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Extended Abstracts

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Sandro Castaldo - Arabella Mocciaro Li Destri - Lara Penco and Marta Ugolini

How do employees support a new technology initiative?
The role of anthropomorphism and legitimacy 4.0

ANNA MARRUCCI[*] CRISTIANO CIAPPEI[•] LAMBERTO ZOLLO[•] RICCARDO RIALTI[•]

Objectives. *Technological progress has emerged as the most powerful driver in shaping the future of our society. Effectively, technology has both re-defined and permeated the economic, social, and environmental fields (Pham, Huynh, & Nasir, 2020). The conjunction of different technological assets - such as Internet of Things (IoT), Cyber Physical System (CPS), Big Data Analytics (BDA)- has triggered a new industrial paradigm known as Industry 4.0 (I4.0). The major purpose of I4.0 is to integrate physical objects, human actor, and intelligent machines to constitute an integrated production system. Reflecting the several constituent parts of the I4.0, the debate on the new digitalization has covered different categories of interest. Chiefly, becoming 'I4.0 compliant' requires companies to embrace some changes in their organization (Tirabeni, Bernardi, Forliano & Franco, 2019). Specifically, technologies promote inter-actions and facilitate the integration of information from different resources. This interconnection between customers, employees and suppliers increases flexibility and empowers customized production (Muller, Kiel & Voigt, 2018). Since Industry 4.0 encourages 'networked production', the fitting business models will mainly be dynamic and open (Prause, 2015). Consequently, I4.0 is driving companies to change their attitude from product to service, using a network oriented and user driven approach (Ibarra, Ganzarain, & Igartua, 2017). Moreover, the substantial shift from mass production to mass customization would guarantee benefits in terms of environmental sustainability, resulting from emission reductions and a positive contribution to the development of the circular economy (Ford & Despeisse, 2016; Kamble, Gunasekaran, & Gawankar 2018; Stahel, 2016). Experts also mention economic sustainability: I4.0 supposedly creates new jobs, more efficient production systems and the emergence of new job profiles (Ghobakhloo, 2020). Though the debate on the benefits of Industry 4.0 is articulate and convincing, the actual implementation of this new paradigm remains obscure. Indeed, it seems that new digitalization is mainly focused on large companies (Mittal, Khan, Romero & Wuest,2018). Nonetheless, most of the European socio-economic sector consists of small and medium-sized enterprises (SMEs). The challenge themes faced by SMEs in adopting I4.0 concern limited financial resources, knowledge resource limitations and technology awareness limitation (Masood & Sonntag, 2020). Notwithstanding, other economies have invested a considerable financial resource to this new technological paradigm, increasing markets competitiveness. Technological progress is unavoidable and will continue to foster social changes. Consequently, public institutions should support companies' growth by filling financial gaps; alongside, organizations should overcome their technology limitations by supporting employee's knowledge and education. Indeed, employees' role in the new industrial paradigm needs to be clarified. Specifically, researchers have focused on two main aspects: which are the processes of employees' new technology acceptance and how it changes the future of work. According to some contributions, problems of acceptance may derive from employees' general skepticism towards the virtualization of work (Murawski & Bick, 2017). Moreover, scholars mentioned that I4.0 may increase employees' alienation (Hirsch-Kreinsen, 2016). Employees may also feel threatened by technologies. The possibility of experiencing situations of work alienation has led some academics to consider the future of work. The main concerns relate to the loss of creativity and the lack of relationality. Indeed, employees are expected to interact with machines and computers, losing the human dimension of work (Rainnie & Dean, 2020). These approaches highlight the many critical issues connected with I4.0. However, it would be misleading to presume a standstill in digitization. Thus, the aim that scholars should pursue is finding concrete solutions to navigate through the digital perimeter, bridging the human-technology relationship. Accordingly, we take an interpretivist perspective to understand how employees perceive a new technological initiative and to verify how employees implement technological initiative. The positive perception of a new technology strategy may ensure employees' technology acceptance (Schneider & Sting, 2020).*

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[*] Ph.D student in Management - University of Pisa
  e-mail: anna.marrucci@phd.unipi.it

[•] Full professor of Management - University of Florence
  e-mail: cristiano.ciappei@unifi.it

[•] Assistant professor of Management- University of Florence
  e-mail: lamberto.zollo@unifi.it

[•] Postdoctoral research fellow in Management - University of Florence
  e-mail: riccardo.rialti@unifi.it

Conceptual Framework. *Drawing on the previous assumptions, we use the concept of anthropomorphism to answer how employees perceive a new technological initiative. Anthropomorphism is the attribution of human or behavioral qualities to non-human objects, processes, and events (Ashforth, Schinoff, & Brickson 2020; Epley, Waytz, & Cacioppo, 2007). Individuals anthropomorphize instinctively and naturally; this process has important implications in terms of organization identity (Ashforth et al., 2020; Miesler, Landwehr, Herrmann, & McGill, 2010). People naturally tend to anthropomorphize to describe their environment. This tendency has a strong impact on human behavior. The anthropomorphic form has been used to sell products and further to design industrial and service robots (Złotowski, Proudfoot, Yogeeswaran, & Bartneck, 2015). Some studies have tried to explain why humans tend to anthropomorphize. According to Epley et al., (2007), some psychological factors favor this process: the need to create mental models. Humans want to understand how the actions of non-human agents work, consequently, they tend to associate human features with inanimate objects. The aim would be to understand non-human operating model. Furthermore, an individual's social isolation can be compensated by treating inanimate objects as human beings. Therefore, agent knowledge, effectance motivation and sociality motivation are all psychological aspect that might influence anthropomorphism process (Epley et al., 2007).*

The debate on anthropomorphism might generate some insights. People naturally tend to give human-like appearances to inanimate objects, such as their car, however, they know perfectly well that the car is not a human being. Is it possible to use the term 'anthropomorphism' in such circumstances? In this research we hypothesize that anthropomorphizing an entity formed by people is different to anthropomorphizing a car. According to Ashforth et al., (2020), if employees associate human features and characteristics to their company - as a multiplicity of human expressions and different cultures - the same employees will develop organizational identity as an effect of personifying. Thus, when individuals anthropomorphize the company in which they work, they identify themselves socially and personally. For this reason, employees will naturally tend to support processes and new initiatives, including technological ones. Substantially, we are not simply discussing anthropomorphizing a robot or a new technology, but anthropomorphizing the company, which guarantees employee support for the organization.

Individuals might associate human appearances with company departments following top-down and bottom-up logic. Top-down logics regard the statement from organizational subjects to present a more positive image of the company. Bottom-up ones, instead, entail members' interpretation of the stimuli they experience during their work-routine. Employees' sensemaking might depend on a multiplicity of motivations, such as social connection and anthropocentric motives. These two patterns generate anthropomorphism processes. Top-down and bottom-up processes involve top management and employees fostering organization identification and personification. According to Ashforth et al., (2020): "Anthropomorphism is necessary for members to experience a meaningful employment relationship because the transformation from "what" to "who" renders the organization interpersonally relatable. (p. 42)." We assume that corporate social responsibility (CSR) might explain the top-down process of organizational anthropomorphism (Martin, 2021). CSR is an important channel through which managers communicate a shared meaning to employees and stakeholders by focusing on social wellbeing and making the enterprise more humane (Boğan & Dedeoğlu, 2020). We selected CSR since it encompasses a set of practices and behaviors that the company wants to implement in order to make an ethical, environmental and social contribution. Moreover, CSR could have a strong impact on the study of new technological initiatives. Our measure of bottom-up process of organizational anthropomorphism are the employee opinions concerning the perceived external prestige (PEP) (Dutton & Dukerich, 1994). Employee's perceived external prestige could impact on individual identity enhancing their sense of importance and value. Having a good perception of external prestige because of CSR leads employees to behave more effectively in favor of the organization. According to some studies, employees' perceptions of external prestige are one of the main aspects in shaping their attitudes (Meynhardt, Brieger, & Hermann, 2020). First, we assume that CSR can positively influence PEP. Furthermore, we assume that CSR and PEP potentially generate employee legitimacy to the organization and to new strategic initiatives (Singh, Tucker, & House, 1986). According to Suchman (1995) legitimacy is a generalized perception that the actions of an entity are desirable and appropriate within a system of norms and values. Legitimacy could be seen as a key reason to engage in social responsibility behavior in order to have a higher corporate reputation or legitimacy (Moir,2001). Since the focus is on industry 4.0, we will validate the legitimacy 4.0 scale. Indeed, CSR practices and external prestige foster anthropomorphism guaranteeing employees' support towards the organization. This recognition translates into legitimacy which in our context of analysis will be a legitimacy to 4.0.

Our variables conceptualize the process of anthropomorphism allowing employees to feel part of a human organization where they can find fulfillment. Legitimacy 4.0 would qualify as an antecedent of the Technology Acceptance Model (TAM) (Venkatesh, Speier, & Morris, 2002). The TAM model sheds light on the concept of employee technology acceptance and technology implementation. Our theoretical framework considers legitimacy 4.0 as the main variable that positively influence the intention to use a new technology.

Hence, we highlight our propositions:

H1: Corporate social responsibility has a positive impact on employees' Perceived external Prestige.
H2: Corporate social responsibility positively influences Legitimacy.
H3: Perceived external Prestige positively influences Legitimacy.
H4: Legitimacy has a positive impact on employees' Intention to Use Technology.
H5: Intention to Use technology exerts a positive influence on Usage Behavior.

Moreover, we assume Perceived Ease of Use as mediator. Thus:
H6: Perceived Ease of Use positively impacts on Legitimacy.
H7: Perceived Ease of Use positively impacts on Intention to Use Technology.

We propose Experience, gender and age as moderator.
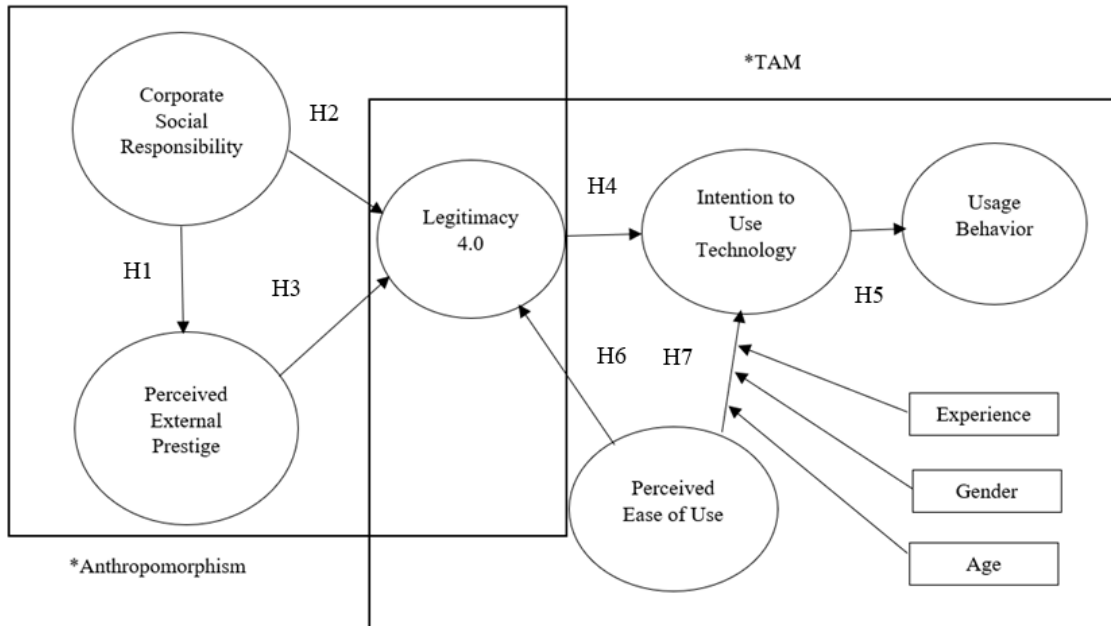
Methodology. *The aim of this research is to demonstrate the importance of increase employees' support to new technology initiative in order to justify their technology usage and acceptance. To achieve these proposals, we will use the concept of anthropomorphism and TAM model. Anthropomorphism allows employees to identify themselves with organization, legitimizing their company and supporting a new initiative. Tam model instead, will explore the dynamics of technology usage. The quantitative method used to test the research hypotheses included the development of a survey questionnaire to measure the perceptions and behaviors of the employees. Indeed, participants may include employees of large and medium size companies operating on national and European perimeter who are facing situations of technological change. In our conceptual framework there are three independent variables. Two constructs are able to explain anthropomorphism process: CSR and PEP. The other independent variable is Perceived Ease of Use. The instrument to measure CSR will be taken from Turker (2008). The scale contains 17 items and analyzes aspect such as CSR and stakeholders, CSR and employees. We will measure the second independent variable - PEP- using Mael and Ashforth scale (1992). Finally, we will test the role of Perceived Ease of Use using Venkatesh (2000) scale, composed by 4 items. Moreover, our model presents 3 dependent variables and 3 moderators. Legitimacy is our first dependent variable. Scholars have analyzed this construct identifying three type of legitimacy: Pragmatic, moral and cognitive legitimacy (Alexiou & Wiggins, 2019). Dart (2004) describes pragmatic legitimacy as the judgement of stakeholders in receiving something of value from the organization. Cognitive legitimacy, instead, emerges when employees classify organization's activity. We decided to use moral legitimacy because is an active evaluation of the level to which a company embraces social norms and shared values to promote well-being and public value. This conceptualization of legitimacy is coherent with the independent variables. Thus, we will use Alexiou and Wigging (2019) moral legitimacy scale, composed by 9 items, however, we will adapt the items to Industry 4.0 by validating the legitimacy 4.0 scale. To measure Intention to use Technology we will use 2 items deriving from Gangwar, Date and Ramaswamy (2014) scale. The last dependent variable - Usage Behavior- will be measured using Venkatesh (2000) scale, formed by two items. Experience, Gender and Age, will be coded according to the measurement point.*

To test the validity of the hypotheses outlined we will proceed to the construction of a structural equations model. SEM - Structural equation modeling- is a multivariate statistical analysis that allows us to model the causal relationships between latent variables, from a set of observed variables (items) (Byrne, 2016). SEM methodology also allows to perform an exploratory factorial analysis (EFA) and a confirmatory factorial analysis (CFA), both necessary to validate Legitimacy 4.0 scale and confirmed our assumptions. In this sense we will use AMOS statistical software. In order to investigate the multiple mediation relationships of our models, we will use the procedure proposed by Hayes (2013), SPSS PROCESS. Through the bootstrap method we will analyze the confidence intervals and the indirect effects promoted by the variables of our models.

Results and implications. *Technological progress is unavoidable and will continue to foster social changes. Consequently, the challenge is to find a new ethicality in human-technology interactions. Public institutions have invested a considerable financial resource to Industry 4.0 paradigm, increasing markets competitiveness and suggesting companies to change their organizations. Adopting this new technological approach means re-thinking work*

activity. Managers should operate following two perspective: receiving employees' support for a new technology initiative and leading the employee to implement and accept the technology. Indeed, employees should first support and understand a new challenge and then actually implement it. To solve the first aspect entrepreneurs should facilitate anthropomorphism process. Anthropomorphizing means giving human characteristics to companies or new technological initiatives allowing employees to feel part of a community and find his or her own social identity. This research might offer important contributions to anthropomorphism in terms of the employee-firm relationship. Through anthropomorphism the employee is able to give meaning to his or her work regardless of the potential change in working methods or the inclusion of new technologies. Anthropomorphism could humanize the enterprise by creating psychological contracts. According to some contributions we decide to conceptualize anthropomorphism process by using top-down and bottom-up processes. We have selected CSR and PEP as the main variables capable of explain these processes. Following this perspective, we suggest leaders to design and implement a strategy based on their understanding of the organization as human by choosing other variables in which invest. Employee's organization anthropomorphism could also enhance the external image of the organization. In word-of-mouth processes, an anthropomorphized employee will describe the organization as a human place, increasing the reputation of the company itself. In addition, as a result of increased social isolation due to emergency and post-emergency situations, employees increasingly need to identify themselves and feel part of an entity. Essentially, they might be more inclined to anthropomorphize. Referring to our specifical topic, managers should invest resources to CSR, i.e., communicating to internal and external stakeholders that the company is human and sustainable. Subsequently the newly achieved sustainability will increase employees' perceived prestige and legitimacy towards the organization. Some research on Industry 4.0 has analyzed possible future scenarios of work permeated by machines and technology. Through this research we try to argue that such a debate does not offer important contributions to social and economic development. Technology and social progress, which cannot be stopped, require more concrete solutions. What we want to highlight is that through anthropomorphism employees do not enquire about the future of their work, because they identify with the organization by supporting it. Consequently, the whole debate about the future of work becomes meaningless and useless. Hence, it is necessary to let the employee perceive that his organization is human, kind, environmentally aware and people centered. Following this perspective, employees will be satisfied and will support potential organization's changes. This transition is crucial to ensure the successful acceptance and implementation of technology. In particular, the research we are proposing pursues the further objective of extending the tam model by identifying some variables that precede and influence the acceptance and use of new technological systems. Effectively, CSR, PEP, and legitimacy 4.0 translate into technology acceptance. Anthropomorphism is therefore a necessary condition for TAM unwinding. Moreover, anthropomorphizing leads employees to feel part of a wholeness eliminating the criticality of work alienation.

Limitations and Contributions. *The study is a subject to several limitations. The first one that should be underlined is that the research try to conceptualize anthropomorphism by using CSR and PEP. However, scholars might define anthropomorphism differently by identifying other variables. Therefore, research on this topic is needed to further develop. The proposed conceptual model will be validated through a sample of Italian and European employees. This aspect could represent a further limitation. Indeed, the technological process is especially driven by non-European countries. Future research could test the model in a different context of analysis. The technological process is relentless, and it is important to understand how to manage it. Managers should find in anthropomorphism and in organizational identity an answer to promote employee acceptance of a new strategic initiative: identification means acceptance. Consequently, we have extended the Tam model by proposing anthropomorphism as an antecedent of intention to use technology and usage behavior. Another important contribution concerns the conceptualization of the legitimacy 4.0 variable. In fact, this research seeks to broaden the concept of legitimacy by exploring a new context of study: industry 4.0. The conceptual model and the proposed topics are new in the literature as they try to combine two different fields of study, i.e., business ethics and industry 4.0. Research on these topics needs to be expanded.*

Key words: *Anthropomorphism; Industry 4.0; CSR; PEP; Legitimacy 4.0; TAM model*

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