Digital technology and employee well-being: the role of employee attributions

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Abstract

Digital technologies are posing new and significant challenges to organizational science. Evidence in the literature suggested that similar technologies can exert contradictory effects on different individual-level outcomes, such as employee well-being. The existing literature had so far looked at those contradictory effects, either considering contextual variables (i.e., organization size) or job characteristics design. However, the employee's evaluation concerning technology introduction has been ignored. Therefore, this project places at the heart of the study employee's socio-cognitive process of evaluation to explain why people respond differently to technology introduction. In particular, this work would consider the role of employee's causal attributions. This theoretical perspective's core idea is that it is not the technology itself to determine different outcomes. Still, it is how employees attribute sense to the organizational choice of adopting new technology. This paper explores this topic, presents the attribution theory theoretical background, shows and discusses the main findings of a preliminary literature review, and finally proposes the research design.

Keywords

Technology implementation, causal attributions, employee well-being

1. Introduction

Shortly, technology may imply huge impacts on both labor content and work in organizations and it may change the way the human factor is taking part and adding value in many industrial value chains (Bonekamp & Sure, 2015). However, very little is known about how employees perceive technological advancements (Oosthuizen, 2019). Therefore, the present research project intends to explore how employees respond to technology introduction in their organizational contexts, placing at the heart of the discussion employee's perspective.

This work contributes to the socio-technical perspective since it explores the technology implementation process from an employee perspective. In particular, in this work we consider how employees attribute causes to the organizational decision of adopting new technologies and how their evaluations influence individual-level outcomes (e.g., well-being). Hence, we shed light on the importance of considering employee's perspectives and giving equal weight to both the social and the technical system (Mumford, 2006) in the implementation process.

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In particular, the aims of the present research project are to a) explore the role of employee' evaluations (i.e., attributions) in influencing how they react to technology adoption, b) investigate the relationship between employee attributions and individual outcomes, c) contribute to the literature on employee perspective toward technology implementation in the field of organizational behavior and human resource management and organization studies.

Since its deployment in organizational contexts, technology, particularly emerging technologies, such as artificial intelligence and robotics, calls into question our fundamental theories and ideas about organizations.

The recent literature on digital workplace transformation and technology implementation is polarized into two opposite streams of thought. On one side, proponents of an optimistic view enthusiastically claim that, once new technologies are introduced in organizations, they bring a set of positive consequences since they augment human performance, enable better and cheaper services and replace dangerous and repetitive work activities (cf. Parker & Grote, 2020). On the other side, scholars and experts have argued that digital technologies and the work practices they enable bring several risks since they have the potential to erode the need for human workers and to change the overall workforce structure (Brynjolfsson, Mitchell & Rock, 2018; Huang & Rust, 2018).

However, scholars agree that technological change is likely to entail many simultaneous changes. From the workers' point of view, it is doubtful that all those affected by technological change in the same organization will view the consequences in the same light (cf. Roskies et al. 1988). Indeed, some evidence has shown that technology can produce contradictory effects on a set of outcomes (O'Driscoll, Brough, Timms, & Sawang, 2010; Ter Hoeven et al., 2016). For example, according to some scholars, technology can produce mainly costs in terms of individual well-being and job performance (Parvari, Mansor, Jafarpoor, & Salehi, 2014), while others believe that, following technology adoption, employees may experience an increase in the quality of their working conditions (see Tarafdar et al., 2019).

For years, the literature's central focus has been on assessing the outcomes of the technology implementation process. To our knowledge, very few studies were designed to understand "*why*" employees react differently to technology introduction.

To date, technology and organizing scholars attempt to explore this issue can be categorized into three streams of research, depending on the main explanatory variables they have considered. One one side, we group all those studies that have adopted a macro-level of analysis and had considered a set of structural dimensions of both technology (e.g., type, features) and the context of implementation (e.g., managerial support, organization size, industrial sector) as responsible for different outcomes. Other authors have placed at the heart of the analysis the job design with the idea that different effects depend on how job characteristics (e.g., job demand) are redesigned following technology introduction and also according to the level of participation of the employee in the change process (Shaba, Guerci, Gilardi & Battezzaghi, 2018; Morgeson & Humprey, 2008). Finally, another stream of research has zoomed on

the analysis of individual characteristics (e.g., socio-demographics, attitudes), claiming that individual-level variables, such as attitude toward technology or age, are responsible for differences in individual reactions to technology (Elias et al., 2012; Ziamou et al., 2012).

In line with this last pillar of research, this project holds an individual level of analysis based on a categorical refusal of technological determinism since there is evidence that the same technology can trigger different outcomes (Leonardi & Barley, 2010).

We approach the issue of investigating why people react differently to technology adoption, considering the psychological perspective of people's cognitive process of evaluation. In particular, the focus would be on employee' causal attributions (see, Nishii et al., 2009). The core idea of this approach is that digital technology implementation makes it necessary for the individual to assess its meaning for him or her. However, the ambiguity and the differential impact of technological change are likely to highlight individual differences in what is perceived and how it is interpreted (cf. Folkman & Lazarus, 1984). In particular, we expect that people will try to find causal explanations based on the information they receive during the change process to make sense of the organizational decision to introduce the technology (van Bracht, 2019). Furthermore, we believe that different attributions will lead to different outcomes in terms of well-being and job performance among individuals in the organization.

A large portion of the existing literature has already investigated the impact of digital technologies on employees, showing the importance of studying the consequences of new technologies on issues such as the perception of control or cognitive overload (e.g., Miele & Tirabeni, 2019). However, to our knowledge, very few studies have explicitly adopted the attribution theory framework to investigate the impact of technology implementation.

2. Theoretical background

The theoretical framework hold in this project is the attribution theory. Attribution theory was initially developed based on the psychological assumption that people are continually looking for causal explanations for unlikely and relevant events (e.g., success or failure) or others' behaviors (Heider, 1978; Martinko, 2006). The search for causal explanations involves ascribing meaning and labels to events or to others' actions, which affect subsequent attitudes and behavior (Fiske & Taylor, 2013). Causal attributions are a core mechanism of sensemaking that influences people's emotions, attitudes, and behavioral reactions and expectations (Fiske & Taylor, 2013; Martinko & Gardner, 1982; Weiner, 1985). Attributions are related to the perceived cause of an outcome or the interpretation of an event (Seifert, 2004). However, the term 'attribution' is often wrongly considered synonymous with "perception"; indeed, it refers to perceptions of causation (Martinko, 2006) or intention (Hewett et al., 2019).

First models of attributions were used in social psychology to describe how people make attributions for relevant events (i.e., success or failure) or other behaviors (Heider, 1958; Kelly, 1973). During the

next twenty-five years, attribution theories were also expanded to other fields of study and contributed to a wide variety of Industrial and Organizational Psychology topics, including performance appraisal (e.g., Feldman, 1981; Goerke et al., 2004), interview and selection processes (e.g., Silvester, 1997;) leader-member relations (Ashkanasy, 1989, 1995), and coalition formation (Pearce & Denisi, 1983). Lately, this theoretical framework has been extensively adopted both in the HRM literature, to investigate the role of attributions to explain the 'black box' between HR practices/systems and individual outcomes (e.g. job performance; affective commitment) (for a review, Hewett et al., 2019) and in the CSR literature, where attribution theory is used to explain how employees respond to CSR initiatives (for a review, Gond et al., 2017).

Scholars of organizational studies have confirmed the critical role of attributions in determine individuals' attitudes and behaviors.

3. Preliminary literature exploration

3.1. Method

We conduct a preliminary literature review to assess to what extent attribution theory was adopted with respect to technology introduction, using the following electronic databases: Scopus, PsycINFO (OVID), Wiley Online Library, and Web of Science. Other sources include Google Scholars and reference list of full-text articles by hand searching. Only English language, human, and peer-reviewed articles were selected. We used a set of keywords related to attribution theory (i.e., causal attribution*, attribution theory, employees' attribution*) and another set of keywords related to technology and technology introduction (i.e., technolog* implementation, digital technolog*, digitalization, Industry 4.0, technolog*, automation, Iot). The two strings of keywords were then joint using the "AND" boolean operator. Studies were selected based on eligibility criteria following three steps: i) screening by title and abstract, ii) assessing full-text for eligibility, and iii) reviewing full-texts. In the next section, a brief discussion of the main findings of the literature exploration is provided.

3.2. Reflection on main findings

We found 11 papers to match our eligibility criteria. In this section, a brief discussion of the literature focusing on the main findings is provided. Furthermore, a definition of the research questions of this project will be included.

Attribution theory has been employed in some recent works in the information system success (ISS) literature. Authors in this field have investigated those factors determining users' attributions for information system-related outcomes, as well as the influence of these attributions and the nature of the system outcome on the level of users' satisfaction with the system use (Snead, 2015). Other studies have explored how project managers attribute information technology (IT) project success and failure (Standing et al., 2006), while others have adopted the attribution theory framework to understand the

implementation, adoption, and use of technology to better investigate post-adoption behavior. In other papers, attribution theory was used to explain user resistance to technology implementation (Martinko et al., 1996; Lin et al., 2018), while a less recent stream of research, in the field of human-machine interaction, used to attribution framework to assess the type of attributions people make toward computing technology (Marakas et al., 1999).

Although this theoretical framework has been heterogeneously adopted concerning information and computing technology, very little attention has been paid to employees' attributions toward digital technology, especially concerning employee well-being and job performance. Moreover, in the existing literature there is a lack of a clear definition of the difference between employee perceptions and employee attributions toward technology. Furthermore, the literature fails in clearly categorizing the possible technology attributions. Finally, in most studies, the analysis of employee attributions was limited to assess the impact on user acceptability, and other individual or organizational level outcomes were ignored (Abraham et al., 2019; Nijssen et al., 2016). Hence, we can conclude that the attribution theory about digital technologies has still not expressed its full potential, which, on the contrary, has been/is starting to be recognized in other research fields.

A final remark is that we found attributions toward technology to be strongly polarized into positive and negative for the respondent. Examples of positive attributions are made when employees believe that technology is introduced to enhance productivity, support coordination and planning, improve the working environment, or offer extra services and flexibility (Abraham et al., 2019; Nijssen et al., 2016). On the other side, when employee attributes as the cause for technology implementation, the need to exerting control over employee's work, reduce costs and increase profits, negative attributions prevail (see Abraham et al., 2019; Nijssen et al., 2016).

Additionally, we found the analysis of attributions to be limited to internal factors without considering the role of external factors (e.g., normative and mimetic pressure), which may exert pressure to adopt the technology.

Therefore, this work's first research question is: (RQ1) *What type of causal attributions do different organizational agents - employees and managers- make concerning technology introduction?*

In one of the studies reviewed, the individual level of acceptance of the technological tool was found to differ among individuals according to how they perceived it (Abraham et al., 2019). However, since this study has adopted a different theoretical perspective, little is known about the role of attributions in the relation between technology introduction, employee attributions, and individual-level outcomes. Moreover, most of the studies in this field have considered user acceptability as the outcome in their theoretical model (Van Acker et al., 2019; Abraham et al., 2019). Therefore, we do not know the relation between technology, employee attributions, employees' well-being, and job performance.

Hence, the second research question is: (RQ2) *What is the role of employees' causal attributions in the relation between technology introduction, well-being, and job performance?*

Finally, a dearth of research on antecedents of attributions has been identified both in the HRM literature and in the literature reviewed, suggesting the need to investigate the possible antecedents of employee's attributions. Some studies indicated that managers are crucial in determining employee attributions, and future research should focus on the potential spillover of line manager to employee attributions (Hewett et al., 2019; e.g., Knowlton & Mitchell, 1980). Moreover, the role of communication strategies that managers adopt to inform employees about the technological change needs to be further explored. Since people's attributions are based on the information they receive, how managers communicate to employees the message influences employees' attributions (e.g., Nishii et al., 2008; Snead, 2015).

Therefore, this project's third and final research question is: (RQ3) *What are the antecedents of employees' causal attributions toward technology?*

4. Research design and process

This study would consist of a two-stage process in which a quantitative phase will follow a qualitative one. The project would include Italian organizations that operate in the advanced industrial sector affected by digital technologies diffusion and adoption. The selection criteria are related to whether the organizations have recently introduced or are about to introduce new technology. The focus would be on the Business Units that have adopted the most exciting technologies, which require significant changes in employee's working activities. We are interested in investigating the attributions of different organizational agents. Therefore, the sample would be composed of three different groups:

1. Technology end-user employees who are those directly impacted by technology implementation as they are required to use it in their daily activities;
2. Technology not end-user employees who work in the same Business Unit of the first group but that do not directly use the technology in their working practices;
3. Line managers of the business units.

The research process would be structured as follow. First, we would define the study's context, identify the technology and the Business Units of interest. In this explorative phase, face-to-face interviews will be conducted with trade union representatives and top managers. A qualitative phase will follow so to identify the attributions of different organizational agents. In this second phase, focus groups with a small sub-sample of employees and face-to-face interviews with line managers will conduct separately. A quantitative phase of data collection will follow the qualitative one. A final step of the research process will be the data analysis procedure.

5. References

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