal of Statistical Software*. 2012;48(2):  
855 1-36. 856
- [40] Dares, "Reprise de l'intensification du travail chez les  
857 salariés". *DARES Analyses*. 2014;49:1-11. 858
- [41] Hamon-Cholet S, Catherine R. "La charge mentale au tra-  
859 vail: des enjeux complexes pour les salariés". *Économie et*  
860 *statistique*. 2000;339-340:243-55. 861
- [42] Valeyre A. "Les conditions de travail des salariés dans  
862 l'Union européenne à quinze selon les formes  
863 d'organisation". *Travail et Emploi*. 2007;112:35-47. 864
- [43] Islam M, Alam W, Keramat S, Murshid M, Haque R, Kabir  
865 E, Khanam R, Manjurul. Working conditions and occupa-  
866 tional stress among nurses in Bangladesh: a cross-sectional  
867 pilot study. *Journal of Public Health*. 2021. 10.1007/s10389-  
868 020-01415-8. 869
- [44] Pfaffinger K, Reif J, Spiess E, Berger R. Anxiety in a  
870 digitalised work environment. 2020;1-11. 10.1007/s11612-  
871 020-00502-4. 872
- [45] Brito M, Vale M, Leão João M, Pinto Ferreira L, Gonçalves  
873 M. Lean and Ergonomics decision support tool assessment  
874 in a plastic packaging company. *Procedia Manufacturing*.  
875 2020;51:613-619. 10.1016/j.promfg.2020.10.086. 876
- [46] Felekoglu B, Tasan, S. Interactive ergonomic risk mapping:  
877 A practical approach for visual management of workplace  
878 ergonomics. *International Journal of Occupational Safety*  
879 *and Ergonomics*. 2020;1-41. 10.1080/10803548.2020.17  
880 12127. 881
- [47] Yu Y, Yang X, Li H, Luo X, Guo H, Fang Qi. Joint-Level  
882 Vision-Based Ergonomic Assessment Tool for Construction  
883 Workers. *Journal of Construction Engineering and Manage-*  
884 *ment*. 2019;145. 10.1061/ ASCE CO.1943-7862.0001647. 885
- [48] Li Y, Ho B, Hara T, Ota J. Automatic Assessment System of  
886 Operators' Risk in Order Picking Process for Task Analysis.  
887 10.1007/978-3-030-39512-4.47.2020. 888
- [49] Baron RM, Kenny DA. The moderator-mediator variable  
889 distinction in social psychological research: Conceptual,  
890 strategic, and statistical considerations. *Journal of Person-*  
891 *ality and Social Psychology*. 1986;51:1173-82. 892