



Green Talent Management and Turnover Intention: The Roles of Leader STARA Competence and Digital Task Interdependence

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Abstract:	

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MANUSCRIPT DETAILS

: Green Talent Management and Turnover Intention: The Roles of Leader STARA Competence and Digital Task Interdependence

:with the world-wide call to combat global warming concerns within the context of advancements in smart technology, artificial intelligence, robotics, and algorithms (STARA), and digitalisation, organisational leaders are being pressured to ensure that talented employees are effectively managed (nurtured and retained) to curb the potential risk of staff turnover. By managing such talent(s), organisations may be able to not only retain them, but consequently foster environmental sustainability too. Equally, recent debates encourage the need for teams to work digitally and interdependently on set tasks, and for leaders to cultivate competencies fundamental to STARA, as this may further help reduce staff turnover intention and catalyse green initiatives. However, it is unclear how such turnover intention may be impacted by these actions. We therefore, seek to investigate the predictive roles of Green hard and soft talent management (TM), Leader STARA Competence (LSC) and Digital Task Interdependence (DTI) on turnover intention. used a cross-sectional data collection technique to obtain 372 usable samples from 49 manufacturing organisations in Nigeria. indicate that green hard and soft TM and LSC positively predict turnover intention. While LSC amplifies the negative influence of green soft TM on turnover intention, LSC and DTI dampen the positive influence of green hard TM on turnover intention. _RESEARCH_LIMITATIONS/IMPLICATIONS__ (LIMIT_100_WORDS) :No data available. _PRACTICAL_IMPLICATIONS__ (LIMIT_100_WORDS) :No data available. study offers novel insights into how emerging concepts like LSC, DTI, and green hard and soft TM simultaneously act to predict turnover intention.

Dear Special Issue Editors,

Journal of Intellectual Capital.

19th March, 2021.

Dear Prof Vijay Pereira,

Re: Responses to the Comments of Editors and Reviewers

Ms. Ref. No.: Manuscript ID JIC-01-2021-0016

Title: Green Talent Management and Turnover Intention: The Roles of Leader STARA Competence and Digital Task Interdependence.

We would like to express our deep gratitude to the editors and reviewers for their invaluable efforts in ensuring this manuscript makes a contribution.

We acknowledge and take seriously the magnitude of work put in by the editors and reviewers, to review this manuscript and proffer such useful comments. On this note, the comments have each been given extensive consideration. The manuscript has been revised accordingly to address the issues raised.

The edits in the manuscript are marked with red font so that they are easier to identify.

Authors Responses to Reviewers Comments

Citations highlighted in the response to each comment are also appended in full in the references section (or otherwise below the respective response) of the revised manuscript. We have also addressed the summary of comments by the Editor which can be found in our responses to the comments of the reviewers.

Reviewer 1:

1. You need to slightly improve your English. Nevertheless, your potential to be a great academician is evident, well done

Response:

Thank you for all your excellent remarks, expert suggestion and final acceptance of our manuscript. The entire manuscript content has been revised to account for a much better flow of language and readability. The manuscript has further been thoroughly proofread by four different English native speakers from the United Kingdom, Australia, and the United States of America.”

“

2. This is a very good paper with significant information to justify publication.

Response:

Thank you for your comment.

3. This paper demonstrate an adequate understanding of the relevant literature. The connection it makes both with literature and tenets of sustainability is impressive.

Response:

Thank you for your comment.

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4. The methodology utilized in the paper is sufficiently adequate and justifies the postulated result.

Response:

Thank you for your comment, the authors are grateful!

5. The results and conclusion makes for good insight for captains of industry to imbibe. The paper makes adequate connection between theory, analysis, results and conclusion

Response:

Again, thank you for your kind remark.

6. Like I said in my previous answer, the paper does identify both social and practical managerial insights. These implications are consistent with findings and conclusion.

Response:

Thank you for your comment, the authors are grateful!

7. Very slight improvement needed to bring this paper to international standard. Nevertheless, the paper is a good read, well done.

Response:

Thank you for your observation and good remark. Your concern here has been actioned accordingly across the whole manuscript. Do refer to our response to your first comment.

Reviewer 2:

1. Yes, the paper contains new and significant information into how emerging concepts like LSC, DTI, and green hard and soft TM simultaneously act to predict turnover intention..

Response:

Thank you for all your excellent remarks!

2. The paper has demonstrated a significant amount of previous studies. But there are some areas needed to be rewritten. For example, the introduction section needs discussion on concepts of LSC, DTI, In the present version, it is very hard to understand what does LSC, DTI, means. A transition between introduction and literature review is important. The introduction section may be ended up with the objectives of the study and the structure of the paper. Previous studies are reported to some extent, but a specific research gap is not presented clearly.

Response:

Thank you for your comment, the authors are grateful! Your concerns raised here have been actioned accordingly whilst taking into consideration the already high wordcount (over 13,100 words) of our manuscript. Do see the following additional paragraphs from the introduction for your further perusal.

1 “LSC can be conceptualised as the ability of a leader to typify expertise in *smart technologies,*
2 *artificial intelligence, robotics, and algorithms* so as to more effectively and efficiently foster
3 organisational objectives essential to defined task processes (Brougham and Haar 2018;
4 Ogbeibu et al. 2020b; Ogbeibu et al. 2021). By demonstrating STARA related competencies
5 via an application of one or more of the STARA respective components, leaders can effectively
6 catalyse initiatives relevant for achieving organisational green objectives (Oosthuizen 2019).
7 Given technological change, it is important for leaders to go beyond just possessing basic skills
8 and competencies as they may not be sufficient to combat future challenges provoked by the
9 4IR (Li et al. 2020). For organisations to win in the short run, bolster competitive edge and
10 survive in the long run, leaders must cultivate competencies fundamental to STARA (Masood
11 and Egger 2020). Organisations will require a leader who is competent in developing,
12 managing, and or deploying sensors, actuators and the internet of things (smart technology) to
13 fully support technical processes supporting green initiatives (Haenlein and Kaplan 2020; Li et
14 al. 2020). Additionally, the use of robotics, bots and or chatbots is also relevant for boosting
15 digital operations, and a leader with the technical knowhow could prove essential for managing
16 operations not limited to robotic process automation (Haenlein and Kaplan 2020; Li et al.
17 2020). Likewise, studies advocate that possessing knowledge of artificial intelligence and
18 algorithms, and the ability to implement them is fundamental to organisational growth in
19 today’s rapidly transforming digitalised world (Sarc et al. 2019). Similarly, several task
20 processes can also be initiated, driven, and completed digitally by teams working
21 interdependently to foster related environmental sustainability goals and objectives (Salvi et
22 al. 2020; Stoldt et al. 2018).”

27 “Studies debate that the impact of digitalisation has continued to alter the way teams address
28 defined tasks digitally and the way team members depend on each other whilst collectively
29 executing their job roles via distinct digital platforms (Antikainen et al. 2018; Masood and
30 Egger 2020). Ogbeibu et al. (2020a) define *digital task interdependence* (DTI) as the
31 coordination and interconnectedness of two or more teams in such a way that a team relies on
32 the digital assistance and contributions of other teams. Additionally, their collective digital
33 tasks are highly dependent on software interactive services, the internet and cloud computing
34 systems to achieve anticipated organisational outcomes. Congruent with rising advances in
35 digitalisation, DTI becomes more relevant as it captures the degree to which distinct teams
36 digitally interact and drive individual tasks based on collective contributions of data from all
37 teams involved in a defined overarching project (Salvi et al. 2020; Sarc et al. 2019). As a
38 predominant digital strategy, DTI reflects new avenues by which distinct teams, regardless of
39 their geographical locations, may examine, exchange, exploit and implement defined initiatives
40 digitally in order to achieve predetermined objectives and goals of the organisation (Stoldt et
41 al. 2018). By encouraging task interdependence of teams across digital platforms, existing
42 research contends that this could lead to increased performance and speed, and less complexity
43 of defined challenging tasks (Antikainen et al. 2018; Stoldt et al. 2018).”

49 We have also refined our objectives and made it much clearer as evidenced in the following
50 extract.

52 “Our study contributes to the relevant literature and body of knowledge on green HRM and
53 environmental sustainability (Bui and Chang 2018; Gardas et al. 2019; Glen and Lowitt 2009;
54 Renwick et al. 2008; Renwick et al. 2016) via three core objectives which are; first, to
55 empirically investigate the distinct predictive roles of green hard TM and green soft TM on
56 turnover intention. Second, to advance prior conceptualisations associated with STARA and
57 digitalisation by investigating how LSC and DTI respectively predict staff turnover intention.
58 Third, to deepen insights into how LSC and DTI may respectively act to influence associations
59 between green soft and hard TM on turnover intention within the manufacturing industry
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context of a developing economy (Nigeria). In the succeeding sections, we provide an extensive literature review of the distinct concepts examined and their relative nexus. Next, we discuss the method of empirical analysis employed to test and validate the constructs evidenced in our theoretical framework. We further provide a detailed presentation and discussion of our results. Finally, we conclude with timely and relevant implications for theory and practice whilst taking into consideration some limitations and core recommendations for future research.”

The research gaps have been refined and now more clearly presented in the following extract.

“As distinct emerging concepts, DTI, green TM, and LSC can play important roles in helping organisations positively contribute towards environmental sustainability (Glen and Lowitt 2009; Oosthuizen 2019; Wong and Berntzen 2019). Although, Green TM, DTI and LSC are beginning to garner increasing attention across disparate contexts in developed and emerging economies, extant research is inconclusive regarding how to capture their respective conceptualisations (Al Ariss et al. 2014; Brougham and Haar 2018; Wong and Berntzen 2019). Moreover, existing research has continued to overlook the plausible simultaneous influence of green TM, DTI and LSC on staff turnover intention (Abdul et al. 2019; Bui and Chang 2018; Mahlasela and Chinyamurindi 2020). While the relevant literature continues to build on research from several developed economies, there is a lack of empirical evidence from emerging economies that inform how green TM, DTI and LSC may collectively act to engender environmental sustainability from a human capital development and retention perspective (Brougham and Haar 2018; Gardas et al. 2019; Ogbeibu et al. 2020a; Temouri et al. 2020).

Though generic TM practices and turnover intention have been researched in diverse emerging economies like Vietnam (Bui and Chang 2018), India (Tymon Jr et al. 2010), Malaysia (Tajuddin et al. 2015), Botswana (Bui and Chang 2018), Pakistan (Rana and Abbasi 2013), and South Africa (Du Plessis et al. 2015), it is yet unclear what role *green* TM may play and how it might act via its dimensions – *green* hard and soft TM – to influence turnover intention in an emerging economy context, such as Nigeria (Oludayo et al. 2018; Salau et al. 2018). This gap is further emphasised by Anlesinya et al. (2019), Nwosu and Ward (2016) and Okpara and Wynn (2008) who lament that TM in Nigeria is in its embryonic phase of development and should be given attention if problems such as poor human capital development, and the nurturing and retention of talents are to be addressed. As one of the strongest emerging economies in Africa, Nigeria represents an interesting case for obtaining insights into how green TM, DTI and LSC act to predict turnover intention (Ogbeibu et al. 2021; Oludayo et al. 2018; Salau et al. 2018). Moreover, given the growing uncertainty endemic in the volatility of STARA and digitalisation, debates of recent research continue to overlook the plausible roles of LSC and DTI on turnover intention and how they may also impede or reinforce the association of green soft and hard TM with turnover intention (Abdul et al. 2019; Bui and Chang 2018; Ogbeibu et al. 2020a; Wong and Berntzen 2019). This study aims to address these gaps in the literature and consequently provide new empirical evidence that may provoke significant development of insights that are of relevance to policymakers and practitioners.”

3. the Methodology was done with an appropriate base of theory, concepts, or other ideas. But the issues of human ethics approval were not mentioned. It's good if the Researcher mentioned how the questionnaire was developed and attaches the list of questionnaires.

Response:

1 Thank you for your suggestion. The authors have given it careful attention and acted
2 accordingly. See the authors' response in the following extract where concerns on ethics
3 approval, questionnaire development and a list of questionnaire items have been included.

4 "Prior to data collection, attention was given into ensuring that our investigation strictly
5 adhered to ethical and validated actions of conventionally acceptable and established research
6 procedures. The target respondents were assured that their respective information would be
7 treated with strict confidentiality without any identifying details being included in the reporting
8 of the research. The respondents were informed about the purpose of the research, their role in
9 the research, and the processes of data protection and storage employed post data collection.
10 Participation was informed and voluntary, and they were informed of their right to withdraw
11 from the data collection process at any given point in time. Consent was implied through the
12 respondents' completion and return of the survey. Our questionnaire items were prepared in
13 English and evaluated by six researchers. The distributed questionnaires were comprised of 7-
14 point Likert scales that ranged from strongly disagree to strongly agree. We also employed
15 various measurement instruments to examine our constructs and this was appropriate for
16 reducing possible biases that may arise due to use of single source of measures for the
17 constructs examined in this study (McCoach et al. 2013)."

21 "Measurement Items

22 Leader STARA Competence (LSC)

- 23 1. My leader is not good at designing or applying algorithms to complete defined tasks (Reverse
24 coded).
- 25 2. My leader has the knowledge and ability to apply smart (self-monitoring, analysing, and
26 reporting systems) technology during operations.
- 27 3. My leader knows how to design and apply robots or mechanical devices during operations.
- 28 4. Matters related to machines that share similar qualities (reason, calculate, learn, discover)
29 with the human mind are adequately addressed by my leader.

30 Turnover Intention

- 31 1. I am always searching for an opportunity to work anywhere else.
- 32 2. I thought I would leave this organization.
- 33 3. I plan to work at this organization for a certain time and will leave after that.

34 Digital Task Interdependence (DTI)

- 35 1. I work best when I coordinate my digital tasks closely with other teams.
- 36 2. I have to digitally work together with other teams to complete digital tasks.
- 37 3. The way I perform my digital tasks has a significant impact on team members in other teams.
- 38 4. My digital task can't be completed unless team members from other teams do their work
39 digitally.
- 40 5. Most of my digital tasks are affected by the activities of team members from other teams.
- 41 6. Team members from other teams and I frequently have to coordinate our efforts with each
42 other digitally.

7. As a team, we cannot complete a project digitally unless contributions are gotten from team members of other teams.

Green Soft Talent Management (Green soft TM)

1. My organisation cares about my wellbeing and offers considerable support for my welfare when executing green centred initiatives.

2. My organisation offers green training, workshop opportunities, coaching and courses that advances my knowledge on how to foster environmental sustainability.

3. My organisation offers me a considerable degree of autonomy when carrying out green related tasks.

4. My organisation offers me job rotation opportunities associated with environmental sustainability.

5. My organisation is very supportive of green related activities that can help me plan my future development.

6. My organisation offers me challenging assignments that are grounded on environmental sustainability.

7. In my organisation, green tasks are driven with several opportunities that allow me express myself and share my opinions on green related matters.

Green hard Talent Management (Green hard TM)

1. My organisation offers a stringent performance appraisal system to drive green initiatives.

2. Environmental sustainability initiatives in my organisation is driven by a high level of bureaucracy.

3. My organisation offers more support towards achievement of green results than it offers to support my wellbeing.

4. Green initiatives are not driven by already established and prescribed strict rules (reverse coded).

5. Organisational support for developing team members is mainly geared towards increased task efficiency and productivity in green initiatives.

6. My organisation offers high level of task flexibility, autonomy, effective and efficient communication when carrying out green initiatives (reverse coded).

7. Personal development in my organisation is driven by green related results I achieve.”

4. The results presented clearly and analyzed appropriately. The conclusions have adequately been done.

Response:

Thank you for your expert observation and comment.

5. The researchers suggest the importance of policymakers and leaders to note that though the green hard TM has its benefits for controlling and driving talent towards further advancing

environmental sustainability. It will be more strong if the researcher explained how the policy can be done accordingly with their research results.

Response:

Thank you for your suggestion. See our additional information in the following extract. We have not provided much information as presently, our overall wordcount for our manuscript is almost 14000 words, and this quite exceeds the maximum wordcount requirement of the journal.

“Although our findings also show that the green soft TM does engender turnover intention, we argue that contextual factors such as a hierarchical organisational culture ought to be given careful consideration when implementing defined values of green soft TM in an emerging economy context like Nigeria. Therefore, policies should be instituted to foster the establishment of values (e.g., effective communication, talent inclusiveness, support for talent wellbeing and welfare) that capture green soft TM practices in organisations. Nurturing, supporting, and recognising the importance of green values and competencies among staff is an important process of long-term development of employees with a commitment to environmental sustainability. Organisational members, especially those with green skills and commitment, should be recognised as a vital resource that should be supported towards developing and disseminating green initiatives throughout the organisation. Existing evidence supports that excessive control of organisational members, as found in the green hard TM system, may result in less commitment, less job engagement, and increased turnover intentions. Supporting green skill development, engaging with employees to develop sustainability values, and supporting staff with green skills and aspirations can be part of a process of organisational re-orientation to recognise and incorporate a sustainability agenda. To also help curb or reduce the negative impact of green hard TM on staff turnover intention, HRM systems should support the incorporation of green aspirations and programs into staff development and talent management programs. Practical processes associated with a green inclusive HRM system include training and skill development programs; the mentoring of those staff with potential leadership capabilities to staff who have green capabilities, the inclusion of green objectives in performance management systems, and the strategic management of talent within the organisation, especially to ensure that key divisions and subsidiaries are linked to green objectives. Additionally, industrial policy makers interested in green industry development should pay attention to green soft TM while estimating the impacts of their policies on the green proactivity of firms.”

6. Submission of language and communication in this paper is good and can be understood.

Response:

Thank you for your expert observation and comment.

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Green Talent Management and Turnover Intention: The Roles of Leader STARA Competence and Digital Task Interdependence

Abstract

Purpose: Congruent with the world-wide call to combat global warming concerns within the context of advancements in *smart technology, artificial intelligence, robotics, and algorithms* (STARA), and *digitalisation*, organisational leaders are being pressured to ensure that talented employees are effectively managed (nurtured and retained) to curb the potential risk of staff turnover. By managing such talent(s), organisations may be able to not only retain them, but consequently foster environmental sustainability. Equally, recent debates encourage the need for teams to work digitally and interdependently on set tasks, and for leaders to cultivate competencies fundamental to STARA, as this may further help reduce staff turnover intention and catalyse green initiatives. However, it is unclear how such turnover intention may be impacted by these actions. We therefore, seek to investigate the predictive roles of Green hard and soft talent management (TM), Leader STARA Competence (LSC) and Digital Task Interdependence (DTI) on turnover intention.

Design/methodology/approach: We used a cross-sectional data collection technique to obtain original 372 usable samples from 49 manufacturing organisations in Nigeria.

Findings: Findings indicate that green hard and soft TM and LSC positively predict turnover intention. While LSC amplifies the negative influence of green soft TM on turnover intention, LSC and DTI dampen the positive influence of green hard TM on turnover intention.

Originality: Our study offers novel insights into how emerging concepts like LSC, DTI, and green hard and soft TM simultaneously act to predict turnover intention in a fast-growing emerging economy.

Keywords: Green talent management; Turnover intention; Leader STARA competence; Digital task interdependence; Environmental sustainability and Green human resource management.

Introduction

Challenged by the pressures of government programs to address global warming concerns amid the rising volatility of the fourth industrial revolution's (4IR) advances in *smart technology*, *artificial intelligence*, *robotics*, and *algorithms* (STARA), and *digitalisation*, organisational leaders face an imperative to develop and retain staff talent to address global climate change and organisational sustainability (Brougham and Haar, 2018, Li et al., 2020, Nirino et al., 2020, Pinto, 2017). The global war for talent and how to manage talent remain major challenges for organisations, especially given that talent familiar with 4IR technologies is needed to help organisations respond to the United Nations Global Compact (UNGC) to foster environmental sustainability (Al Ariss et al., 2014, Bamel et al., 2020, Farndale et al., 2020, Gardas et al., 2019). Likewise, previous conceptualisations of talent management (TM) require updating to recognise the contemporary environmental sustainability context, and the need for TM practices to focus on green human capital development programs (green TM) in order to attract, nurture, retain and deploy the right talent to advance workplace green initiatives forward (Gardas et al., 2019, Glen and Lowitt, 2009). As an emerging concept, green TM in organisations is argued to be a strategy by which organisational leaders attempt to ensure the right talent is systematically attracted, nurtured and retained (Bui and Chang, 2018, Gardas et al., 2019). Green TM, which consists of green soft and hard TM, entails the attraction, identification, selection, nurturing,

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2
3 retention, and positioning of team members with green centred skills and values together with
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5 the potential to drive green initiatives in an organisation (Bui and Chang, 2018, Glen et al.,
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7 2009).
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11 Turnover intention refers to team members' deliberate and conscious desire, and
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13 behavioural intent to leave an organisation in the near future (Mahlasela and Chinyamurindi,
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15 2020), however, little is known as to how developments in STARA and digitalisation within the
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17 workforce influence staff turnover intention (Abdul et al., 2019, Oosthuizen, 2019). Studies
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19 suggest that STARA and digitalisation pose challenges and benefits that significantly impact the
20
21 future of work and it is important for organisations to ensure their human capital is consistently
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23 equipped with relative competencies fundamental to helping organisations stay relevant over
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25 time (Antikainen et al., 2018, Brougham and Haar, 2018, Nerdrum and Erikson, 2001).
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29 Consequently, recent debates opine the need for team leaders in today's digitalised world to be
30
31 competent in managing and deploying radical innovations grounded in STARA (Brougham and
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33 Haar, 2018, Ogbeibu et al., 2020d, Oosthuizen, 2019). Team leaders that are STARA competent
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35 can play major roles to further drive work operations, reduce complexities of cumbersome tasks,
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37 and share related knowledge that may improve team productivity (Oosthuizen, 2019). The
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39 demonstration of *Leader STARA Competence* (LSC) can consequently help to reduce the weight
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41 of task demands of team members involved in green initiatives, and aid quicker milestones'
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43 completion (Ogbeibu et al., 2021). When LSC is deployed, team leaders' transfer and cultivation
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45 of STARA related knowledge in their team members could reduce turnover intention in team
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47 members who may be overwhelmed with complex task related pressures driven by technological
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49 change (Mahlasela and Chinyamurindi, 2020, Oosthuizen, 2019). While LSC can support
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organisational long-term survival, it could also help bolster the implementation of green initiatives required to engender environmental sustainability (Ogbeibu et al., 2020d).

LSC can be conceptualised as the ability of a leader to typify expertise in *smart technologies, artificial intelligence, robotics, and algorithms* so as to more effectively and efficiently foster organisational objectives essential to defined task processes (Brougham and Haar, 2018, Ogbeibu et al., 2020d, Ogbeibu et al., 2021). By demonstrating STARA related competencies via an application of one or more of the STARA components, leaders can effectively catalyse initiatives relevant for achieving organisational green objectives (Oosthuizen, 2019). Given technological change, it is important for leaders to go beyond just possessing basic skills and competencies as they may not be sufficient to combat future challenges provoked by the 4IR (Li et al., 2020). For organisations to win in the short run, bolster competitive edge and survive in the long run, leaders must cultivate competencies fundamental to STARA (Masood and Egger, 2020). Organisations will require a leader who is competent in developing, managing, and or deploying sensors, actuators and the internet of things (smart technology) to fully support technical processes supporting green initiatives (Haenlein and Kaplan, 2020, Li et al., 2020). Additionally, the use of robotics, bots and or chatbots is also relevant for boosting digital operations, and a leader with the technical knowhow could prove essential for managing operations not limited to robotic process automation (Haenlein and Kaplan, 2020, Li et al., 2020). Likewise, studies advocate that possessing knowledge of artificial intelligence and algorithms, and the ability to implement them is fundamental to organisational growth in today's rapidly transforming digitalised world (Sarc et al., 2019). Similarly, several task processes can also be initiated, driven, and completed digitally

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3 by teams working interdependently to foster related environmental sustainability goals and
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5 objectives (Salvi et al., 2020b, Stoldt et al., 2018b).
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9 As organisations pursue strategies that may aid their response to support the achievement
10 of the United Nations (UN) Sustainable Development Goals (SDGs) on environmental
11 sustainability, studies advocate that green initiatives may be further engendered when set tasks
12 are executed via defined digital platforms (Ogbeibu et al., 2020d, Salvi et al., 2020b). Extant
13 debates espouse that organisations continuing to overlook the relevance of digitisation for the
14 nature of work may lose relevance in the long term (Li et al., 2020). Salvi et al. (2020b)
15 accentuate that digitisation has become a widespread global phenomenon that continues to drive
16 changing job demands. Notably, with the aid of artificial intelligence (AI) and augmented reality
17 systems, organisations are able to digitally advance several otherwise complex tasks, and core
18 digital tasks that are managed by distinct interdependent teams can be more efficiently and
19 effectively fostered to fruition (Masood and Egger, 2020). Digitalisation does not only challenge
20 how jobs are implemented, but also commands the possibility of teams working interdependently
21 via set digital platforms to further expediate organisational objectives (Stoldt et al., 2018a).
22 Existing research suggests that organisational productivity may be enhanced and turnover
23 intention reduced as digital tasks are initiated, driven and completed by team members working
24 interdependently via defined digital platforms (Mahlasela and Chinyamurindi, 2020, Ogbeibu et
25 al., 2020c). With the help of smart technologies and artificial intelligence, team interdependence
26 on digital tasks could promote job satisfaction and reduce task related burdens in team members
27 who may have otherwise intended to leave the organisation (Antikainen et al., 2018, Barnewold
28 and Lottermoser, 2020, Sarc et al., 2019).
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3 Studies debate that the impact of digitalisation on has continued to alter the way teams
4 address defined tasks digitally and the way team members depend on each other whilst
5 collectively executing their job roles via distinct digital platforms (Antikainen et al., 2018,
6 Masood and Egger, 2020). Ogbeibu et al. (2020c) define *digital task interdependence* (DTI) as
7 the coordination and interconnectedness of two or more teams in such a way that a team relies on
8 the digital assistance and contributions of other teams, and their collective digital tasks are highly
9 dependent on software interactive services, the internet and cloud computing systems to achieve
10 anticipated organisational outcomes. Congruent with rising advances in digitalisation, DTI
11 becomes more relevant as it captures the degree to which distinct teams digitally interact and
12 drive individual tasks based on collective contributions of data from all teams involved in a
13 defined overarching project (Salvi et al., 2020b, Sarc et al., 2019). As a predominant digital
14 strategy, DTI reflects new avenues by which distinct teams regardless of their geographical
15 locations may examine, exchange, exploit and implement defined initiatives digitally in order to
16 achieve predetermined objectives and goals of the organisation (Stoldt et al., 2018b). By
17 encouraging task interdependence of teams across digital platforms, existing research contends
18 that this could lead to increased performance, speed and less complexity of defined challenging
19 tasks (Antikainen et al., 2018, Stoldt et al., 2018b).
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43 As distinct emerging concepts, DTI, green TM, and LSC can play important roles in
44 helping organisations positively contribute towards environmental sustainability (Glen and
45 Lowitt, 2009, Oosthuizen, 2019, Wong and Berntzen, 2019). Although, Green TM, DTI and LSC
46 are beginning to garner increasing attention across disparate contexts in developed and emerging
47 economies, extant research is inconclusive regarding how to capture their respective
48 conceptualisations (Al Ariss et al., 2014, Brougham and Haar, 2018, Wong and Berntzen, 2019).
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Moreover, existing research has continued to overlook the plausible simultaneous influence of green TM, DTI and LSC on staff turnover intention (Abdul et al., 2019, Bui and Chang, 2018, Mahlasela and Chinyamurindi, 2020). While the relevant literature continues to build on research from several developed economies, there is a lack of empirical evidence from emerging economies that inform how green TM, DTI and LSC may collectively act to engender environmental sustainability from a human capital development and retention perspective (Brougham and Haar, 2018, Gardas et al., 2019, Ogbeibu et al., 2020c, Temouri et al., 2020).

Though generic TM practices and turnover intention have been researched in diverse emerging economies like Vietnam (Bui and Chang, 2018), India (Tymon Jr et al., 2010), Malaysia (Tajuddin et al., 2015), Botswana (Bui and Chang, 2018), Pakistan (Rana and Abbasi, 2013), and South Africa (Du Plessis et al., 2015), it is yet unclear what role *green* TM may play and how it might act via its dimensions – *green* hard and soft TM – to influence turnover intention in an emerging economy context, such as Nigeria (Oludayo et al., 2018, Salau et al., 2018). This gap is further emphasised by Anlesinya et al. (2019), Nwosu and Ward (2016) and Okpara and Wynn (2008) who lament that TM in Nigeria is in its embryonic phase of development and should be given attention if problems such as poor human capital development, and the nurturing and retention of talents are to be addressed. As one of the strongest emerging economies in Africa, Nigeria represents an interesting case for obtaining insights into how green TM, DTI and LSC act to predict turnover intention (Ogbeibu et al., 2021, Oludayo et al., 2018, Salau et al., 2018). Moreover, given the growing uncertainty endemic in the volatility of STARA and digitalisation, debates of recent research continue to overlook the plausible roles of LSC and DTI on turnover intention and how they may also impede or reinforce the association of green soft and hard TM with turnover intention (Abdul et al., 2019, Bui and Chang, 2018, Ogbeibu et

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3 al., 2020c, Wong and Berntzen, 2019). This study aims to address these gaps in the literature and
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5 consequently provide new empirical evidence that may provoke significant development of
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7 insights that are of relevance to policymakers and practitioners.
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11 Our study contributes to the relevant literature and body of knowledge on green HRM
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13 and environmental sustainability (Bui and Chang, 2018, Gardas et al., 2019, Glen and Lowitt,
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15 2009, Renwick et al., 2008, Renwick et al., 2016) via three core objectives which are; first, to
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17 empirically investigate the distinct predictive roles of green hard TM and green soft TM on
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19 turnover intention. Second, to advance prior conceptualisations associated with STARA and
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21 digitalisation by investigating how LSC and DTI respectively predict staff turnover intention.
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23 Third, to deepen insights into how LSC and DTI may respectively act to influence associations
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25 between green soft and hard TM on turnover intention within the manufacturing industry context
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27 of a developing economy (Nigeria). In the succeeding sections, we provide an extensive
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29 literature review of the distinct concepts examined and their relative nexus. Next, we discuss the
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31 method of empirical analysis employed to test and validate the constructs evidenced in our
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33 theoretical framework. We further provide a detailed presentation and discussion of our results.
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35 Finally, we conclude with timely and relevant implications for theory and practice whilst taking
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37 into consideration some limitations and core recommendations for future research.
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44 **Literature Review**

45 *Contextual and theoretical underpinning and hypothesis development*

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49 Though the need to engender environmental sustainability in Nigeria has been advocated by
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51 recent research (Ogbeibu et al., 2020d, Sanni, 2018), the peculiar role(s) talent could have
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53 otherwise played to foster the achievement of the UN SDGs is largely overlooked (Gardas et al.,
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2019). While Adeosun and Ohiani (2020) argue that the effective management of talent is key to not only boosting organisational performance and shareholders' profitability, Gardas et al. (2019) detail that effective TM practices in Nigeria are relevant for facilitating the pursuit of environmental sustainability. However, evidence suggests that by overlooking the significant influence of effective TM in Nigeria, organisations continue to struggle to capture, nurture and retain staff talent (Oludayo et al., 2018, Salau et al., 2018). Nwosu and Ward (2016) espouse that there is poor human capital development in manufacturing organisations and this has led to a rise in turnover rate of talent. The authors lament that management's TM practices, employers' maltreatment of organisational members, and unrealistic expectations reinforce negative service attitudes of talented employees. Concerns have also been highlighted by existing research of how several organisational leaders in Nigeria give little or no considerations towards effectively investing significant efforts to nurture their human capital (Okpara and Wynn, 2008).

Recent evidence also suggests that organisational members are overwhelmed with unrealistic deadlines and milestones that they are expected to complete, and this often provokes organisational members' intention to leave (Nwosu and Ward, 2016, Oludayo et al., 2018). Equally, while advances in digitalisation and innovation continue to influence existing business models, research espouses how organisational member commitment and satisfaction in their jobs continues to decline, due to a constant push to adopt or adapt to constantly changing technological innovations (Antikainen et al., 2018, Salau et al., 2018). Existing evolving digitalisation and innovations can hamper work-life balance and task engagement of staff members, and drive talented employees to leave their current organisations (Deery and Jago, 2015). Likewise, with respect to intellectual capital development (Temouri et al., 2020), studies lament that the ineffective management of talent with needed competencies and poor retention

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3 strategies in several organisations suggests ineffective and outdated TM practices in Nigerian
4 organisations (Nwosu and Ward, 2016, Okpara and Wynn, 2008, Oludayo et al., 2018). Such
5 findings place an imperative on organisational leaders to not only focus on target-oriented
6 business models, but also to develop TM strategies that adequately and effectively consider
7 constant talent development and retention (Anlesinya et al., 2019). Consequently, this study
8 builds on the overarching theoretical tenets of the VRIO concept (of valuable, rare, imperfectly
9 imitable and organised for value capture) and the stakeholder theory (Clarkson, 1995, Freeman et
10 al., 2020) towards effective TM development.
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22 The VRIO concept presents a theoretical support for organisation's internal human
23 capital capabilities towards determining resources that could aid organisations to sustain
24 competitive advantage (Ogbeibu et al., 2020c). The VRIO consists of tangible and intangible
25 resources (Coley et al., 2012), where the former deals with an organisation's physical assets such
26 as land, machineries, and computers (Dodd, 2016), and the latter incorporates and stretches
27 beyond organisational culture, intellectual capital, values of human behaviour evidenced in an
28 organisation's trademark or brand, or training and development initiatives an organisation adopts
29 and executes in ways that are difficult to be replicated by competitors (Hinterhuber, 2013, Knott,
30 2015, Nirino et al., 2020). VRIO theorisations have yielded several meaningful insights from
31 findings of prior research, but have been criticised for their definitions and conceptualisations
32 (Knott, 2015, Lee et al., 2017, Perez and de Pablos, 2003), as it has been suggested that VRIO
33 has overlooked the capability of LSC – a timely intangible resource which is rare, valuable, not
34 overly complex to organise and difficult to imitate (Knott, 2015). To date, research on VRIO has
35 ignored the relevance of evaluating DTI's influence on turnover intention (Hinterhuber, 2013,
36 Ogbeibu et al., 2020c). Ogbeibu et al. (2020c) suggest that DTI's conceptualisation and
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processes incorporates distinct intangible resources such as data, software and unique task interdependence behaviours of teams, and hardware (tangible) resources alike.

How green TM practices impact on turnover intentions is yet to be given significant attention in prior debates that espouse the tenets of the VRIO (Knott, 2015, Ogbeibu et al., 2020c). This limitation might have otherwise closed the gap on how talent may be further effectively developed and retained to help organisations foster environmental sustainability (Anlesinya et al., 2019). Further research is required to examine how organisational resources may be effectively managed to not just maximise profits, but also to ensure resources and capabilities are tailored and engineered in ways that help bolster environmental sustainability (Barney and Harrison, 2020). Here, Ogbeibu et al. (2020d) and Freeman et al. (2020) advocate a need for organisations to imbibe tenets of stakeholder theory that advocate shifts beyond short-term profit objectives towards a more stakeholder centred model that considers the quadruple bottom line – people, planet, profit and purpose. While the VRIO aids organisations to increase competitive advantages and maximise profits, stakeholder theory consequently helps guide organisations in aligning and deploying their resources and capabilities in ways that helps them advance the achievement of the UN SDGs on environmental sustainability (Ogbeibu et al., 2021, Wu, 2016).

Green TM and turnover intentions

While prior research has examined the concept of TM and turnover intention (Abdul et al., 2019, Deery and Jago, 2015), and despite meaningful findings obtained by such previous research, it is yet unclear how TM really acts to predict staff turnover intention (Anlesinya et al., 2019).

Equally, the concept and role of green TM and how it acts via its dimensions – green hard and soft TM – to predict staff turnover intention is yet to be given significant empirical attention

(Gardas et al., 2019, Glen and Lowitt, 2009). *Green soft TM* is defined as a humanistic aspect of TM that actively supports, and is committed towards, the development and retention of green talent by boosting talents' commitment via effective communication, talent inclusiveness in decision making process, organisational support for talent wellbeing and welfare, and effective and efficient leadership practices that inspires green talented team members to engender defined ecological initiatives for fostering environmental sustainability (Gardas et al., 2019, Glen and Lowitt, 2009). In green soft TM, climate action initiatives tend to be driven via a conducive work environment, adhocracy organisational culture and effective provision of relevant resources (Bui and Chang, 2018, Lee et al., 2017). Conversely, *green hard TM* is defined as a mechanistic, target market-oriented aspect of TM that perceives green talent as a vital resource that needs to be effectively and efficiently managed and controlled via stringent performance appraisal systems, hierarchical organisational culture and bureaucratic work structures to boost competitive advantages and also foster environmental sustainability initiatives (Adeosun and Ohiani, 2020, Bui and Chang, 2018, Glen and Lowitt, 2009).

Likewise, the literature on TM and staff turnover intention is inconclusive due to the mixed findings of extant research (Abdul et al., 2019, Deery and Jago, 2015). The works of Barkhuizen and Schutte (2017), Abdul et al. (2019), and Du Plessis et al. (2015) indicate that green TM is negatively associated with turnover intention. Bui and Chang (2018) found that hard TM is negatively associated with turnover intention, while Rana and Abbasi (2013) found that TM and turnover intention are not significantly associated. Moreover, Abdul et al. (2019) found that TM is positively associated with staff turnover intention. These findings are based on the conventional conceptualisation of TM as a whole, without examining the association between green hard and soft TM with staff turnover intention (Al Ariss et al., 2014, Anlesinya et al.,

2019). The paucity of research on how green soft and hard TM influence turnover intention guides this research, and the works of Bui and Chang (2018) and Gardas et al. (2019) advocate the need for further empirical investigations to be initiated on how green soft and hard TM may influence turnover intention. We therefore, hypothesize that given the definitive conceptualisations of green and hard TM, green soft TM would negatively predict turnover intention and green hard TM would positively predict turnover intention, thus:

H1. Green hard TM positively predicts staff turnover intention

H2. Green soft TM negatively predicts staff turnover intention.

Leader STARA competence (LSC) and turnover intention

It is evident in recent debates that the tenets undergirding LSC can be positively or negatively associated with staff turnover intention (Mahlasela and Chinyamurindi, 2020, Ogbeibu et al., 2021), and that this finding is linked to research connected with the future of work (Brougham and Haar, 2018, Santana and Cobo-Martín, 2020). By allowing for an opportunity in which leaders are able to develop and deploy their STARA related competencies, Oosthuizen (2019) espouse the possibility of having a more productive workforce. Here, prior research argues that complex tasks could be embraced and addressed with less difficulty as STARA competent leaders deploy their relative competencies to execute and manage set complex tasks (Vishwanath et al., 2019), and studies emphasise that complex tasks could be replicated via use of simulations supported by artificial intelligence and augmented reality to drive their implementations (Li et al., 2020, Masood and Egger, 2020, Sarc et al., 2019). Execution of complex tasks may often require huge financial resources to acquire and maintain physical locations that could accommodate relative large-scale capital equipment, and involve risk of life and health of human

capital due to direct physical engagement with hazardous large-scale machinery and adverse consequences for the external environment (Haenlein and Kaplan, 2020, Li et al., 2020). Equally, in cases of trainings and developments involving delicate processes that aid tasks completion and project delivery, probable operations and financial costs and health risks could be averted or curbed when initiated via augmented realities and smart technologies (Masood and Egger, 2020). Congruently, operating highly complex green initiatives relevant for fostering cleaner production would require leaders that are competent in executing augmented reality space innovations and smart technologies (Vishwanath et al., 2019). Such developments could consequently reduce the complexities of cumbersome job processes of team members who due to high productivity and successful project completion demands by their top management, are otherwise strained, pressured and are under pressure in their jobs (Deery and Jago, 2015). Related studies advocate that high job strain and job pressures are negative indicators that could provoke team members to leave their organisation (Mahlasela and Chinyamurindi, 2020, Oludayo et al., 2018). Therefore, while an absence of LSC could increase team member turnover intentions, the effective and efficient deployment of LSC may reduce their intention to leave their organisation (Ogbeibu et al., 2020a, Tajuddin et al., 2015). We thus hypothesize that LSC would negatively predict turnover intention, as:

H3. LSC negatively predicts staff turnover intention.

Digital task interdependence (DTI) and turnover intention

Despite the proliferation of studies that have investigated task interdependence and turnover intention, much work remains to be done to underpin their nexus in the context of digitalisation (Mahlasela and Chinyamurindi, 2020, Ngo-Henha, 2017, Ogbeibu et al., 2020c). Given their relevance in the context of digitalisation, how DTI consequently act to predict turnover intention

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3 lacks significant empirical consideration (Antikainen et al., 2018, Ngo-Henha, 2017). The work
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5 of Masood and Egger (2020) suggests that by engaging in, and executing tasks digitally, teams
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7 are able to more effectively communicate and exchange knowledge across disparate locations of
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9 an organisation. When dealing with complex digital tasks, team members who may be
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11 overwhelmed or frustrated as a result of certain processes that require expert guidance from
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13 another team may be able to obtain direct expert assistance via live interactions across online
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15 digital platforms (Salvi et al., 2020a). Prior research espouses the importance of the internet of
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17 things (IOT) and cloud computing as core indicators for advancing digitalisation, which becomes
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19 even more relevant for interdependent teams to drive initiatives forward across the digital space
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21 (Sarc et al., 2019). DTI consequently fosters more effective and efficient communications across
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23 disparate teams working collectively to execute set digital initiatives (Salvi et al., 2020b), and
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25 could help reduce any frustration(s) that may arise from difficulty in dealing with set tasks that
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27 team members might have as they attempt execution of daily job demands (Stoldt et al., 2018b).
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29 DTI may congruently, help reduce the degree at which frustrated team members may consider
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31 leaving an organisation as the provision of digital assistance for efficient task execution and
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33 delivery can often be readily accessed to foster productivity (Mahlasela and Chinyamurindi,
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35 2020). Studies debate that increased digital support from other interdependent teams can aid
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37 increased speed in completion of milestones, increased work engagements by dissimilar teams
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39 and increased teams' commitment to continue to participate in set task initiatives (Mahlasela and
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41 Chinyamurindi, 2020, Ogbeibu et al., 2020c). In this study, we therefore, hypothesize that DTI
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43 would be a negative predictor of staff turnover intention:
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52 H4. DTI negatively predicts staff turnover intention.
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55 *Moderating role of LSC on green TM and turnover intention relationship*
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Existing research and its predictions of the future of work continue to foster uncertainty that heralds a need to further deepen insights into how LSC may influence the impact of green TM on staff turnover intention (Anlesinya et al., 2019, Brougham and Haar, 2018, Fatorachian and Kazemi, 2018, Reischauer, 2018). Though green hard TM has been suggested to have a positive association with turnover intention, how LSC influences the association is yet to be given significant attention (Bui and Chang, 2018). Given the mechanistic driven values of the green hard TM, extant literature indicates that team members feel estranged from the organisation and their levels of commitment to their jobs may decline (Abdul et al., 2019). The works of Barkhuizen and Schutte (2017), Deery and Jago (2015) and Gardas et al. (2019) emphasize that green values which reflect high levels of bureaucratic work structures and stringent performance appraisal systems may further reduce the job satisfaction of team members, and could facilitate their intentions to leave organisations. Likewise, in the context of green hard TM, there is often less task autonomy and flexibility in job demands, as leaders frequently view talent as mainly a tool to be controlled for boosting competitive advantage and bolstering the achievement of environmental sustainability goals (Bui and Chang, 2018). The works of Reischauer (2018) and Oosthuizen (2019) relate that given the rising advancements in STARA, demonstrating green hard TM values may increase team members' pressure and stress, and consequently their turnover intention, and this might also likely be the case when organisations deploy and use new and advanced technologies that team members find complex and challenging to adopt, adapt to, and drive green initiatives with Mahlasela and Chinyamurindi (2020).

Conversely, green soft TM is argued to mirror a humanistic side of TM that perceives talent as core human capital resource that ought to be constantly nurtured and retained, and whose welfare and wellbeing needs to be effectively and efficiently supported in the organisation

(Bui and Chang, 2018, Sarra et al., 2020). In green soft TM, organisational leaders tend to demonstrate values of benevolence, flexible control, foster effective communication, team members' empowerment and inclusiveness, and strive to ensure team members are given an adequate degree of autonomy to execute their green initiatives (Deery and Jago, 2015, Gardas et al., 2019). Studies emphasise that values exhibited under green soft TM are often positive indicators of increased job satisfaction, commitment, and increased job engagement by team members towards climate initiatives (Du Plessis et al., 2015, Nwosu and Ward, 2016). Congruently, team members are more likely to easily adapt to, adopt and also continue with their organisation despite probable volatile impacts of rapidly changing technology evidenced via STARA (Haenlein and Kaplan, In press), and Green soft TM is suggested to have a negative association with turnover intention (Bui and Chang, 2018, Mukherjee et al., 2009).

Equally, under a green hard and soft TM system, turnover intention would decline when LSC is embraced and implemented (Brougham and Haar, 2018, Vishwanath et al., 2019). By having leaders who are STARA competent, the use of new and advanced technologies could be subtly introduced and advanced, and consequently adopted and adapted to, by team members (Oosthuizen, 2019, Vishwanath et al., 2019). This link seems plausible as team leaders and team members tend to exchange relative knowledge during task execution processes (Ogbeibu et al., 2020c). Moreover, under a green soft or hard TM, LSC could play important roles in reducing the task complexity of team members, and also help them more easily familiarise themselves with new and advanced technologies relevant for enhancing green initiatives (Mahlasela and Chinyamurindi, 2020, Masood and Egger, 2020). Therefore, rather than resolve to leave the organisation as a consequence of high job demands and expectations, amid rapidly changing technologies, team members may otherwise become more committed to executing their tasks due

to LSC's influence (Ogbeibu et al., 2020a). We therefore, hypothesize that LSC would negatively moderate the positive influence of green hard TM on turnover intention, and further positively moderate the negative influence of green soft TM on turnover intentions, namely:

H5. LSC dampens the positive influence of green hard TM on turnover intention.

H6. LSC reinforces the negative influence of green soft TM on turnover intention.

Moderating role of DTI on green TM and turnover intention relationship

The need to manage talent that would aid further enhancement of organisations' long-term survival amid the volatility of digitalisation, and under a competitive business environment, imprints a pressing challenge for organisational leaders (Antikainen et al., 2018, Ferreira et al., 2019, Perez and de Pablos, 2003). Considering the tenets of green soft and hard TM, debates of extant studies relate that while green hard TM may increase the rate at which team members intend to leave an organisation, green soft TM is a negative predictor of team members' turnover intention (Bui and Chang, 2018, Lee et al., 2017). To survive in an era of digitalisation, the works of Ogbeibu et al. (2020c) and Anand et al. (2018) elucidate the need for organisations to encourage the execution of tasks via interdependent teams working digitally and collectively to foster defined organisational objectives. Studies accentuate the possibility of executing and addressing very complex tasks via the digital space by leveraging digital technologies and the internet of things even across distinct geographical locations (Ferreira et al., 2019, Fong et al., 2018). Ogbeibu et al. (2020c) espouse that DTI could foster quicker and more expert support for team members across disparate locations who may be struggling with handling new complex machineries, or be unable to physically assess very sensitive processes in defined tasks. Teams are consequently able to further boost organisational initiatives and save time and cost by

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3 deploying new digital technologies such as working with augmented realities, smart technologies
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5 and exploring the internet of things (Masood and Egger, 2020, Sarc et al., 2019).
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9 Given the need for organisations to adapt to and exploit the benefits of digitalisation,
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11 intense job demands and high expectations of organisations driving green hard TM values, could
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13 provoke team members to then intend to leave their organisation (Haenlein and Kaplan, 2020,
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15 Mahlasela and Chinyamurindi, 2020). Though under a green soft TM system, task flexibility and
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17 some degree of autonomy may minimise turnover intentions (Abdul et al., 2019). Studies find
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19 that the digital space also provides opportunities that engender risk taking by team members by
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21 allowing simulated avenues that accommodate failures which that team members may
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23 consequently learn from (Stoldt et al., 2018b, Vishwanath et al., 2019). Prior debates also
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25 indicate that by initiating and advancing tasks digitally, organisations may be able to more
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27 effectively and efficiently foster set milestones (Stoldt et al., 2018b). Executing complex tasks
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29 within the digital space could create room for increased flexibility of implementing job demands
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31 and reduce overwhelming control by organisational leaders as otherwise evidenced under a green
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33 hard TM system (Ferreira et al., 2019). While DTI could thus improve productivity, it may also
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35 foster increased commitment and job satisfaction in team members who, being more familiar
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37 with set tasks routines, may exhibit little or no turnover intention (Wong and Berntzen, 2019).
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39 We therefore, hypothesize that DTI would weaken the positive influence of green hard TM and
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41 strengthen the negative influence of green soft TM on turnover intention respectively. All
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43 hypotheses are further outlined in Figure 1 accordingly, including:
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51 H7. DTI weakens the positive influence of green hard TM on turnover intention.
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54 H8. DTI strengthens the negative influence of green soft TM on turnover intention.
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PLEASE INSERT FIGURE 1 ABOUT HERE.

Methodology

Data collection and sample size

Data was obtained via a cross-sectional collection technique from 49 distinct manufacturing organisations in Nigeria. Consistent with recent literature, leaders and team members were from research and development (R&D), human resource management (HRM) and information technology (IT) departments (Ogbeibu et al., 2020b). In our study, leaders were in charge of groups of 2 – 6 interdependent teams, who ranged from four to eight (average = 5.2) team members respectively. To identify the 49 organisations, we used the Nigerian Stock Exchange – an approach congruent with similar studies (Ogbeibu et al., 2020d). We determined our sample size by employing the Krejcie and Morgan (1970) population sample recommendations, which aided the achievement of an adequate sample size and a stratified proportionate sampling of our study. Thus, a total of 417 questionnaires were distributed to the distinct 49 manufacturing organisations, and 372 completed samples were returned and used for final analysis. This was an 89% response rate, where 89 teams received a questionnaire and responses were received from 85 teams (95% response rate) and used for further analysis. A total of eighteen team leaders responded to the distributed questionnaire. Overall, the participants' age ranged from 24 to 57, and they consisted of 46.7% male team leaders. The HRM, IT, and R&D departments consisted of 32.6%, 38.2%, and 29.2% participants respectively. In terms of their education, 21.2% of respondents hold a diploma/equivalent, 39.6% undergraduate degrees, 30.2% a master's degree and 9% a PhD.

Prior to data collection, attention was given into ensuring that our investigation strictly adhered to ethical and validated actions of conventionally acceptable and established research procedures. The target respondents were assured that their respective information would be treated with strict confidentiality without any identifying details being included in the reporting of the research. The respondents were informed about the purpose of the research, their role in the research, and the processes of data protection and storage employed post data collection. Participation was informed and voluntary, and they were informed of their right to withdraw from the data collection process at any given point in time. Consent was implied through the respondents' completion and return of the survey. Our questionnaire items were prepared in English and evaluated by six researchers. The distributed questionnaires were comprised of 7-point Likert scales that ranged from strongly disagree to strongly agree. We also employed various measurement instruments to examine our constructs and this was appropriate for reducing possible biases that may arise due to use of single source of measures for the constructs examined in this study (McCoach et al., 2013).

Moreover, seven research assistants (RAs) were recruited and trained for data collection purposes. Data obtained from a pilot study consisting of fifty participants was analysed using the SmartPLS3 software to determine and exclude poorly loaded items as recommended by existing studies (Hair, 2009, Ogbeibu et al., 2020d). Our RAs visited the headquarters (HQs) of the identified manufacturing organisations for data collection purposes, and these HQs were situated in seven distinct states of Nigeria. Contacts with the manufacturing organisations were done via direct visits, telephone calls and emails. Human resource (HR) managers were contacted, and respondents were informed to fill, seal and return the questionnaires to their HR managers in their individual sealed envelopes. Submitted envelopes were collected from respective HR

managers by RAs to foster further data collation. To address concerns of common method bias (CMB), the recommendations of Podsakoff et al. (2012) were considered. Though participants' anonymity was guaranteed, an item of the LSC construct and two items from green hard TM construct were reverse coded prior to data collection. Equally, congruent with Kock's (2015) recommendation for a post data collection CMB measure, the variance inflation factor (VIF) values ranging from 1.318 to 1.758 indicate a reduced influence of CMB in our study (See Table 1).

PLEASE INSERT TABLE 1 ABOUT HERE

Measures

The LSC, turnover intention and DTI measures were adopted from prior research, while green soft and hard TM measures employed in this study were developed based on earlier research. Adjustments of prior measurement items, and the inclusion of new items for green hard and soft TM were necessary to much closely identify with the context, investigated constructs, and aims of our study (*See appendix for full measurement scales*). To measure LSC, four items which are congruent with existing research (Ogbeibu et al., 2021), were adopted (Ogbeibu et al., 2020a). An example is "My leader is not good at designing or applying algorithms to complete defined tasks" (Reverse coded)". Reliability of this measurement scale is 0.908 (Ogbeibu et al., 2020a). To measure turnover intention, three items were adopted from Bui and Chang (2018), and an example of these items is "I am always searching for an opportunity to work anywhere else". The reliability of this measurement scale is 0.795 (Bui and Chang, 2018). Furthermore, consistent with extant debates concerning probable encompassing factors that may influence turnover intention in the context of environmental sustainability, we consequently controlled for work environment, resource availability, and organisational culture (Abdul et al., 2019, Al Ariss

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3 et al., 2014, Anlesinya et al., 2019, Deery and Jago, 2015, Gardas et al., 2019, Lee et al., 2017,
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5 Wan et al., 2018). To measure DTI, seven items were initially self-developed based on the work
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7 of Langfred (2005). An example of the items is “Most of my digital tasks are affected by the
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9 activities of team members from other teams.” To measure green soft and hard TM, seven items
10
11 were developed based on the works of Bui and Chang (2018), Glen and Lowitt (2009) and
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13 Gardas et al. (2019). An example of items for green soft TM are: “My organisation cares about
14
15 my wellbeing and offers considerable support for my welfare when executing green centred
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17 initiatives.” Conversely, an example of items for green hard TM is “My organisation offers a
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19 stringent performance appraisal system to drive green initiatives.”
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24 **Findings and Analysis**

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27 Congruent with our study’s prediction-oriented scope, partial least squares structural equation
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29 modelling (PLS SEM) was employed for further data analysis. Use of PLS SEM is also based on
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31 the causal-explanatory nature, model complexity, interpretation ease and soft distributional
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33 assumptions of our study. The green soft and hard TM construct, LSC and DTI constructs are
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35 relatively underdeveloped, as a major focus of prior literature has been towards advancing TM’s
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37 conceptual underpinnings and theoretical developments (Al Ariss et al., 2014, Anlesinya et al.,
38
39 2019). Consequently, extant research (Hair et al., 2019, Sarstedt et al., 2016) recommends the
40
41 use of PLS SEM for models consisting of new or relatively underdeveloped constructs in order
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43 to also foster theory development. To initiate statistical analysis, we utilise the SmartPLS3
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45 software.
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50 *Results*

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53 Mean values ranged from 5.3 to 5.6 and standard deviation results ranged from 1.3 to 1.6, thus
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55 suggesting no significant distinction among the constructs examined. Equally, skewness values (-
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3 1.3 to 1.5) and Kurtosis values (0.6 to 2.3) indicates normality of distribution (Hair, 2009).

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5 Values of Figure 2 suggests that all measurement items are larger than the lowest factor loading
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7 threshold, thus substantially contributing to their respective constructs (Ringle et al., 2020). In

8
9 Table 1, Rho_A and CR values indicate internal consistency and reliability for all the constructs
10
11 examined in this study. Likewise, AVE values confirm our model's convergent validity (Hair, et
12
13 al., 2019). The heterotrait-monotrait ratio (HTMT) results noted in Table 2 suggest that all
14
15 constructs examined have met the requirements for discriminant validity (Henseler et al., 2016).

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17 Equally, multicollinearity concerns are not an issue, considering that all VIF results are less than
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19 the maximum required threshold of 5 (Ringle et al., 2020). In light of values of model fitness,
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21 Hair et al. (2019) and Ogbeibu et al. (2020c) strongly advocate against the use of model fitness
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23 indices in PLS-SEM, given that the measures are yet incomprehensive and includes tentative
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25 model fit thresholds that are of questionable value in general. Hence recent research (Ogbeibu et
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27 al., 2020c, Ringle et al., 2020, Shmueli et al., 2019) opines that researchers initiating PLS SEM
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29 estimations ought to demonstrate a causal-predictive nature that relies on the predictive accuracy,
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31 relevance and power of their model (Q^2 , β , R^2 and lesser *RMSE* or *MAE* values).
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38 PLEASE INSERT FIGURES 2 AND 3 ABOUT HERE
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41 As a point of departure, we present results for our structural model. R^2 values ($\beta = 0.534$,
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43 $t = 8.784$, $p = 0.000$) indicate a moderate degree of variance explained in turnover intention (Hair
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45 et al., 2019). Congruent with the inner model values of Figures 2 and 3, green hard TM exerts the
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47 most significant positive influence on turnover intention, and this is followed by green soft TM,
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49 and then LSC. Although, green hard TM is a more significant predictor, green soft TM
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51 demonstrates a much stronger influence on turnover intention. These results provide support for
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53 H1, but surprisingly not for H2 and H3, though H2 and H3 are statistically significant. DTI is
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3 however, not significant and H4 is therefore, not supported. Values of effect sizes (f^2) for LSC
4 (0.027), green hard TM (0.044) and green soft TM (0.048) suggest small effects (Aiken and
5 West, 1991), and Lowry and Gaskin (2014) accentuate that even small effects add significant
6 contribution and are very meaningful to a model and for subsequent policy implications.
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8 Moreover, f^2 values for DTI (0.003) indicates no meaningful effect. Furthermore, results from
9
10 Figure 3 indicate that the work environment, and organisational culture positively influence
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12 turnover intention, while resource availability is not significant.
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20 PLEASE INSERT FIGURES 4, 5, 6, AND 7 ABOUT HERE
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23 Figures 4, 5, 6, and 7 shows respective interaction analysis results, and considering that
24 our model has two separate moderating variables, we employed the recommendations of Hair et
25 al. (2013). Consequently, we examined one moderator variable at a time, thus producing a
26 moderation model showing the bootstrapped significance of product terms and report the
27 interaction effects in the results' output accordingly. Result of Figure 4 suggests that LSC
28 dampens ($\beta = -0.217, t = 2.974, p = 0.003$) the positive influence of green hard TM on turnover
29 intention. LSC interaction effect size ($f^2 = 0.036$) indicates a small effect. This confirms our
30 initial postulation for H5 and is consequently supported. Figure 5 indicates that LSC strengthens
31 ($\beta = 0.148, t = 1.932, p = 0.054$) the negative association between green soft TM with turnover
32 intention. LSC interaction effect size ($f^2 = 0.018$) in this association indicates a relatively small
33 effect. This also confirms our initial postulation for H6 and is consequently supported. Figure 6
34 indicates that DTI weakens ($\beta = -0.204, t = 2.348, p = 0.019$) the positive influence of green hard
35 TM on turnover intention. LSC interaction effect size ($f^2 = 0.024$) in this association indicates a
36 small effect. We can thus, conclude that our initial postulation for H7 is confirmed and
37 supported. Figure 7 shows that although DTI strengthens ($\beta = 0.142, t = 1.607, p = 0.108, f^2 =$
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0.012) the negative influence of green soft TM on turnover intention as initially postulated, it is not significant and therefore does not support our prior theorisation of H8. Furthermore, considering our model's predictive accuracy and relevance, the value of Q^2 (0.382) indicate a sufficient and acceptable path model's predictive accuracy and relevance (Ogbeibu et al., 2020d). Congruent with the rule of thumb (Shmueli et al., 2019) on the predictive power of a model, our PLS Predict MAE results (lesser prediction errors) in Table 1 offers substantial support that confirms our model's *medium* predictive power.

Discussion and Conclusions

Our study examines important emerging concepts in the context of the development of green HRM, and has attempted to position them in an environmental sustainability context, to emphasise the need for organisational leaders and work teams to take into consideration the relevance of demonstrating leader STARA competence and green hard and soft TM and DTI. Not only do the examined predictors have significant influences on turnover intention, but by understanding how they influence turnover intention, organisations may be able to better manage talent towards further achievement of the UN SDGs. Congruent with the debates of relevant prior research, we find that green hard TM has a positive association with turnover intention (Abdul et al., 2019, Bui and Chang, 2018, Lee et al., 2017). As noted in the extant literature, values (for example - excessive control, less task autonomy, highly formal work environment and bureaucratic work structure, ineffective communication, stringent performance appraisal system and others) exhibited within organisations that practice green hard TM, are indicators that can provoke team members' intention to leave an organisation (Adeosun and Ohiani, 2020, Bui and Chang, 2018, Glen and Lowitt, 2009). Equally, we found that green soft TM also positively,

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3 rather than negatively, predicts turnover intention as earlier theorised. This result has been
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5 unexpected – though quite plausible given the cultural context of our study.
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8 While these findings challenge earlier research findings (Abdul et al., 2019, Anlesinya et
9 al., 2019, Ngo-Henha, 2017, Rana and Abbasi, 2013), they do bring to mind a possibility that
10 may arise while demonstrating green soft TM. Drawing from figure 2 and 3, we find that in the
11 Nigerian manufacturing industry, organisational culture and work environment are significant
12 factors that foster turnover intention of talent, despite the dimension of green TM applied within
13 an organisation. In this context it may be difficult for leaders and team members to introduce
14 values reflective of green soft TM amid a firmly established hierarchical organisational culture
15 (Jabbour, 2011, Roscoe et al., 2019). Ogbeibu et al. (2018) argue that the organisational culture
16 demonstrated within manufacturing organisations in Nigeria is firmly hierarchical, and studies
17 (Auernhammer and Hall, 2014, Gupta, 2011, Naranjo-Valencia et al., 2016, Porter et al., 2016)
18 lament that such organisational culture can stifle creativity, impair innovativeness, dampen job
19 satisfaction, increase ineffective communication, and foster exclusion and alienation of talent.
20 Congruently, studies suggest that this could provoke intention of organisational members to
21 leave their organisation (Abdul et al., 2019, Deery and Jago, 2015). We also find that LSC is a
22 positive predictor of turnover intention. This means LSC also increases talents' intention to leave
23 their organisation. Again, this result has been unexpected.
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46 Considering the changes evidenced via the components of the fourth industrial
47 revolution, leaders who are STARA competent would need adequate, and constantly maintained
48 work environments to deploy STARA related competencies and to effectively execute complex
49 green initiatives (Brougham and Haar, 2018, Reischauer, 2018, Stoldt et al., 2018b). An adequate
50 work environment is also essential to foster relevant STARA knowledge exchange between team
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3 leaders and their members (Ogbeibu et al., 2021). However, drawing from Figure 2 and 3, one
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5 can deduce that the work environment of manufacturing organisations in Nigeria is likely to
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7 increase turnover intention. Rapidly changing demands of the fourth industrial revolution
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9 provoke the need for organisations to also constantly equip their work environment with relevant
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11 resources needed to accommodate emerging technological innovations (Reischauer, 2018, Stoldt
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13 et al., 2018b). This could lead to continuous increase in financial cost associated with the
14
15 constant need to implement industry 4.0 related relevant changes in the work environment
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17 (Oosthuizen, 2019, Vishwanath et al., 2019). Organisations with insufficient financial resources
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19 may consequently be unable to adequately support their work environment (Stoldt et al., 2018b,
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21 Wu, 2016). Therefore, despite the influence of LSC, extant research suggests that the lack of an
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23 adequate or supportive work environment could reduce work engagement, impair commitment
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25 and consequently provoke intention to leave (Teo et al., 2020, Wan et al., 2018). Another reason
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27 for this outcome is that team members may not be mentally prepared for, or willing to accept
28
29 new or emerging technological advances in light of maintaining conventional work practices
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31 (Nejati et al., 2017). Considering that such technological advances may alter the way they
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33 originally execute their daily task routines, this could provoke resistance to change (Mahlasela
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35 and Chinyamurindi, 2020). Studies suggest that the influence of LSC could be met with
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37 resistance by team members who may be unaware of, or lack adequate knowledge of, or lack the
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39 mental capability to embrace and utilise new technologies (Du Plessis et al., 2015, Mahlasela and
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41 Chinyamurindi, 2020, Nejati et al., 2017). Prior research espouses that workplace conflict that
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43 may ensue due to resistance to technological advancements that could foster team members'
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45 intention to leave their organisation (Anand et al., 2018, Yong et al., 2014).
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We also find that LSC dampens the positive influence of green hard TM on turnover intention, and reinforces the negative influence of green soft TM on turnover intention. These findings complement prior findings (Anlesinya et al., 2019, Brougham and Haar, 2018, Fatorachian and Kazemi, 2018, Reischauer, 2018) that have espoused the distinct roles and benefits of embracing and deploying the tenets of STARA in the organisation. Moreover, these findings also stand in dissonance to prior contentions that present STARA as an influence that may negatively impact the future of work, and consequently provoke team members' turnover intention (Mahlasela and Chinyamurindi, 2020, Oosthuizen, 2019, Santana and Cobo-Martín, 2020, Vishwanath et al., 2019). We also find that DTI weakens the positive influence of green hard TM on turnover intention. By embracing, encouraging, and supporting interdependent teams to drive tasks via distinct digital technologies, workloads that initially seemed overly complex or overwhelming may consequently be completed with less energy, time and cost. According to Ogbeibu et al. (2020c), DTI can foster team members willingness to become more committed and engaged in further executing defined tasks. Studies further support that increased task engagement and commitment can help reduce turnover intention (Teo et al., 2020, Wan et al., 2018). Thus, our finding on DTI complements the discourse of extant research (Antikainen et al., 2018, Barnewold and Lottermoser, 2020, Ferreira et al., 2019, Sarc et al., 2019).

Theoretical Implications

Despite the proliferation of investigations that have respectively considered the concepts of TM, task interdependence and STARA associated tenets, our study is the first to simultaneously investigate TM's disparate dimensions, leader competency, and task interdependence into the context of digitalisation, STARA, and environmental sustainability. We offer novel insights that inform how green soft and hard TM, LSC and DTI predicts turnover intention in Nigeria. We

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3 conducted the research in an emerging economy context (Nigeria) that is scarcely found in prior
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5 research, to garner original and substantial knowledge that is meaningful for theory and practice.
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7 While prior works on TM may have yielded meaningful findings, only a handful of studies have
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9 examined TM via its soft and hard dimensions. By examining TM as a unidimensional construct,
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11 prior research raises endogeneity concerns, and have consequently overlooked robust findings
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13 that could have otherwise been obtained to foster relevant policy implications. We have
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15 attempted to close this major gap in the literature and have further positioned TM in a more
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17 timely – environmental sustainability context – by investigating green TM via its green soft and
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19 hard dimensions respectively.
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25 By demonstrating how green hard TM positively predict turnover intention, we
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27 compliment prior research. Notably, our findings show that green soft TM positively predicts
28
29 turnover intention. We thus, extend earlier conceptualisations of stakeholder theory, and
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31 challenge prior empirical findings that have suggested that green soft TM has a negative or
32
33 insignificant association with turnover intention. By providing evidence that demonstrates how
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35 green TM acts as both a positive and negative resource, we advocate a new understanding that
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37 extends the VRIO theoretical underpinnings. We advance the VRIO tenets by offering
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39 substantial evidence that demonstrates how an often-overlooked intangible resource such as LSC
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41 acts to predict turnover intention. While the debate continues on as to how the fourth industrial
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43 revolution via its relative components such as STARA could adversely influence the workforce
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45 or better equip the organisation for the future of work, we offer substantial evidence that allows
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47 for deeper clarity into how STARA via LSC operates in the workforce.
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53 Congruent with our findings, we stretch recent empirical insights that mirrors the LSC
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55 phenomenon as a portent for organisations and the future of work. We show that LSC dampens
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3 the negative influence of green hard TM on turnover intention, and strengthens the negative
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5 association between green soft TM and turnover intention. Conversely, we provide evidence that
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7 supports how LSC could be a portent to organisations by demonstrating that it could also directly
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9 engender turnover intention of talent. In view of the debate on digitalisation and its probable
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11 impact on organisations and the future of work, our findings offer evidence that deepens
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13 understanding into the roles of DTI. We predict that DTI would not directly lead to turnover
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15 intention, neither would DTI influence the relationship between green soft TM and turnover
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17 intention as it has been found to be insignificant respectively. However, we extend previous
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19 empirical contentions on DTI by demonstrating that DTI does weaken the negative influence of
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21 green hard TM on turnover intention. Our study captures substantial insights from recently
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23 emerging fields in the literature, and provides an avenue to further furnish researchers with novel
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25 findings that compliment, extend, and challenge contemporary understandings associated with
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27 the LSC, DTI, green TM and turnover intention. We consequently open a new lens of research
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29 for future inquiry into relative issues of STARA and digitalisation from a perspective of
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31 deploying LSC and DTI to further nurture and retain talent in an environmental sustainability
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33 context.
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40 **Managerial and Policy Implications**

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43 By investigating how green TM, LSC, and DTI predicts turnover intention, we provide insights
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45 that supports meaningful policy implications. We consequently furnish practitioners and industry
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47 policy makers with substantive evidence for establishing guidelines relevant for driving green
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49 soft and hard TM in organisations. To ensure human capital – talents – are adequately nurtured
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51 and retained in organisations for fostering environmental sustainability, practitioners and leaders
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53 should consider instilling values endemic within the green soft TM rather than the green hard
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3 TM. Although our findings also show that the green soft TM does engender turnover intention,
4 we argue that contextual factors such as a hierarchical organisational culture ought to be given
5 careful consideration when implementing defined values of green soft TM in an emerging
6 economy context like Nigeria. Therefore, policies should be instituted to foster the establishment
7 of values (e.g., effective communication, talent inclusiveness, support for talent wellbeing and
8 welfare) that capture green soft TM practices in organisations. Nurturing, supporting, and
9 recognising the importance of green values and competencies among staff is an important
10 process of long-term development of employees with a commitment to environmental
11 sustainability. Organisational members, especially those with green skills and commitment,
12 should be recognised as a vital resource that should be supported towards developing and
13 disseminating green initiatives throughout the organisation. Existing evidence supports that
14 excessive control of organisational members, as found in the green hard TM system, may result
15 in less commitment, less job engagement, and increased turnover intentions. Supporting green
16 skill development, engaging with employees to develop sustainability values, and supporting
17 staff with green skills and aspirations can be part of a process of organisational re-orientation to
18 recognise and incorporate a sustainability agenda. To also help curb or reduce the negative
19 impact of green hard TM on staff turnover intention, HRM systems should support the
20 incorporation of green aspirations and programs into staff development and talent management
21 programs. Practical processes associated with a green inclusive HRM system include training
22 and skill development programs; the mentoring of those staff with potential leadership
23 capabilities to staff who have green capabilities, the inclusion of green objectives in performance
24 management systems, and the strategic management of talent within the organisation, especially
25 to ensure that key divisions and subsidiaries are linked to green objectives. Additionally,
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3 industrial policy makers interested in green industry development should pay attention to green
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5 soft TM while estimating the impacts of their policies on the green proactivity of firms.
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9 Given that our findings suggest that LSC positively predicts turnover intention,
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11 policymakers and practitioners may want to consider allocating adequate resource for the
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13 development of the work environment which supports effective and efficient demonstration of
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15 leader STARA related competencies. This could be relevant for supporting team members'
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17 tasks' commitment and engagement and consequently reduce their intention to leave. This
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19 recommendation is congruent with our findings that relay the work environment as a positive
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21 predictor of turnover intention. Moreover, leaders and practitioners may consider the benefits of
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23 slowly instituting changes or driving processes associated with STARA as it may otherwise have
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25 a confounding effect on team members who may feel overwhelmed, and thus resist adopting,
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27 embracing or utilising knowledge associated with STARA. Leaders and practitioners may also
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29 consider initiating training programs for team members to increase their STARA awareness,
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31 cultivate their interest in STARA, and to effectively adopt or adapt to STARA for bolstering
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33 environmental sustainability.
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40 Though we find that green hard TM leads to turnover intention, policymakers may take
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42 comfort in knowing that by implementing LSC and DTI, the negative influence of green hard
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44 TM can be reduced. Thus, organisations currently managing talents to foster environmental
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46 sustainability by instilling green hard TM values, may consider adopting, and embracing the
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48 LSC and DTI phenomenon to drive tasks and operations processes. By instituting strategies to
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50 foster DTI, task routine processes and complex projects could be more easily executed and
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52 driven to fruition via the leveraging of distinct digital technologies (for example, augmented
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54 reality technology and others). Equally, while policies could be established to further enhance
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3 the adoption of LSC in the workplace, practitioners and leaders may also ensure resources are
4 allocated to support LSC's acceptance and use, especially as it can reinforce green soft TM's
5 negative influence on turnover intention. This is congruent with our finding that LSC increases
6 the strength of green soft TM to reduce turnover intention of talent in organisations.
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12 Consequently, organisations driving green initiatives via green soft TM practices may be able to
13 further nurture and retain their talent by deploying the tenets of LSC.
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17 **Limitations and Ideas for Future Research**

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20 Although our study offers robust empirical contributions to both theory and practice, it is not
21 without limitations. Our study has been driven along the lines of a team-level analysis, so
22 organisational or individual inferences should not be deduced. Nevertheless, it provides an
23 avenue for future investigation to be initiated from organisational and individual points of
24 analysis. Our study did not directly consider the perceptions of other stakeholders such as
25 customers, suppliers, societal factors, corporate level or community actors – as such deviation
26 would have deeply altered the motivation, aims and context of our present investigation. We
27 thus, leave this to future research investigations to examine. A major part of our focus has been
28 to investigate the predictive powers of LSC, DTI, and green TM dimensions on turnover
29 intention. However, given the intense debates associated with STARA and digitalisation from the
30 future of work perspective, it would be meaningful for future research to consider examining the
31 influence of LSC on the relationship between DTI and turnover intention.
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49 We acknowledge that several other factors in the literature have been debated to engender
50 turnover intention, and not all of these have been examined in our study. Although, we controlled
51 for some other core factors like work environment, resource availability and organisational
52 culture, we contend that it would be unrealistic to have evidenced or controlled for all prior
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3 identified predictors of turnover intention. Congruently, we provide an avenue for future research
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5 to further examine the plausible moderating roles of work environment, resource availability, and
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7 organisational culture on the relationships between our endogenous and target exogenous
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9 constructs. This work could foster more substantive insights from an organisational level
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11 perspective. Another major focus has been on LSC, whereas deeper insights may have been
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13 obtained from a plausible examination of individual or team level STARA competence. We call
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15 on scholars to consider this in their investigations. Furthermore, our study has initiated a cross-
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17 sectional investigation in which the data obtained is also influenced by self-reporting
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19 measurement scales that is limited to one country; one sector and thus, does not advocate
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21 causality. We therefore, recommend that a longitudinal investigation (via multisource data
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23 collection) which garners insights from across the manufacturing industry, national or cultural
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25 contexts be initiated by future studies to foster causality and generalisability of our prediction-
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27 oriented model. We encourage future researchers to also examine additional sectors, especially
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29 the services sectors and initiate studies of actual training, nurturing and retention programs
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31 linked to developing green TM and leadership competence.
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38 **Research funding**

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44 **Declaration of Competing Interest**

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47 The authors declare that they have no known competing financial interests or personal
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49 relationships that could have appeared to influence the work reported in this paper.
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Appendix

Table 1: Reliability, Validity and Prediction Oriented Assessments

Construct	Composite reliability (CR)	VIF Values	rho_A	AVE	PLS PREDICT MAE	LM MAE
DIGITAL TASK INTERDEPENDENCE (DTI)	0.907	1.758	0.878	0.620		
GREEN HARD TM	0.943	1.589	0.930	0.769		
GREEN SOFT TM	0.933	1.486	0.915	0.699		
LEADER STARA COMPETENCE (LSC)	0.870	1.740	0.818	0.628		
ORGANISATIONAL CULTURE	1.000	1.644	1.000	1.000		
RESOURCE AVAILABILITY	1.000	1.318	1.000	1.000		
TURNOVER INTENTION	0.901		0.836	0.752		
• T11					0.675	0.715
• T12					0.695	0.757
• T13					0.63	0.613
WORK ENVIRONMENT	1.000	1.423	1.000	1.000		

Note: AVE (Average variance Extracted); VIF (Variance Inflation Factor)

Table 2: The heterotrait-monotrait ratio (HTMT) Test

	DTI	GREEN HARD TM	GREEN SOFT TM	LSC	OC	RA	TI	WE
DIGITAL TASK INTERDEPENDENCE (DTI)								
GREEN HARD TM	0.473							
GREEN SOFT TM	0.491	0.455						
LEADER STARA COMPETENCE (LSC)	0.682	0.499	0.510					
ORGANISATIONAL CULTURE (OC)	0.435	0.550	0.459	0.453				
RESOURCE AVAILABILITY (RA)	0.416	0.331	0.352	0.401	0.394			
TURNOVER INTENTION (TI)	0.551	0.617	0.599	0.628	0.648	0.407		
WORK ENVIRONMENT (WE)	0.474	0.375	0.375	0.513	0.377	0.271	0.518	

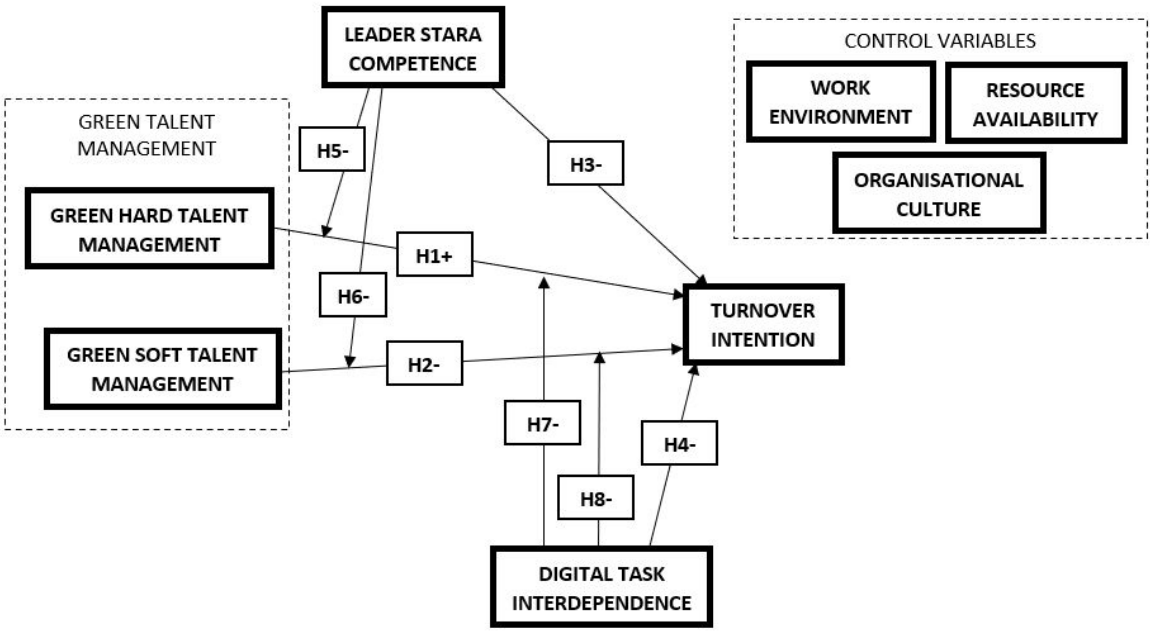


Figure 1: Theoretical framework

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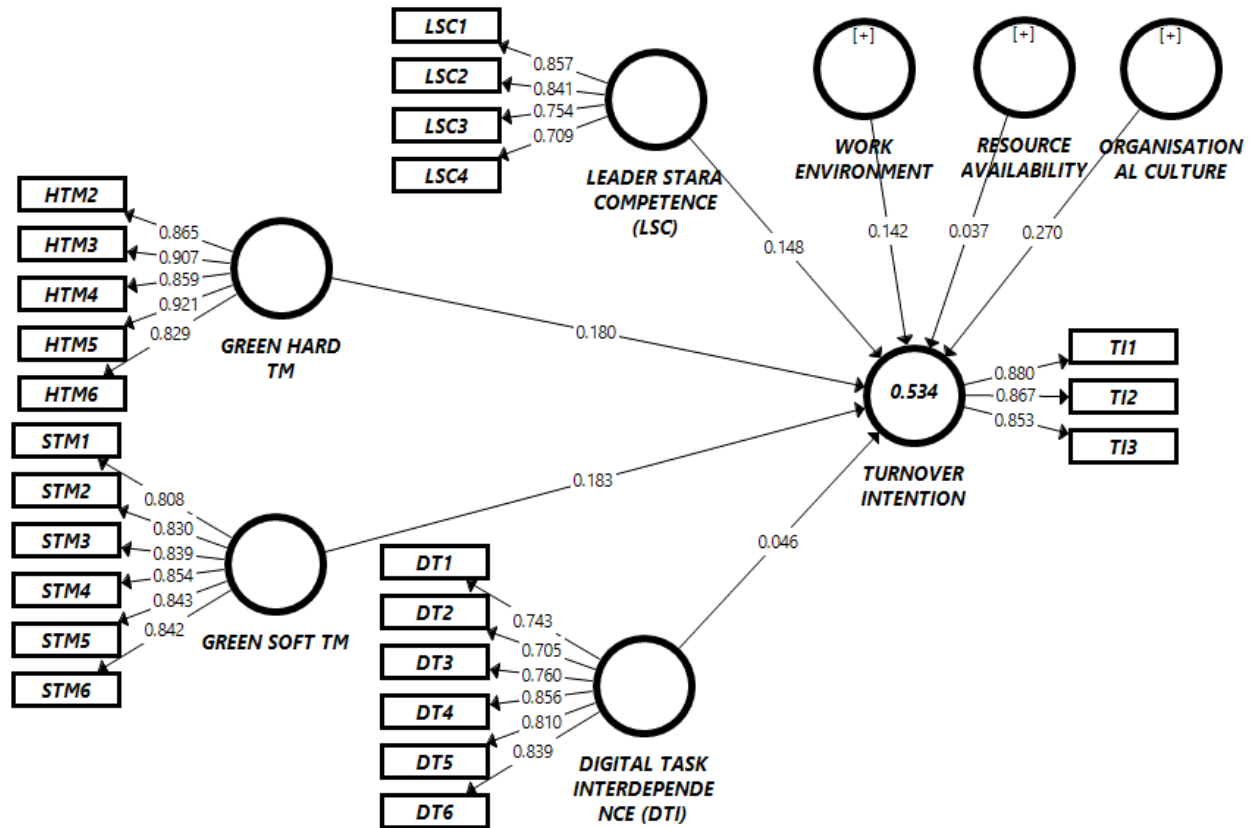


Figure 2: Measurement model

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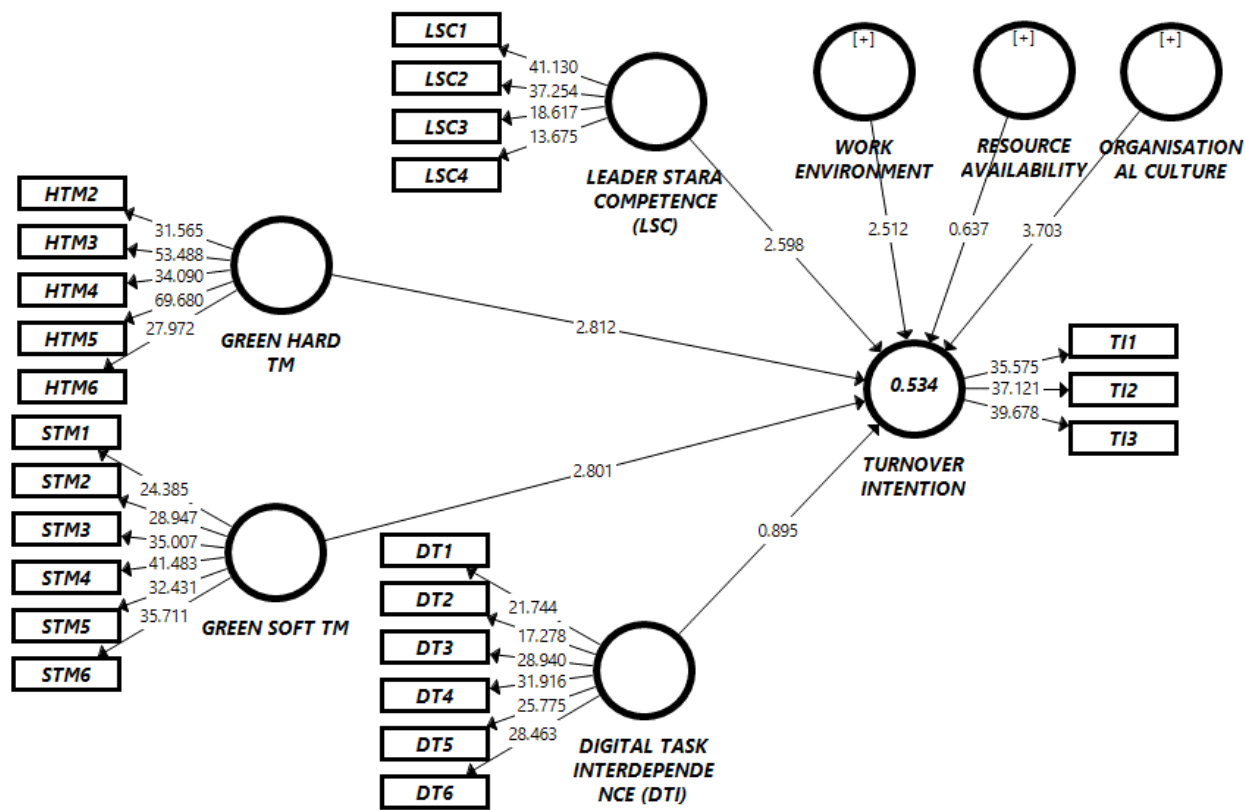


Figure 3: Structural model with T-Statistics test.

Journal of Intellectual Capital

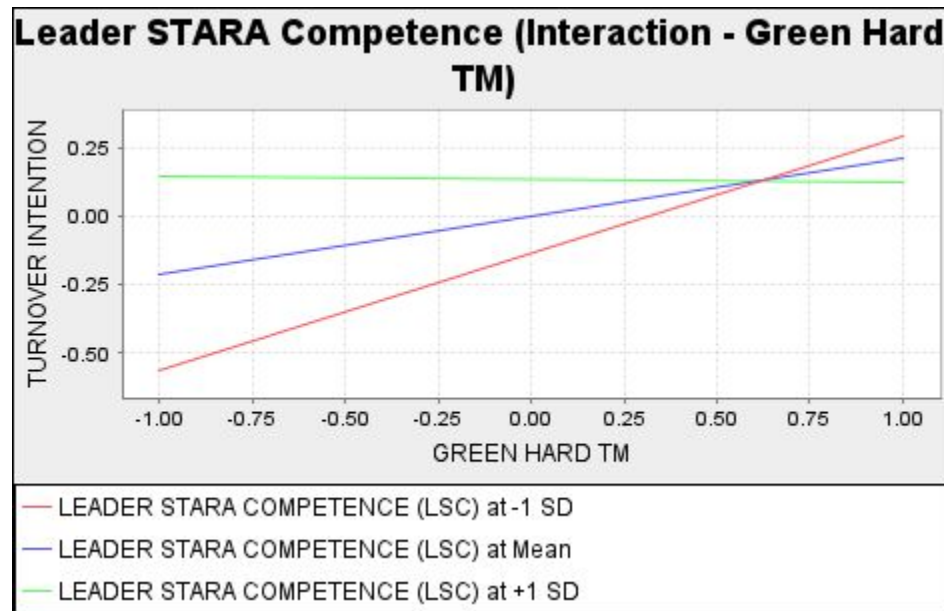


Figure 4: Interaction effect of LSC on the relationship between green hard TM and turnover intention

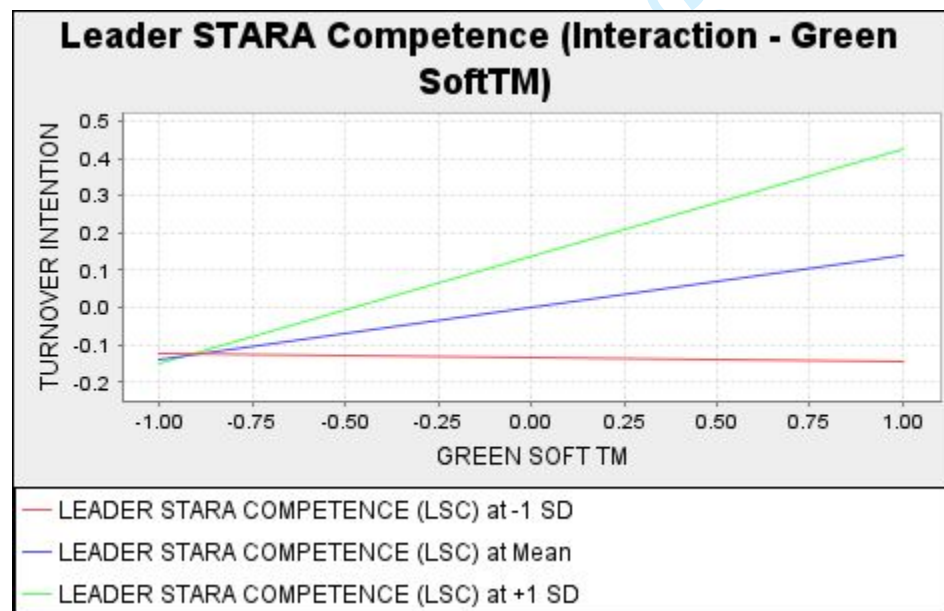


Figure 5: Interaction effect of LSC on the relationship between green soft TM and turnover intention

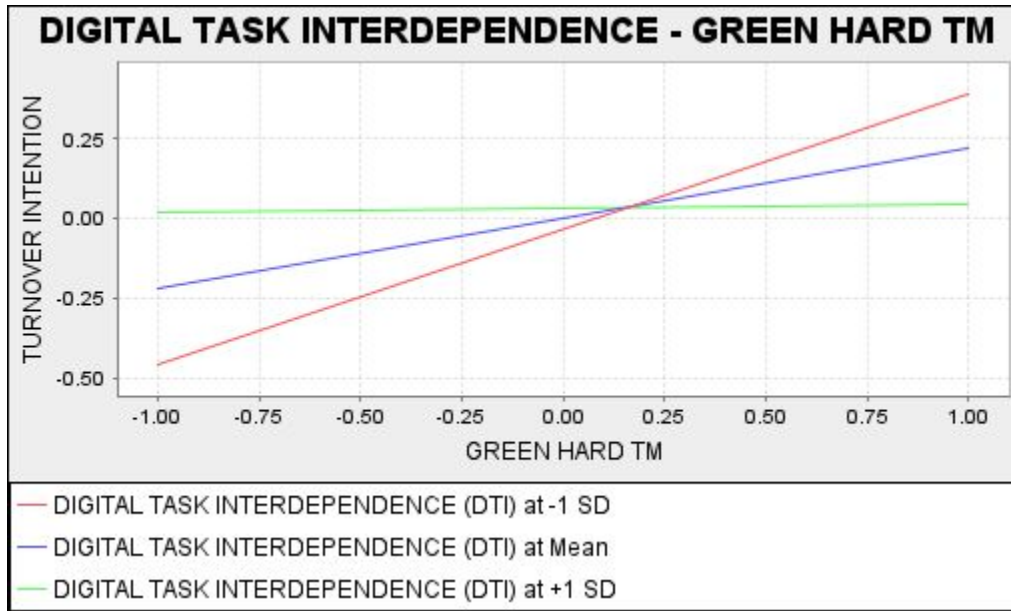


Figure 6: Interaction effect of DTI on the relationship between green hard TM and turnover intention

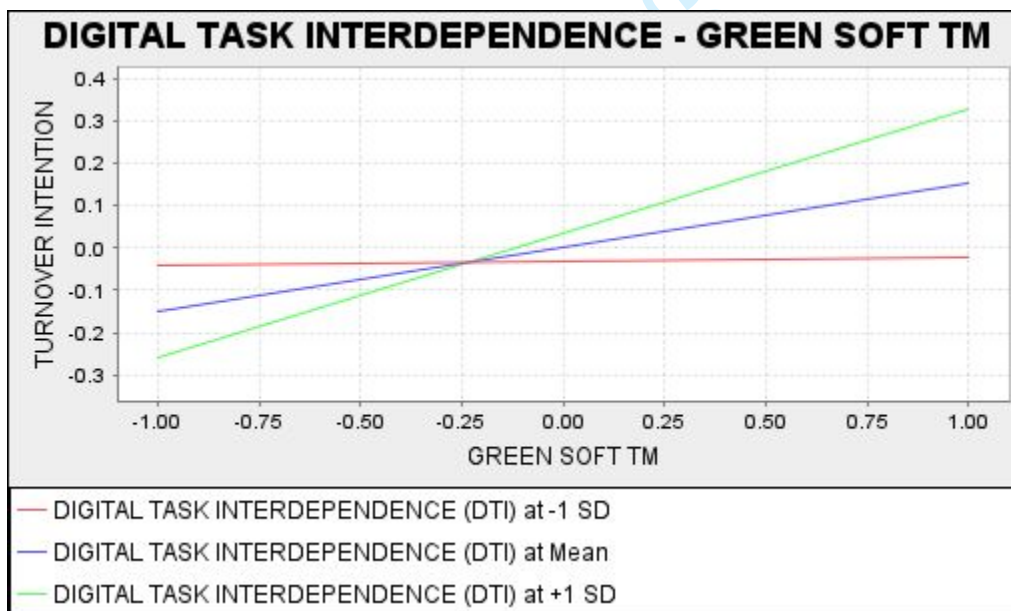


Figure 7: Interaction effect of DTI on the relationship between green soft TM and turnover intention

Measurement Items

Leader STARA Competence (LSC)

1. My leader is not good at designing or applying algorithms to complete defined tasks (Reverse coded).
2. My leader has the knowledge and ability to apply smart (self-monitoring, analysing, and reporting systems) technology during operations.
3. My leader knows how to design and apply robots or mechanical devices during operations.
4. Matters related to machines that share similar qualities (reason, calculate, learn, discover) with the human mind are adequately addressed by my leader.

Turnover Intention

1. I am always searching for an opportunity to work anywhere else.
2. I thought I would leave this organization.
3. I plan to work at this organization for a certain time and will leave after that.

Digital Task Interdependence (DTI)

1. I work best when I coordinate my digital tasks closely with other teams.
2. I have to digitally work together with other teams to complete digital tasks.
3. The way I perform my digital tasks has a significant impact on team members in other teams.
4. My digital task can't be completed unless team members from other teams do their work digitally.

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3 5. Most of my digital tasks are affected by the activities of team members from other teams.
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6 6. Team members from other teams and I frequently have to coordinate our efforts with each
7
8 other digitally.
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11 7. As a team, we cannot complete a project digitally unless contributions are gotten from team
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13 members of other teams.
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16 Green Soft Talent Management (Green soft TM)

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20 1. My organisation cares about my wellbeing and offers considerable support for my welfare
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22 when executing green centred initiatives.
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25 2. My organisation offers green training, workshop opportunities, coaching and courses that
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27 advances my knowledge on how to foster environmental sustainability.
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30 3. My organisation offers me a considerable degree of autonomy when carrying out green related
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32 tasks.
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35 4. My organisation offers me job rotation opportunities associated with environmental
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37 sustainability.
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40 5. My organisation is very supportive of green related activities that can help me plan my future
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42 development.
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45 6. My organisation offers me challenging assignments that are grounded on environmental
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47 sustainability.
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51 7. In my organisation, green tasks are driven with several opportunities that allow me express
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53 myself and share my opinions on green related matters.
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Green hard Talent Management (Green hard TM)

1. My organisation offers a stringent performance appraisal system to drive green initiatives.
2. Environmental sustainability initiatives in my organisation is driven by a high level of bureaucracy.
3. My organisation offers more support towards achievement of green results than it offers to support my wellbeing.
4. Green initiatives are not driven by already established and prescribed strict rules (reverse coded).
5. Organisational support for developing team members is mainly geared towards increased task efficiency and productivity in green initiatives.
6. My organisation offers high level of task flexibility, autonomy, effective and efficient communication when carrying out green initiatives (reverse coded).
7. Personal development in my organisation is driven by green related results I achieve.

Green Talent Management and Turnover Intention: The Roles of Leader STARA Competence and Digital Task Interdependence

Abstract

Purpose: Congruent with the world-wide call to combat global warming concerns within the context of advancements in *smart technology, artificial intelligence, robotics, and algorithms* (STARA), and *digitalisation*, organisational leaders are being pressured to ensure that talented employees are effectively managed (nurtured and retained) to curb the potential risk of staff turnover. By managing such talent(s), organisations may be able to not only retain them, but consequently foster environmental sustainability too. Equally, recent debates encourage the need for teams to work digitally and interdependently on set tasks, and for leaders to cultivate competencies fundamental to STARA, as this may further help reduce staff turnover intention and catalyse green initiatives. However, it is unclear how such turnover intention may be impacted by these actions. We therefore, seek to investigate the predictive roles of Green hard and soft talent management (TM), Leader STARA Competence (LSC) and Digital Task Interdependence (DTI) on turnover intention.

Design/methodology/approach: We used a cross-sectional data collection technique to obtain 372 usable samples from 49 manufacturing organisations in Nigeria.

Findings: Findings indicate that green hard and soft TM and LSC positively predict turnover intention. While LSC amplifies the negative influence of green soft TM on turnover intention, LSC and DTI dampen the positive influence of green hard TM on turnover intention.

Originality: Our study offers novel insights into how emerging concepts like LSC, DTI, and green hard and soft TM simultaneously act to predict turnover intention.

Keywords: Green talent management; Turnover intention; Leader STARA competence; Digital task interdependence.

Introduction

Challenged by the pressures of government programs to address global warming concerns amid the rising volatility of the fourth industrial revolution's (4IR) advances in *smart technology*, *artificial intelligence*, *robotics*, and *algorithms* (STARA), and *digitalisation*, organisational leaders face an imperative to develop and retain talent to address global climate change and organisational sustainability (Brougham and Haar, 2018; Li et al., 2020; Nirino, et al., 2020; Pinto, 2017). The global war for talent and how to manage talent remain major challenges for organisations, especially given that talent familiar with 4IR technologies is needed to help organisations respond to the United Nations Global Compact (UNGC) to foster environmental sustainability (Ariss, et al., 2014; Bamel, et al., 2020; Farndale, et al., 2020; Gardas, et al., 2019). Likewise, previous conceptualisations of talent management (TM) require updating to recognise the contemporary environmental sustainability context, and the need for TM practices to focus on green human capital development programs (green TM) in order to attract, nurture, retain and deploy the right talent to advance workplace green initiatives (Gardas, et al., 2019; John, et al., 2009). As an emerging concept, green TM in organisations is argued to be a strategy by which organisational leaders attempt to ensure the right talent is systematically attracted, nurtured and retained (Bui and Chang, 2018; Gardas et al., 2019). Green TM, which consists of green soft and hard TM, entails the attraction, identification, selection, nurturing, retention, and positioning of team members with green centred skills and values together with the potential to drive green initiatives in an organisation (Bui and Chang, 2018; John et al., 2009).

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3 Turnover intention refers to team members' deliberate and conscious desire, and
4 behavioural intent to leave an organisation in the near future (Mahlasela and Chinyamurindi,
5 2020), however, little is known as to how developments in STARA and digitalisation within the
6 workforce influence staff turnover intention (Abdul, et al., 2019; Oosthuizen, 2019). Studies
7 suggest that STARA and digitalisation pose challenges and benefits that significantly impact the
8 future of work and it is important for organisations to ensure their human capital is consistently
9 equipped with relative competencies fundamental to helping organisations stay relevant over
10 time (Antikainen, et al., 2018; Brougham and Haar, 2018; Nerdrum and Erikson, 2001).
11 Consequently, recent debates opine the need for team leaders in today's digitalised world to be
12 competent in managing and deploying radical innovations grounded in STARA (Brougham and
13 Haar, 2018; Ogbeibu, Burgess, Emelifeonwu and Pereira, 2020c; Oosthuizen, 2019). Team
14 leaders that are STARA competent can play major roles to further drive work operations, reduce
15 complexities of cumbersome tasks, and share related knowledge that may improve team
16 productivity (Oosthuizen, 2019). The demonstration of *leader STARA competence* (LSC) can
17 consequently help to reduce the weight of task demands of team members involved in green
18 initiatives, and aid quicker milestones' completion (Ogbeibu et al., 2020c). When LSC is
19 deployed, team leaders' transfer and cultivation of STARA related knowledge in their team
20 members could reduce turnover intention in team members who may be overwhelmed with
21 complex task related pressures driven by technological change (Mahlasela and Chinyamurindi,
22 2020; Oosthuizen, 2019). While LSC can support organisational long-term survival, it could also
23 help bolster the implementation of green initiatives required to engender environmental
24 sustainability (Ogbeibu et al., 2020c). *LSC* can be conceptualised as the ability of a leader to
25 typify expertise in *smart technologies, artificial intelligence, robotics, and algorithms* so as to
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3 more effectively and efficiently foster organisational objectives essential to defined task
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5 processes (Brougham & Haar, 2018; Ogbeibu et al., 2020c). Congruent with the rapid
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7 advancements in digitalisation, several task processes can also be initiated, driven, and
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9 completed digitally by teams working interdependently to foster related environmental
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11 sustainability goals and objectives (Salvi, et al., 2020; Stoldt, et al., 2018).
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15 As organisations pursue strategies that may aid their response to support the achievement
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17 of the United Nations (UN) Sustainable Development Goals (SDGs) on environmental
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19 sustainability, studies advocate that green initiatives may be further engendered when set tasks
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21 are executed via defined digital platforms (Ogbeibu, et al., 2020b; Salvi, et al., 2020). Extant
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23 debates espouse that organisations continuing to overlook the relevance of digitisation for the
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25 nature of work may lose relevance in the long term (Li, et al., 2020). Salvi, et al. (2020)
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27 accentuate that digitisation has become a widespread global phenomenon that continues to drive
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29 changing job demands. Notably, with the aid of artificial intelligence (AI) and augmented reality
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31 systems, organisations are able to digitally advance several otherwise complex tasks, and core
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33 digital tasks that are managed by distinct interdependent teams can be more efficiently and
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35 effectively fostered to fruition (Masood and Egger, 2020). Digitalisation does not only challenge
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37 how jobs are implemented, but also commands the possibility of teams working interdependently
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39 via set digital platforms to further expediate organisational objectives (Stoldt, et al., 2018).
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43 Existing research suggests that organisational productivity may be enhanced and turnover
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45 intention reduced as digital tasks are initiated, driven and completed by team members working
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47 interdependently via defined digital platforms (Mahlasela and Chinyamurindi, 2020; Ogbeibu et
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49 al., 2020b). With the help of smart technologies and artificial intelligence, team interdependence
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51 on digital tasks could promote job satisfaction and reduce task related burdens in team members
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3 who may have otherwise intended to leave the organisation (Antikainen, et al., 2018; Barnewold
4 and Lottermoser, 2020; Sarc, et al., 2019). Ogbeibu et al. (2020b) define *digital task*
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6 *interdependence* (DTI) as the coordination and interconnectedness of two or more teams in such
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8 a way that a team relies on the digital assistance and contributions of other teams and their
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10 collective digital tasks are highly dependent on software interactive services, the internet and
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12 cloud computing systems to achieve anticipated organisational outcomes.
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18 As distinct emerging concepts, green TM, DTI and LSC can play important roles in
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20 helping organisations positively contribute towards environmental sustainability (John, et al.,
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22 2009; Oosthuizen, 2019; Wong and Berntzen, 2019). Although, Green TM, DTI and LSC are
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24 beginning to garner increasing attention across disparate contexts in developed and emerging
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26 economies, extant research is inconclusive regarding how to capture their respective
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28 conceptualisations (Ariss, et al., 2014; Brougham and Haar, 2018; Wong and Berntzen, 2019).
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30 Moreover, existing research has continued to overlook the plausible simultaneous influence of
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32 Green TM, DTI and LSC on staff turnover intention (Abdul, et al., 2019; Bui and Chang, 2018;
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34 Mahlasela and Chinyamurindi, 2020). While the relevant literature continues to build on research
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36 from several developed economies, there is a lack of empirical evidence from emerging
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38 economies that inform how green TM, DTI and LSC may collectively act to engender
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40 environmental sustainability from a human capital development and retention perspective
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42 (Brougham and Haar, 2018; Gardas, et al., 2019; Ogbeibu et al., 2020b; Temouri, et al., 2020).
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49 Though TM practices and turnover intention has been researched in diverse emerging
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51 economies like Vietnam (Bui and Chang, 2018), India (Tymon Jr, et al., 2010), Malaysia
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53 (Tajuddin, et al., 2015), Botswana (Barkhuizen and Schutte, 2017), Parkistan (Rana and Abbasi,
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55 2013), and South Africa (Plessis et al., 2015), it is yet unclear what probable role *green* TM may
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3 play and how it might act via its dimensions – *green* hard and soft TM – to influence turnover
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5 intention in an emerging economy contexts, such as Nigeria (Oludayo et al., 2018; Salau et al.,
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7 2018). This gap is further emphasised by Anlesinya et al. (2019), Nwosu and Ward (2016) and
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9 Okpara and Wynn (2008) who lament that TM in Nigeria is t in its embryonic phase and should
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11 be given considerable attention if problems such as poor human capital development, nurturing
12
13 and retention of talents are to be curbed. As one of the strongest emerging economies in Africa,
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15 Nigeria represents an interesting case for obtaining insights into how Green TM, DTI and LSC
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17 act to predict turnover intention (Ogbeibu, et al., 2021; Oludayo, et al., 2018; Salau, et al., 2018).
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19 Moreover, given the growing uncertainty endemic in the volatility of STARA and digitalisation,
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21 debates of recent research continue to overlook the plausible role of LSC and DTI on turnover
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23 intention and how they may also impede or reinforce green soft and hard TM’s association with
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25 turnover intention (Abdul, et al., 2019; Bui and Chang, 2018; Ogbeibu, et al., 2020c; Wong and
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27 Berntzen, 2019). This study aims to reduce these gaps in the literature, and consequently provide
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29 new empirical evidence that may provoke significant development of insights that are of
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31 relevance to policymakers and practitioners.
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39 Our study contributes to the relevant literature and body of knowledge on green HRM
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41 and environmental sustainability (Bui and Chang, 2018; Gardas et al., 2019; John et al., 2009;
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43 Renwick, 2020; Renwick, Redman, Maguire, 2013; Renwick, Jabbour, Muller-Camen, Redman,
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45 & Wilkinson, 2016) by empirically investigating the distinct predictive roles of green hard TM
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47 and green soft TM on turnover intention. We seek to advance prior conceptualisations associated
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49 with STARA and digitalisation by investigating how LSC and DTI respectively predict staff
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51 turnover intention. Additionally, we attempt to deepen insights into how LSC and DTI may
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3 respectively act to influence associations between green soft and hard TM on turnover intention
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5 within the manufacturing industry context of Nigeria.
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8 **Literature Review**

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10 *Contextual and theoretical underpinning and hypothesis development*

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14 Though the need to engender environmental sustainability in Nigeria has been advocated by
15 recent research (Ogbeibu, et al., 2020; Sanni, 2018), the peculiar role(s) talent could have
16 otherwise played to foster the achievement of the UN SDGs is largely overlooked (Gardas et al.,
17 2019). While Adeosun and Ohiani (2020) argue that the effective management of talent is key to
18 not only boosting organisational performance and shareholders' profitability, Gardas et al.
19 (2019) detail that effective TM practices in Nigeria are relevant for facilitating the pursuit of
20 environmental sustainability. However, evidence suggests that by overlooking the significant
21 influence of effective TM in Nigeria, organisations continue to struggle to capture, nurture and
22 retain staff talent (Oludayo et al., 2018; Salau et al., 2018). Nwosu and Ward (2016) espouse that
23 there is poor human capital development in manufacturing organisations and this has led to a rise
24 in turnover rate of talent. The authors lament that management's TM practices, employers'
25 maltreatment of organisational members, and unrealistic expectations reinforce negative service
26 attitudes of talented employees. Concerns have also been highlighted by existing research of how
27 several organisational leaders in Nigeria give little or no considerations towards effectively
28 investing significant efforts to nurture their human capital (Okpara and Wynn, 2008).
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50 Recent evidence also suggests that organisational members are overwhelmed with
51 unrealistic deadlines and milestones that they are expected to complete, and this often provokes
52 organisational members' intention to leave (Nwosu and Ward, 2016; Oludayo et al., 2018).
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Equally, while advances in digitalisation and innovation continue to influence existing business models, research espouses how organisational member commitment and satisfaction in their jobs continues to decline, due to a constant push to adopt or adapt to constantly changing technological innovations (Antikainen et al., 2018; Salau et al., 2018). Existing evolving digitalisation and innovations can hamper work-life balance and task engagement of staff members, and drive talented employees to leave their current organisations (Deery & Jago, 2015). Likewise, with respect to intellectual capital development (Temouri, et al., 2020), studies lament that the ineffective management of talent with needed competencies and poor retention strategies in several organisations suggests ineffective and outdated TM practices in Nigerian organisations (Nwosu and Ward, 2016; Okpara and Wynn, 2008; Oludayo et al., 2018). Such findings place an imperative on organisational leaders to not only focus on target-oriented business models, but also to develop TM strategies that adequately and effectively consider constant talent development and retention (Anlesinya et al., 2019). Consequently, this study builds on the overarching theoretical tenets of the VRIO concept (of valuable, rare, imperfectly imitable and organised for value capture) and the stakeholder theory (Clarkson, 1995; Freeman et al., 2018) towards effective TM development.

The VRIO concept presents a theoretical support for organisation's internal human capital capabilities towards determining resources that could aid organisations to sustain competitive advantage (Ogbeibu, et al., 2020b). The VRIO consists of tangible and intangible resources (Coley et al., 2012), where the former deals with an organisation's physical assets such as land, machineries, and computers (Dodd, 2016), and the latter incorporates and stretches beyond organisational culture, intellectual capital, values of human behaviour evidenced in an organisation's trademark or brand, or training and development initiatives an organisation adopts

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3 and executes in ways that are difficult to be replicated by competitors (Baima, et al., 2020;
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5 Hinterhuber, 2013; Knott, 2015). VRIO theorisations have yielded several meaningful insights
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7 from findings of prior research, but have been criticised for their definitions and
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9 conceptualisations (Knott, 2015; Lee, et al., 2017; Perez and de Pablos, 2003), as it has been
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11 suggested that VRIO has overlooked the capability of LSC – a timely intangible resource which
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13 is rare, valuable, not overly complex to organise and difficult to imitate (Knott, 2015). To date,
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15 research on VRIO has ignored the relevance of evaluating DTI's influence on turnover intention
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17 (Hinterhuber, 2013; Ogbeibu et al., 2020b). Ogbeibu et al. (2020) suggest that DTI's
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19 conceptualisation and processes incorporates distinct intangible resources such as data, software
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21 and unique task interdependence behaviours of teams, and hardware (tangible) resources alike.
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27 How green TM practices impact on turnover intentions is yet to be given significant
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29 attention in prior debates that espouse the tenets of the VRIO (Knott, 2015; Ogbeibu et al.,
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31 2020b). This limitation might have otherwise closed the gap on how talent may be further
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33 effectively developed and retained to help organisations foster environmental sustainability
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35 (Anlesinya et al., 2019). Further research is required to examine how organisational resources
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37 may be effectively managed to not just maximise profits, but also to ensure resources and
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39 capabilities are tailored and engineered in ways that help bolster environmental sustainability
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41 (Barney and Harrison, 2020). Here, Ogbeibu et al. (2021) and Freeman et al. (2018) advocate a
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43 need for organisations to imbibe tenets of stakeholder theory that advocate shifts beyond short-
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45 term profit objectives towards a more stakeholder centred model that considers the quadruple
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47 bottom line – people, planet, profit and purpose. While the VRIO aids organisations to increase
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49 competitive advantages and maximise profits, stakeholder theory consequently helps guide
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51 organisations in aligning and deploying their resources and capabilities in ways that helps them
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3 advance the achievement of the UN SDGs on environmental sustainability (Wu, 2016; Ogbeibu
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5 et al., 2021).

6 7 8 *Green TM and turnover intentions* 9

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11 While prior research has examined the concept of TM and turnover intention (Abdul et al., 2019;
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13 Deery and Jago, 2015), and despite meaningful findings obtained by such previous research, it is
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15 yet unclear how TM really acts to predict staff turnover intention (Anlesinya et al., 2019).

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17 Equally, the concept and role of green TM and how it acts via its dimensions – green hard and
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19 soft TM – to predict staff turnover intention is yet to be given significant empirical attention
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21 (Gardas, et al., 2019; John, et al., 2009). *Green soft TM* is defined as a humanistic aspect of TM
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23 that actively supports, and is committed towards, the development and retention of green talent
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25 by boosting talents' commitment via effective communication, talent inclusiveness in decision
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27 making process, organisational support for talent wellbeing and welfare, and effective and
28
29 efficient leadership practices that inspires green talented team members to engender defined
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31 ecological initiatives for fostering environmental sustainability (Gardas, et al., 2019; John, et al.,
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33 2009). In green soft TM, climate action initiatives tend to be driven via a conducive work
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35 environment, adhocracy organisational culture and effective provision of relevant resources (Bui
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37 and Chang, 2018; Lee et al., 2017). Conversely, *green hard TM* is defined as a mechanistic,
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39 target market-oriented aspect of TM that perceives green talent as a vital resource that needs to
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41 be effectively and efficiently managed and controlled via stringent performance appraisal
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43 systems, hierarchical organisational culture and bureaucratic work structures to boost
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45 competitive advantages and also foster environmental sustainability initiatives (Adeosun and
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47 Ohiani, 2020; Bui and Chang, 2018; John, et al., 2009).
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Likewise, the literature on TM and staff turnover intention is inconclusive due to the mixed findings of extant research (Abdul et al., 2019; Deery and Jago, 2015). The works of Barkhuizen et al. (2015), Abdul et al. (2019), and Plessis et al. (2015) indicate that green TM is negatively associated with turnover intention. Bui and Chang (2018) found that hard TM is negatively associated with turnover intention, while Rana and Abbasi (2013) found that TM and turnover intention are not significantly associated. Moreover, Abdul et al. (2019) found that TM is positively associated with staff turnover intention. These findings are based on the conventional conceptualisation of TM as a whole, without examining the association between green hard and soft TM with staff turnover intention (Anlesinya et al., 2019; Ariss, et al., 2014). The paucity of research on how green soft and hard TM influence turnover intention guides this research, and the works of Bui and Chang (2018) and Gardas et al. (2019) advocate the need for further empirical investigations to be initiated on how green soft and hard TM may influence turnover intention. We therefore, hypothesize that given the definitive conceptualisations of green and hard TM, green soft TM would negatively predict turnover intention and green hard TM would positively predict turnover intention, thus:

H1. Green hard TM positively predicts staff turnover intention

H2. Green soft TM negatively predicts staff turnover intention.

Leader STARA competence (LSC) and turnover intention

It is evident in recent debates that the tenets undergirding LSC can be positively or negatively associated with staff turnover intention (Mahlasela and Chinyamurindi, 2020; Ogeibu et al., 2020), and that this finding is linked to research connected with the future of work (Brougham and Haar, 2018; Santana and Cobo, In press). By allowing for an opportunity in which leaders

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3 are able to develop and deploy their STARA related competencies, Oosthuizen (2019) espouse
4 the possibility of having a more productive workforce. Here, prior research argues that complex
5 tasks could be embraced and addressed with less difficulty as STARA competent leaders deploy
6 their relative competencies to execute and manage set complex tasks (Vishwanath et al., 2019),
7 and studies emphasise that complex tasks could be replicated via use of simulations supported by
8 artificial intelligence and augmented reality to drive their implementations (Li et al., 2020;
9 Masood and Egger, 2020; Sarc et al., 2019). Execution of complex tasks may often require huge
10 financial resources to acquire and maintain physical locations that could accommodate relative
11 large-scale capital equipment, and involve risk of life and health of human capital due to direct
12 physical engagement with hazardous large-scale machinery and adverse consequences for the
13 external environment (Haenlein and Kaplan, In press; Li et al., 2020). Equally, in cases of
14 trainings and developments involving delicate processes that aid tasks completion and project
15 delivery, probable operations and financial costs and health risks could be averted or curbed
16 when initiated via augmented realities and smart technologies (Masood and Egger, 2020).
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18 Congruently, operating highly complex green initiatives relevant for fostering cleaner production
19 would require leaders that are competent in executing augmented reality space innovations and
20 smart technologies (Vishwanath et al., 2019). Such developments could consequently reduce the
21 complexities of cumbersome job processes of team members who due to high productivity and
22 successful project completion demands by their top management, are otherwise strained,
23 pressured and are under pressure in their jobs (Deery and Jago, 2015). Related studies advocate
24 that high job strain and job pressures are negative indicators that could provoke team members to
25 leave their organisation (Mahlasela and Chinyamurindi, 2020; Oludayo et al., 2018). Therefore,
26 while an absence of LSC could increase team member turnover intentions, the effective and
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3 efficient deployment of LSC may reduce their intention to leave their organisation (Ogbeibu et
4 al., 2020; Tajuddin et al., 2015). We thus hypothesize that LSC would negatively predict
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6 turnover intention, as:
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11 H3. LSC negatively predicts staff turnover intention.
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13 *Digital task interdependence (DTI) and turnover intention*

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17 Despite the proliferation of studies that have investigated task interdependence and turnover
18 intention, much work remains to be done to underpin their nexus in the context of digitalisation
19 (Mahlasela and Chinyamurindi, 2020; Ngo-Henha, 2017; Ogbeibu, et al., 2020b). Given their
20 relevance in the context of digitalisation, how DTI consequently act to predict turnover intention
21 lacks significant empirical consideration (Antikainen, et al., 2018; Ngo-Henha, 2017). The work
22 of Masood and Egger (2020) suggests that by engaging in, and executing tasks digitally, teams
23 are able to more effectively communicate and exchange knowledge across disparate locations of
24 an organisation. When dealing with complex digital tasks, team members who may be
25 overwhelmed or frustrated as a result of certain processes that require expert guidance from
26 another team may be able to obtain direct expert assistance via live interactions across online
27 digital platforms (Salvi, Vitolla, Rubino, Giakoumelou, & Raimo, 2020). Prior research espouses
28 the importance of the internet of things (IOT) and cloud computing as core indicators for
29 advancing digitalisation, which becomes even more relevant for interdependent teams to drive
30 initiatives forward across the digital space (Sarc, et al., 2019). DTI consequently fosters more
31 effective and efficient communications across disparate teams working collectively to execute
32 set digital initiatives (Salvi, et al., 2020), and could help reduce any frustration(s) that may arise
33 from difficulty in dealing with set tasks that team members might have as they attempt execution
34 of daily job demands (Stoldt, et al., 2018). DTI may congruently, help reduce the degree at
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3 which frustrated team members may consider leaving an organisation as the provision of digital
4 assistance for efficient task execution and delivery can often be readily accessed to foster
5 productivity (Mahlasela and Chinyamurindi, 2020). Studies debate that increased digital support
6 from other interdependent teams can aid increased speed in completion of milestones, increased
7 work engagements by dissimilar teams and increased teams' commitment to continue to
8 participate in set task initiatives (Mahlasela and Chinyamurindi, 2020; Ogbeibu, et al., 2020b). In
9 this study, we therefore, hypothesize that DTI would be a negative predictor of staff turnover
10 intention:
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22 H4. DTI negatively predicts staff turnover intention.
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25 *Moderating role of LSC on green TM and turnover intention relationship* 26 27

28 Existing research and its predictions of the future of work continue to foster uncertainty that
29 heralds a need to further deepen insights into how LSC may influence the impact of green TM on
30 staff turnover intention (Anlesinya et al., 2019; Brougham and Haar, 2018; Fatorachian and
31 Kazemi, 2018; Reischauer, 2018). Though green hard TM has been suggested to have a positive
32 association with turnover intention, how LSC influences the association is yet to be given
33 significant attention (Bui and Chang, 2018). Given the mechanistic driven values of the green
34 hard TM, extant literature indicates that team members feel estranged from the organisation and
35 their levels of commitment to their jobs may decline (Abdul, Saraih, & Harada, 2019). The
36 works of Barkhuizen and Schutte (2017), Deery and Jago (2015) and Gardas, et al. (2019)
37 emphasize that green values which reflect high levels of bureaucratic work structures and
38 stringent performance appraisal systems may further reduce the job satisfaction of team
39 members, and could facilitate their intentions to leave organisations. Likewise, in the context of
40 green hard TM, there is often less task autonomy and flexibility in job demands, as leaders
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3 frequently view talent as mainly a tool to be controlled for boosting competitive advantage and
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5 bolstering the achievement of environmental sustainability goals (Bui and Chang, 2018). The
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7 works of Reischauer (2018) and Oosthuizen (2019) relate that given the rising advancements in
8
9 STARA, demonstrating green hard TM values may increase team members' pressure and stress,
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11 and consequently their turnover intention, and this might also likely be the case when
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13 organisations deploy and use new and advanced technologies that team members find complex
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15 and challenging to adopt, adapt to, and drive green initiatives with (Mahlasela and
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17 Chinyamurindi, 2020).
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23 Conversely, green soft TM is argued to mirror a humanistic side of TM that perceives
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25 talent as core human capital resource that ought to be constantly nurtured and retained, and
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27 whose welfare and wellbeing needs to be effectively and efficiently supported in the organisation
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29 (Berraies, et al., 2020; Bui and Chang, 2018). In green soft TM, organisational leaders tend to
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31 demonstrate values of benevolence, flexible control, foster effective communication, team
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33 members' empowerment and inclusiveness, and strive to ensure team members are given an
34
35 adequate degree of autonomy to execute their green initiatives (Deery and Jago, 2015; Gardas et
36
37 al., 2019). Studies emphasise that values exhibited under green soft TM are often positive
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39 indicators of increased job satisfaction, commitment, and increased job engagement by team
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41 members towards climate initiatives (Nwosu and Ward, 2016; Plessis et al., 2015). Congruently,
42
43 team members are more likely to easily adapt to, adopt and also continue with their organisation
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45 despite probable volatile impacts of rapidly changing technology evidenced via STARA
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47 (Haenlein & Kaplan, In press), and Green soft TM is suggested to have a negative association
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49 with turnover intention (Budhwar, et al., 2009; Bui and Chang, 2018).
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Equally, under a green hard and soft TM system, turnover intention would decline when LSC is embraced and implemented (Brougham and Haar, 2018; Vishwanath et al., 2019). By having leaders who are STARA competent, the use of new and advanced technologies could be subtly introduced and advanced, and consequently adopted and adapted to, by team members (Oosthuizen, 2019; Vishwanath et al., 2019). This link seems plausible as team leaders and team members tend to exchange relative knowledge during task execution processes (Ogbeibu, et al., 2021). Moreover, under a green soft or hard TM, LSC could play important roles in reducing the task complexity of team members, and also help them more easily familiarise themselves with new and advanced technologies relevant for enhancing green initiatives (Mahlasela and Chinyamurindi, 2020; Masood and Egger, 2020). Therefore, rather than resolve to leave the organisation as a consequence of high job demands and expectations, amid rapidly changing technologies, team members may otherwise become more committed to executing their tasks due to LSC's influence (Ogbeibu, et al., 2020). We therefore, hypothesize that LSC would negatively moderate the positive influence of green hard TM on turnover intention, and further positively moderate the negative influence of green soft TM on turnover intentions, namely:

H5. LSC dampens the positive influence of green hard TM on turnover intention.

H6. LSC reinforces the negative influence of green soft TM on turnover intention.

Moderating role of DTI on green TM and turnover intention relationship

The need to manage talent that would aid further enhancement of organisations' long-term survival amid the volatility of digitalisation, and under a competitive business environment, imprints a pressing challenge for organisational leaders (Antikainen, et al., 2018; Ferreira et al., 2019; Perez and de Pablos, 2003). Considering the tenets of green soft and hard TM, debates of

extant studies relate that while green hard TM may increase the rate at which team members intend to leave an organisation, green soft TM is a negative predictor of team members' turnover intention (Bui and Chang, 2018; Lee et al., 2017). To survive in an era of digitalisation, the works of Ogbeibu et al. (2020b) and Anand et al. (2018) elucidate the need for organisations to encourage the execution of tasks via interdependent teams working digitally and collectively to foster defined organisational objectives. Studies accentuate the possibility of executing and addressing very complex tasks via the digital space by leveraging digital technologies and the internet of things even across distinct geographical locations (Ferreira, et al., 2019; Fong, et al., 2018). Ogbeibu et al. (2020b) espouse that DTI could foster quicker and more expert support for team members across disparate locations who may be struggling with handling new complex machineries, or be unable to physically assess very sensitive processes in defined tasks. Teams are consequently able to further boost organisational initiatives and save time and cost by deploying new digital technologies such as working with augmented realities, smart technologies and exploring the internet of things (Masood and Egger, 2020; Sarc, et al., 2019).

Given the need for organisations to adapt to and exploit the benefits of digitalisation, intense job demands and high expectations of organisations driving green hard TM values, could provoke team members to then intend to leave their organisation (Haenlein and Kaplan, In press; Mahlasela and Chinyamurindi, 2020). Though under a green soft TM system, task flexibility and some degree of autonomy may minimise turnover intentions (Abdul et al., 2019). Studies find that the digital space also provides opportunities that engender risk taking by team members by allowing simulated avenues that accommodate failures which that team members may consequently learn from (Stoldt, et al., 2018; Vishwanath, et al., 2019). Prior debates also indicate that by initiating and advancing tasks digitally, organisations may be able to more

effectively and efficiently foster set milestones (Stoldt, et al., 2018). Executing complex tasks within the digital space could create room for increased flexibility of implementing job demands and reduce overwhelming control by organisational leaders as otherwise evidenced under a green hard TM system (Ferreira, et al., 2019). While DTI could thus improve productivity, it may also foster increased commitment and job satisfaction in team members who, being more familiar with set tasks routines, may exhibit little or no turnover intention (Wong and Berntzen, 2019). We therefore, hypothesize that DTI would weaken the positive influence of green hard TM and strengthen the negative influence of green soft TM on turnover intention respectively. All hypotheses are further outlined in Figure 1 accordingly, including:

H7. DTI weakens the positive influence of green hard TM on turnover intention.

H8. DTI strengthens the negative influence of green soft TM on turnover intention.

PLEASE INSERT FIGURE 1 ABOUT HERE.

Methodology

Data collection and sample size

Data was obtained via a cross-sectional collection technique from 49 distinct manufacturing organisations in Nigeria. Consistent with recent literature, leaders and team members were from research and development (R&D), human resource management (HRM) and information technology (IT) departments (Ogbeibu et al., 2020b). In our study, leaders were in charge of groups of 2 – 6 interdependent teams, who ranged from four to eight (average = 5.2) team members respectively. To identify the 49 organisations, we used the Nigerian Stock Exchange – an approach congruent with similar studies (Ogbeibu et al., 2021). We determined our sample size by employing the Krejcie and Morgan (1970) population sample recommendations, which

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3 aided the achievement of an adequate sample size and a stratified proportionate sampling of our
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5 study. Thus, a total of 417 questionnaires were distributed to the distinct 49 manufacturing
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7 organisations, and 372 completed samples were returned and used for final analysis. This was an
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9 89% response rate, where 89 teams received a questionnaire and responses were received from
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11 85 teams (95% response rate) and used for further analysis. A total of eighteen team leaders
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13 responded to the distributed questionnaire. Overall, the participants' age ranged from 24 to 57,
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15 and they consisted of 46.7% male team leaders. The HRM, IT, and R&D departments consisted
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17 of 32.6%, 38.2%, and 29.2% participants respectively. In terms of their education, 21.2% of
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19 respondents hold a diploma/equivalent, 39.6% undergraduate degrees, 30.2% a master's degree
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21 and 9% a PhD.
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27 Prior to data collection, our questionnaire items were evaluated by six researchers, and
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29 seven research assistants (RAs) were recruited and trained for data collection purposes. Data
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31 obtained from a pilot study consisting of fifty participants was analysed using the SmartPLS3
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33 software to determine and exclude poorly loaded items as recommended by existing studies
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35 (Hair, et al., 2010; Ogbeibu, et al., 2021). Our RAs visited the headquarters (HQs) of the
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37 identified manufacturing organisations for data collection purposes, and these HQs were situated
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39 in seven distinct states of Nigeria. Contacts with the manufacturing organisations were done via
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41 direct visits, telephone calls and emails. Human resource (HR) managers were contacted, and
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43 respondents were informed to fill, seal and return the questionnaires to their HR managers in
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45 their individual sealed envelopes. Submitted envelopes were collected from respective HR
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47 managers by RAs to foster further data collation. To address concerns of common method bias
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49 (CMB), the recommendations of Podsakoff et al. (2012) were considered. Though participants'
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51 anonymity was guaranteed, an item of the LSC construct and two items from green hard TM
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construct were reverse coded prior to data collection. Equally, congruent with Kock's (2015) recommendation for a post data collection CMB measure, the variance inflation factor (VIF) values ranging from 1.318 to 1.758 indicate a reduced influence of CMB in our study (See Table 1).

PLEASE INSERT TABLE 1 ABOUT HERE

Measures

Our distributed questionnaires comprised of 7-point Likert scales that ranged from strongly disagree to strongly agree. The LSC, turnover intention and DTI measures were adopted from prior research, while green soft and hard TM measures employed in this study were developed based on earlier research. Adjustments of prior measurement items, and the inclusion of new items for green hard and soft TM were necessary to much closely identify with the context, investigated constructs, and aims of our study. To measure LSC, four items were adopted from Ogbeibu et al. (2020c) – “My leader is not good at designing or applying algorithms to complete defined tasks” (Reverse coded)”, “My leader has the knowledge and ability to apply smart (self-monitoring, analysing, and reporting systems) technology during operations”, “My leader knows how to design and apply robots or mechanical devices during operations”, “Matters related to machines that share similar qualities (reason, calculate, learn, discover) with the human mind are adequately addressed by my leader”. ”. Reliability of this measurement scale is 0.908 (Ogbeibu et al., 2020c).

To measure turnover intention, three items were adopted from Bui and Chang (2018), and an example of these items is “I am always searching for an opportunity to work anywhere else”.

The reliability of this measurement scale is 0.795 (Bui and Chang, 2018). Furthermore,

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3 consistent with extant debates concerning probable encompassing factors that may influence
4 turnover intention in the context of environmental sustainability, we consequently controlled for
5 work environment, resource availability, and organisational culture (Abdul et al., 2019;
6 Anlesinya et al., 2019; Ariss et al., 2014; Deery and Jago, 2015; Gardas et al., 2019; Lee et al.,
7 2017; Wan et al., 2018). To measure DTI, seven items were adopted from Ogbeibu et al.
8 (2020b). An example of the items is “Most of my digital tasks are affected by the activities of
9 team members from other teams”, and the reliability of this measurement scale is 0.919 (Ogbeibu
10 et al., 2020b). To measure green soft and hard TM, seven items were developed based on the
11 works of Bui and Chang (2018), John et al. (2009) and Gardas et al. (2019) respectively.
12 Examples of items for green soft TM are: “My organisation cares about my wellbeing and offers
13 considerable support for my welfare when executing green centred initiatives”, “My organisation
14 offers green training, workshop opportunities, coaching and courses that advances my
15 knowledge on how to foster environmental sustainability”. “My organisation offers me a
16 considerable degree of autonomy when carrying out green related tasks”, “My organisation
17 offers me job rotation opportunities associated with environmental sustainability”, “My
18 organisation is very supportive of green related activities that can help me plan my future
19 development”, “My organisation offers me challenging assignments that are grounded on
20 environmental sustainability”, “In my organisation, green tasks are driven with several
21 opportunities that allow me express myself and share my opinions on green related matters”.

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Conversely, items for green hard TM are “My organisation offers a stringent performance appraisal system to drive green initiatives”, “Environmental sustainability initiatives in my organisation is driven by a high level of bureaucracy”, “My organisation offers more support towards achievement of green results than it offers to support my wellbeing”, “Green initiatives

are not driven by already established and prescribed strict rules (reverse coded)”, “Organisational support for developing team members is mainly geared towards increased task efficiency and productivity in green initiatives”, “My organisation offers high level of task flexibility, autonomy, effective and efficient communication when carrying out green initiatives (reverse coded)”, “Personal development in my organisation is driven by green related results I achieve”.

Findings and Analysis

Congruent with our study’s prediction-oriented scope, partial least squares structural equation modelling (PLS SEM) was employed for further data analysis. Use of PLS SEM is also based on the causal-explanatory nature, model complexity, interpretation ease and soft distributional assumptions of our study. The green soft and hard TM construct, LSC and DTI constructs are relatively underdeveloped, as a major focus of prior literature has been towards advancing TM’s conceptual underpinnings and theoretical developments (Anlesinya, et al., 2019; Ariss, et al., 2014). Consequently, extant research (Hair, et al., 2019; Sarstedt, et al., 2016) recommends the use of PLS SEM for models consisting of new or relatively underdeveloped constructs in order to also foster theory development. To initiate statistical analysis, we utilise the SmartPLS3 software.

Results

Mean values ranged from 5.3 to 5.6 and standard deviation results ranged from 1.3 to 1.6, thus suggesting no significant distinction among the constructs examined. Equally, skewness values (-1.3 to 1.5) and Kurtosis values (0.6 to 2.3) indicates normality of distribution (Hair, et al., 2010). Values of Figure 2 suggests that all measurement items are larger than the lowest factor loading threshold, thus substantially contributing to their respective constructs (Ringle, et al., 2018). In Table 1, Rho_A and CR values indicate internal consistency and reliability for all the constructs

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3 examined in this study. Likewise, AVE values confirm our model's convergent validity (Hair, et
4 al., 2019). The heterotrait-monotrait ratio (HTMT) results noted in Table 2 suggest that all
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6 constructs examined have met the requirements for discriminant validity (Henseler, et al., 2016).
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8 Equally, multicollinearity concerns are not an issue, considering that all VIF results are less than
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10 the maximum required threshold of 5 (Ringle, et al., 2018). In light of values of model fitness,
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12 Hair et al. (2019) and Ogbeibu et al. (2020b) strongly advocate against the use of model fitness
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14 indices in PLS-SEM, given that the measures are yet incomprehensive and includes tentative
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16 model fit thresholds that are of questionable value in general. Hence recent research (Ogbeibu et
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18 al., 2020a; Ringle, et al., 2018; Shmueli, et al., 2019) opines that researchers initiating PLS SEM
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20 estimations ought to demonstrate a causal-predictive nature that relies on the predictive accuracy,
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22 relevance and power of their model (Q^2 , β , R^2 and lesser RMSE or MAE values).
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29 PLEASE INSERT FIGURES 2 AND 3 ABOUT HERE
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32 As a point of departure, we present results for our structural model. R^2 values ($\beta = 0.534$,
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34 $t = 8.784$, $p = 0.000$) indicate a moderate degree of variance explained in turnover intention
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36 (Hair, Risher, Sarstedt, & Ringle, 2019). Congruent with the inner model values of Figures 2 and
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38 3, green hard TM exerts the most significant positive influence on turnover intention, and this is
39
40 followed by green soft TM, and then LSC. Although, green hard TM is a more significant
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42 predictor, green soft TM demonstrates a much stronger influence on turnover intention. These
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44 results provide support for H1, but surprisingly not for H2 and H3, though H2 and H3 are
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46 statistically significant. DTI is however, not significant and H4 is therefore, not supported.
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48 Values of effect sizes (f^2) for LSC (0.027), green hard TM (0.044) and green soft TM (0.048)
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50 suggest small effects (Aiken & West, 1991), and Lowry and Gaskin (2014) accentuate that even
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52 small effects add significant contribution and are very meaningful to a model and for subsequent
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3 policy implications. Moreover, f^2 values for DTI (0.003) indicates no meaningful effect.

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5 Furthermore, results from Figure 3 indicate that the work environment, and organisational
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7 culture positively influence turnover intention, while resource availability is not significant.
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11 PLEASE INSERT FIGURES 4, 5, 6, AND 7 ABOUT HERE
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15 Figures 4, 5, 6, and 7 shows respective interaction analysis results, and considering that
16 our model has two separate moderating variables, we employed the recommendations of Hair et
17 al. (2013). Consequently, we examined one moderator variable at a time, thus producing a
18 moderation model showing the bootstrapped significance of product terms and report the
19 interaction effects in the results' output accordingly. Result of Figure 4 suggests that LSC
20 dampens ($\beta = -0.217, t = 2.974, p = 0.003$) the positive influence of green hard TM on turnover
21 intention. LSC interaction effect size ($f^2 = 0.036$) indicates a small effect. This confirms our
22 initial postulation for H5 and is consequently supported. Figure 5 indicates that LSC strengthens
23 ($\beta = 0.148, t = 1.932, p = 0.054$) the negative association between green soft TM with turnover
24 intention. LSC interaction effect size ($f^2 = 0.018$) in this association indicates a relatively small
25 effect. This also confirms our initial postulation for H6 and is consequently supported. Figure 6
26 indicates that DTI weakens ($\beta = -0.204, t = 2.348, p = 0.019$) the positive influence of green hard
27 TM on turnover intention. LSC interaction effect size ($f^2 = 0.024$) in this association indicates a
28 small effect. We can thus, conclude that our initial postulation for H7 is confirmed and
29 supported. Figure 7 shows that although DTI strengthens ($\beta = 0.142, t = 1.607, p = 0.108, f^2 =$
30 0.012) the negative influence of green soft TM on turnover intention as initially postulated, it is
31 not significant and therefore does not support our prior theorisation of H8. Furthermore,
32 considering our model's predictive accuracy and relevance, the value of Q^2 (0.382) indicate a
33 sufficient and acceptable path model's predictive accuracy and relevance (Ogbeibu et al., 2021).
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Congruent with the rule of thumb of Shmueli et al. (2019) on the predictive power of a model, our PLS Predict MAE results (lesser prediction errors) in Table 1 offers substantial support that confirms our model's *medium* predictive power.

Discussion and Conclusions

Our study examines important emerging concepts in the context of the development of green HRM, and has attempted to position them in an environmental sustainability context, to emphasise the need for organisational leaders and work teams to take into consideration the relevance of demonstrating leader STARA competence and green hard and soft TM and DTI. Not only do the examined predictors have significant influences on turnover intention, but by understanding how they influence turnover intention, organisations may be able to better manage talent towards further achievement of the UN SDGs. Congruent with the debates of relevant prior research, we find that green hard TM has a positive association with turnover intention (Abdul et al., 2019; Bui and Chang, 2018; Lee et al., 2017). As noted in the extant literature, values (for example - excessive control, less task autonomy, highly formal work environment and bureaucratic work structure, ineffective communication, stringent performance appraisal system and others) exhibited within organisations that practice green hard TM, are indicators that can provoke team members' intention to leave an organisation (Adeosun and Ohiani, 2020; Bui and Chang, 2018; John, et al., 2009). Equally, we found that green soft TM also positively, rather than negatively, predicts turnover intention as earlier theorised. This result has been unexpected – though quite plausible given the cultural context of our study.

While these findings challenge earlier research findings (Abdul et al., 2019; Anlesinya et al., 2019; Ngo-Henha, 2017; Rana and Abbasi, 2013), they do bring to mind a possibility that may arise while demonstrating green soft TM. Drawing from figure 2 and 3, we find that in the

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3 Nigerian manufacturing industry, organisational culture and work environment are significant
4 factors that foster turnover intention of talent, despite the dimension of green TM applied within
5 an organisation. In this context it may be difficult for leaders and team members to introduce
6 values reflective of green soft TM amid a firmly established hierarchical organisational culture
7 (Jabbour, 2011; Roscoe, et al., 2019). Ogbeibu et al. (2018) argue that the organisational culture
8 demonstrated within manufacturing organisations in Nigeria is firmly hierarchical, and
9 Auernhammer and Hall (2013), Gupta (2011), Naranjo-Valencia et al. (2016), and Porter et al.
10 (2016) lament that such organisational culture can stifle creativity, impair innovativeness,
11 dampen job satisfaction, increase ineffective communication, and foster exclusion and alienation
12 of talent. Congruently, studies suggest that this could provoke intention of organisational
13 members to leave their organisation (Abdul, et al., 2019; Deery and Jago, 2015). We also find
14 that LSC is a positive predictor of turnover intention. This means LSC also increases talents'
15 intention to leave their organisation. Again, this result has been unexpected.

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34 Considering the changes evidenced via the components of the fourth industrial
35 revolution, leaders who are STARA competent would need adequate, and constantly maintained
36 work environments to deploy STARA related competencies and to effectively execute complex
37 green initiatives (Brougham and Haar, 2018; Reischauer, 2018; Stoldt et al., 2018). An adequate
38 work environment is also essential to foster relevant STARA knowledge exchange between team
39 leaders and their members (Ogbeibu et al., 2021). However, drawing from Figure 2 and 3, one
40 can deduce that the work environment of manufacturing organisations in Nigeria is likely to
41 increase turnover intention. Rapidly changing demands of the fourth industrial revolution
42 provoke the need for organisations to also constantly equip their work environment with relevant
43 resources needed to accommodate emerging technological innovations (Reischauer, 2018; Stoldt
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3 et al., 2018). This could lead to continuous increase in financial cost associated with the constant
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5 need to implement industry 4.0 related relevant changes in the work environment (Oosthuizen,
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7 2019; Vishwanath, et al., 2019). Organisations with insufficient financial resources may
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9 consequently be unable to adequately support their work environment (Stoldt, et al., 2018; Wu,
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11 2016). Therefore, despite the influence of LSC, extant research suggests that the lack of an
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13 adequate or supportive work environment could reduce work engagement, impair commitment
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15 and consequently provoke intention to leave (Teo, et al., 2020; Wan, et al., 2018). Another
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17 reason for this outcome is that team members may not be mentally prepared for, or willing to
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19 accept new or emerging technological advances in light of maintaining conventional work
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21 practices (Nejati, et al., 2017). Considering that such technological advances may alter the way
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23 they originally execute their daily task routines, this could provoke resistance to change
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25 (Mahlasela and Chinyamurindi, 2020). Studies suggest that the influence of LSC could be met
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27 with resistance by team members who may be unaware of, or lack adequate knowledge of, or
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29 lack the mental capability to embrace and utilise new technologies (Mahlasela and
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31 Chinyamurindi, 2020; Nejati, et al., 2017; Plessis, et al., 2015). Prior research espouses that
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33 workplace conflict that may ensue due to resistance to technological advancements that could
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35 foster team members' intention to leave their organisation (Anand, et al., 2018; Yong, et al.,
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37 2014).

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40 We also find that LSC dampens the positive influence of green hard TM on turnover
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42 intention, and reinforces the negative influence of green soft TM on turnover intention. These
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44 findings complement prior findings (Anlesinya et al., 2019; Brougham and Haar, 2018;
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46 Fatorachian and Kazemi, 2018; Reischauer, 2018) that have espoused the distinct roles and
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48 benefits of embracing and deploying the tenets of STARA in the organisation. Moreover, these
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3 findings also stand in dissonance to prior contentions that present STARA as an influence that
4 may negatively impact the future of work, and consequently provoke team members' turnover
5 intention (Mahlasela and Chinyamurindi, 2020; Oosthuizen, 2019; Santana and Cobo, In press;
6 Vishwanath, et al., 2019). We also find that DTI weakens the positive influence of green hard
7 TM on turnover intention. By embracing, encouraging, and supporting interdependent teams to
8 drive tasks via distinct digital technologies, workloads that initially seemed overly complex or
9 overwhelming may consequently be completed with less energy, time and cost. According to
10 Ogbeibu et al. (2020b), DTI can foster team members willingness to become more committed
11 and engaged in further executing defined tasks. Studies further support that increased task
12 engagement and commitment can help reduce turnover intention (Teo, et al., 2020; Wan, et al.,
13 2018). Thus, our finding on DTI complements the discourse of extant research (Barnewold and
14 Lottermoser, 2020; Antikainen et al., 2018; Ferreira, et al., 2019; Sarc, et al., 2019).

31 **Theoretical Implications**

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34 Despite the proliferation of investigations that have respectively considered the concepts of TM,
35 task interdependence and STARA associated tenets, our study is the first to simultaneously
36 investigate TM's disparate dimensions, leader competency, and task interdependence into the
37 context of digitalisation, STARA, and environmental sustainability. We offer novel insights that
38 inform how green soft and hard TM, LSC and DTI predicts turnover intention in Nigeria. We
39 conducted the research in an emerging economy context (Nigeria) that is scarcely found in prior
40 research, to garner original and substantial knowledge that is meaningful for theory and practice.
41 While prior works on TM may have yielded meaningful findings, only a handful of studies have
42 examined TM via its soft and hard dimensions. By examining TM as a unidimensional construct,
43 prior research raises endogeneity concerns, and have consequently overlooked robust findings
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3 that could have otherwise been obtained to foster relevant policy implications. We have
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5 attempted to close this major gap in the literature and have further positioned TM in a more
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7 timely – environmental sustainability context – by investigating green TM via its green soft and
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9 hard dimensions respectively.
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13 By demonstrating how green hard TM positively predict turnover intention, we
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15 compliment prior research. Notably, our findings show that green soft TM positively predicts
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17 turnover intention. We thus, extend earlier conceptualisations of stakeholder theory, and
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19 challenge prior empirical findings that have suggested that green soft TM has a negative or
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21 insignificant association with turnover intention. By providing evidence that demonstrates how
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23 green TM acts as both a positive and negative resource, we advocate a new understanding that
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25 extends the VRIO theoretical underpinnings. We advance the VRIO tenets by offering
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27 substantial evidence that demonstrates how an often-overlooked intangible resource such as LSC
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29 acts to predict turnover intention. While the debate continues on as to how the fourth industrial
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31 revolution via its relative components such as STARA could adversely influence the workforce
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33 or better equip the organisation for the future of work, we offer substantial evidence that allows
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35 for deeper clarity into how STARA via LSC operates in the workforce.
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42 Congruent with our findings, we stretch recent empirical insights that mirrors the LSC
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44 phenomenon as a portent for organisations and the future of work. We show that LSC dampens
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46 the negative influence of green hard TM on turnover intention, and strengthens the negative
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48 association between green soft TM and turnover intention. Conversely, we provide evidence that
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50 supports how LSC could be a portent to organisations by demonstrating that it could also directly
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52 engender turnover intention of talent. In view of the debate on digitalisation and its probable
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54 impact on organisations and the future of work, our findings offer evidence that deepens
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3 understanding into the roles of DTI. We predict that DTI would not directly lead to turnover
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5 intention, neither would DTI influence the relationship between green soft TM and turnover
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7 intention as it has been found to be insignificant respectively. However, we extend previous
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9 empirical contentions on DTI by demonstrating that DTI does weaken the negative influence of
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11 green hard TM on turnover intention. Our study captures substantial insights from recently
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13 emerging fields in the literature, and provides an avenue to further furnish researchers with novel
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15 findings that compliment, extend, and challenge contemporary understandings associated with
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17 the LSC, DTI, green TM and turnover intention. We consequently open a new lens of research
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19 for future inquiry into relative issues of STARA and digitalisation from a perspective of
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21 deploying LSC and DTI to further nurture and retain talent in an environmental sustainability
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23 context.
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29 **Practical Implications**

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32 By investigating how green TM, LSC, and DTI predicts turnover intention, we provide insights
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34 that supports meaningful policy implications. We consequently furnish practitioners with
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36 substantive evidence for establishing guidelines relevant for driving green soft and hard TM in
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38 organisations. To ensure human capital – talents – are adequately nurtured and retained in
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40 organisations for fostering environmental sustainability, practitioners and leaders should consider
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42 instilling values endemic within the green soft TM rather than the green hard TM. Although our
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44 findings also show that the green soft TM does engender turnover intention, we argue that
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46 contextual factors such as a hierarchical organisational culture ought to be given careful
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48 consideration when implementing defined values of green soft TM in a relative emerging
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50 economy context like Nigeria. It is also important for policymakers and leaders to note that
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52 though the green hard TM has its benefits for controlling and driving talent towards further
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3 advancing environmental sustainability, chances are that organisations would end up losing
4 talent in the process. Therefore, policies should be instituted to foster the establishment of values
5 (reflecting effective communication, talent inclusiveness, support for talent wellbeing and
6 welfare) that capture green soft TM practices in organisations. Equally, leaders and practitioners
7 should bear in mind the predictive influence of LSC and how it can also contribute to loss of
8 human capital through turnover.
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Given that our findings suggest that LSC positively predicts turnover intention, policymakers and practitioners may want to consider allocating adequate resource for the development of the work environment which supports effective and efficient demonstration of leader STARA related competencies. This could be relevant for supporting team members' tasks' commitment and engagement and consequently reduce their intention to leave. This recommendation is congruent with our findings that relay the work environment as a positive predictor of turnover intention. Moreover, leaders and practitioners may consider the benefits of slowly instituting changes or driving processes associated with STARA as it may otherwise have a confounding effect on team members who may feel overwhelmed, and thus resist adopting, embracing or utilising knowledge associated with STARA. Leaders and practitioners may also consider initiating training programs for team members to increase their STARA awareness, cultivate their interest in STARA, and to effectively adopt or adapt to STARA for bolstering environmental sustainability.

Though we find that green hard TM leads to turnover intention, policymakers may take comfort in knowing that by implementing LSC and DTI, the negative influence of green hard TM can be reduced. Thus, organisations currently managing talents to foster environmental sustainability by instilling green hard TM values, may consider adopting, and embracing the

LSC and DTI phenomenon to drive tasks and operations processes. By instituting strategies to foster DTI, task routine processes and complex projects could be more easily executed and driven to fruition via the leveraging of distinct digital technologies (for example, augmented reality technology and others). Equally, while policies could be established to further enhance the adoption of LSC in the workplace, practitioners and leaders may also ensure resources are allocated to support LSC's acceptance and use, especially as it can reinforce green soft TM's negative influence on turnover intention. This is congruent with our finding that LSC increases the strength of green soft TM to reduce turnover intention of talent in organisations.

Consequently, organisations driving green initiatives via green soft TM practices may be able to further nurture and retain their talent by deploying the tenets of LSC.

Limitations and Ideas for Future Research

Though our study offers robust empirical contributions to both theory and practice, it is not without limitations. Our study has been driven along the lines of a team-level analysis, so organisational or individual inferences should not be deduced. Nevertheless, this provides an avenue for future investigation to be initiated from organisational and individual points of analysis. Our study did not directly consider the perceptions of other stakeholders such as customers, suppliers, societal factors, corporate level or community actors – such deviation would have deeply altered the motivation, aims and context of our present investigation. We thus, leave this to future investigations to examine. A major part of our focus has been to investigate the predictive powers of LSC, DTI, and green TM dimensions on turnover intention. However, given the intense debates associated with STARA and digitalisation from the future of work perspective, it would be meaningful for future research to consider examining the influence of LSC on the relationship between DTI and turnover intention.

We acknowledge that several other factors in the literature have been debated to engender turnover intention, and not all have been examined in our study. Though, we controlled for some other core factors like work environment, resource availability and organisational culture, we contend that it would be unrealistic to have evidenced or controlled for all prior identified predictors of turnover intention. Congruently, we provide an avenue for future research to further examine the plausible moderating roles of work environment, resource availability, and organisational culture on the relationships between our endogenous and target exogenous constructs. This could foster more substantive insights from an organisational level perspective. Another major focus has been on LSC, whereas deeper insights may have been obtained from a plausible examination of individual or team level STARA competence. We call on scholars to consider this in their investigations. Furthermore, our study has initiated a cross-sectional investigation in which the data obtained is also influenced by self-reporting measurement scales that is limited to one country; one sector and thus, does not advocate causality. We therefore, recommend that a longitudinal investigation (via multisource data collection) that garners insights from across the manufacturing industry, national or cultural contexts be initiated by future studies to foster causality and generalisability of our prediction-oriented model. We encourage future researchers to also examine additional sectors, especially the services sectors and initiate studies of actual training, nurturing and retention programs linked to developing green TM and leadership competence.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix

Table 1: Reliability, Validity and Prediction Oriented Assessments

Construct	Composite reliability (CR)	VIF Values	rho_A	AVE	PLS PREDICT MAE	LM MAE
DIGITAL TASK INTERDEPENDENCE (DTI)	0.907	1.758	0.878	0.620		
GREEN HARD TM	0.943	1.589	0.930	0.769		
GREEN SOFT TM	0.933	1.486	0.915	0.699		
LEADER STARA COMPETENCE (LSC)	0.870	1.740	0.818	0.628		
ORGANISATIONAL CULTURE	1.000	1.644	1.000	1.000		
RESOURCE AVAILABILITY	1.000	1.318	1.000	1.000		
TURNOVER INTENTION	0.901		0.836	0.752		
• TI1					0.675	0.715
• TI2					0.695	0.757
• TI3					0.63	0.613
WORK ENVIRONMENT	1.000	1.423	1.000	1.000		

Note: AVE (Average variance Extracted); VIF (Variance Inflation Factor)

Table 2: The heterotrait-monotrait ratio (HTMT) Test

	DTI	GREEN HARD TM	GREEN SOFT TM	LSC	OC	RA	TI	WE
DIGITAL TASK INTERDEPENDENCE (DTI)								
GREEN HARD TM	0.473							
GREEN SOFT TM	0.491	0.455						
LEADER STARA COMPETENCE (LSC)	0.682	0.499	0.510					
ORGANISATIONAL CULTURE (OC)	0.435	0.550	0.459	0.453				
RESOURCE AVAILABILITY (RA)	0.416	0.331	0.352	0.401	0.394			
TURNOVER INTENTION (TI)	0.551	0.617	0.599	0.628	0.648	0.407		
WORK ENVIRONMENT (WE)	0.474	0.375	0.375	0.513	0.377	0.271	0.518	

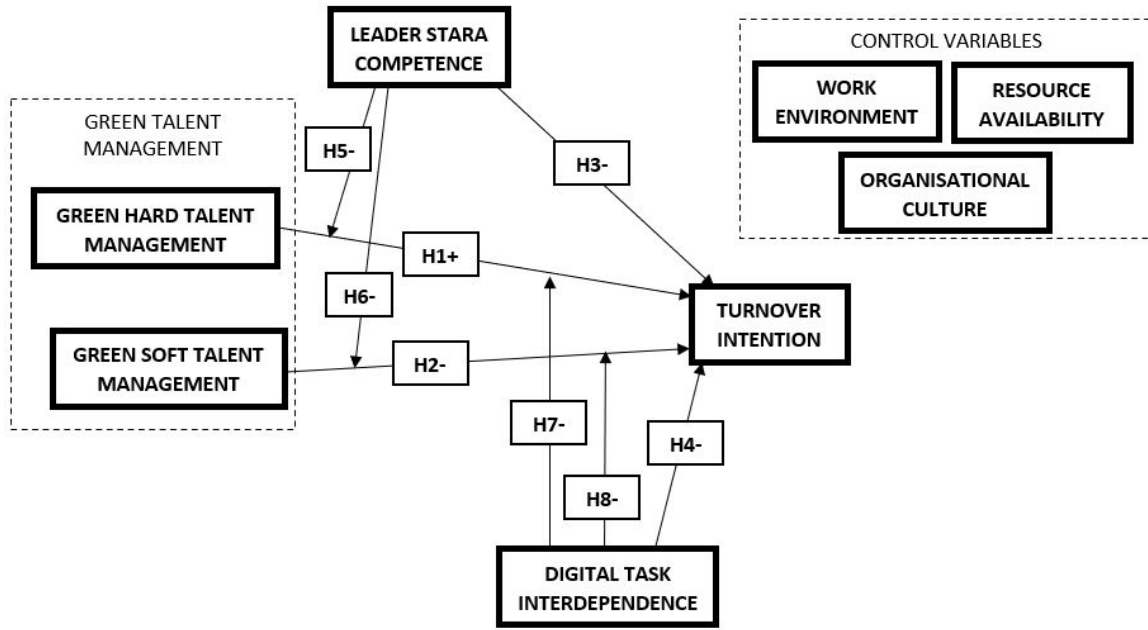


Figure 1: Theoretical framework

Intellectual Capital

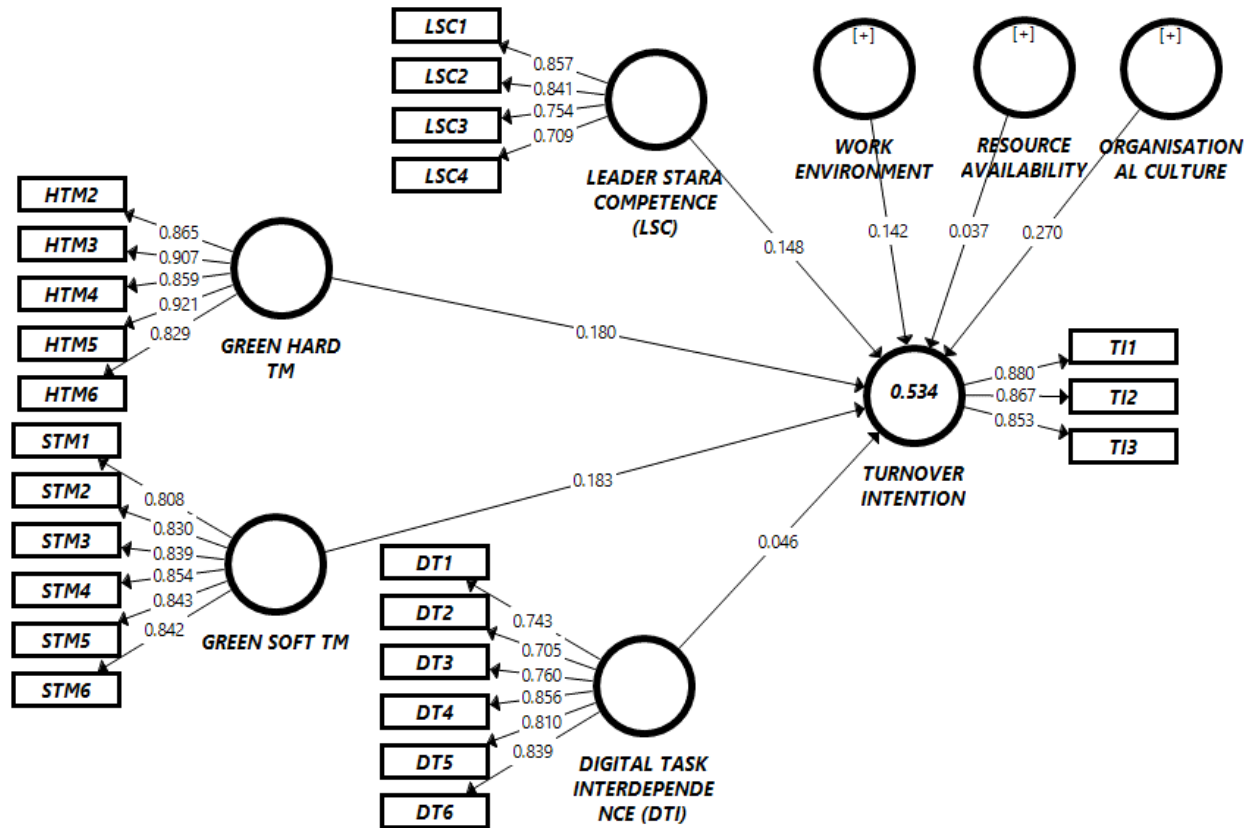


Figure 2: Measurement model

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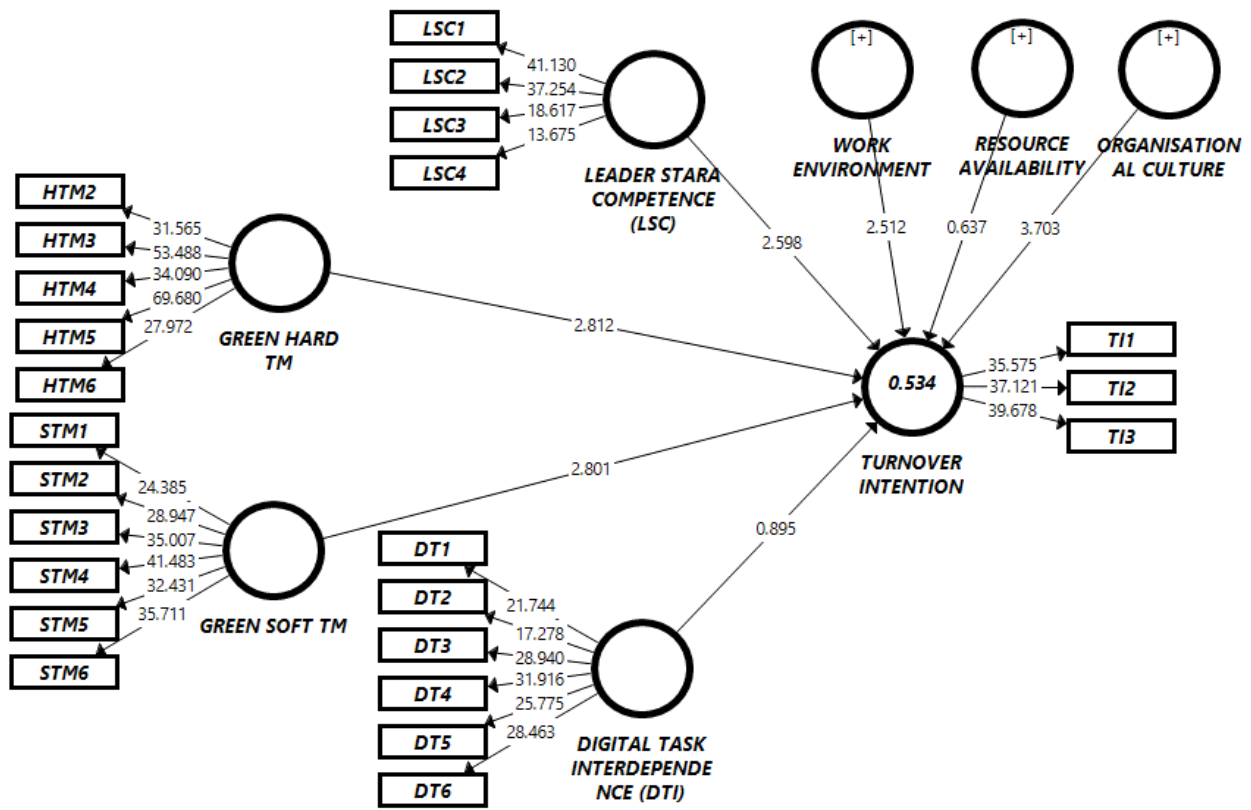


Figure 3: Structural model with T-Statistics test.

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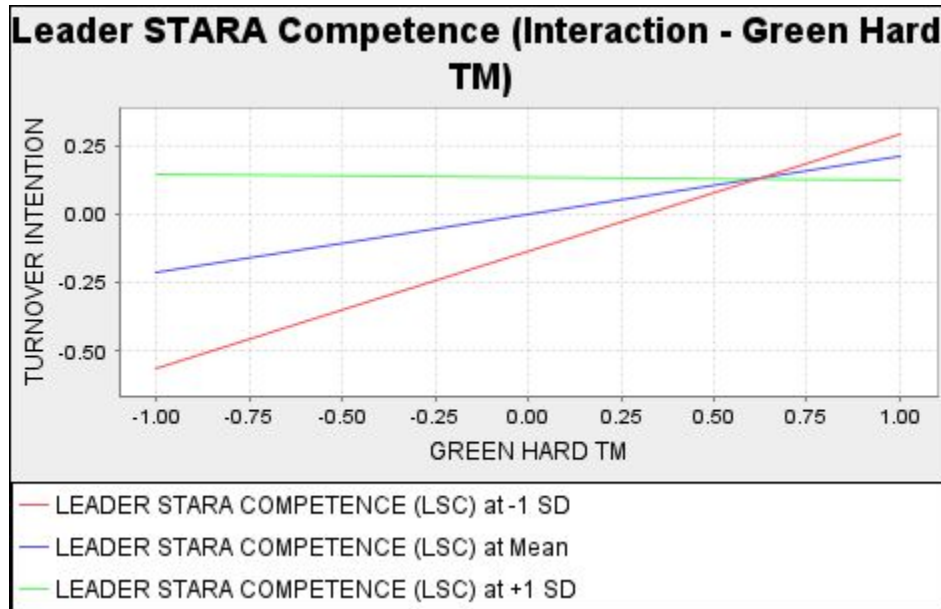


Figure 4: Interaction effect of LSC on the relationship between green hard TM and turnover intention

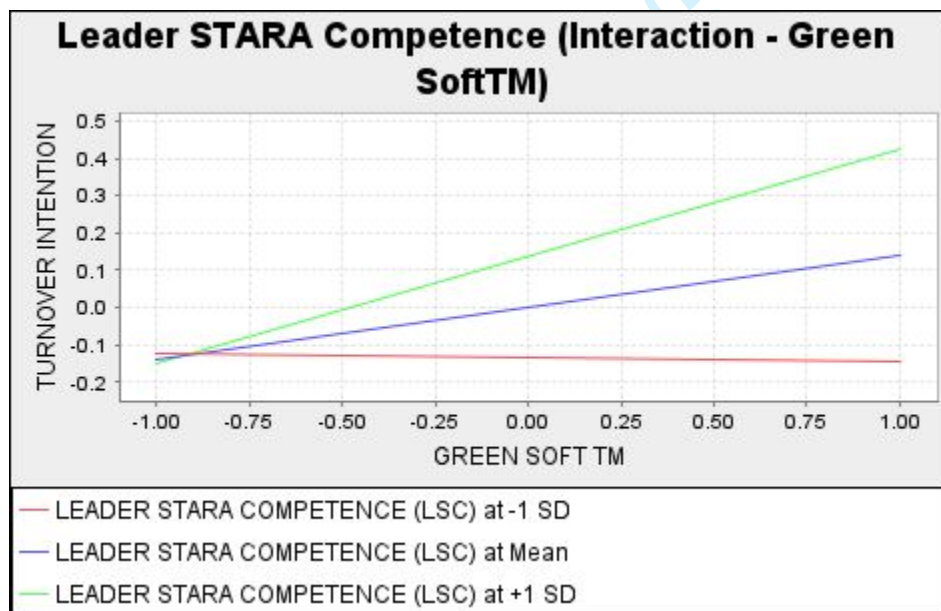


Figure 5: Interaction effect of LSC on the relationship between green soft TM and turnover intention

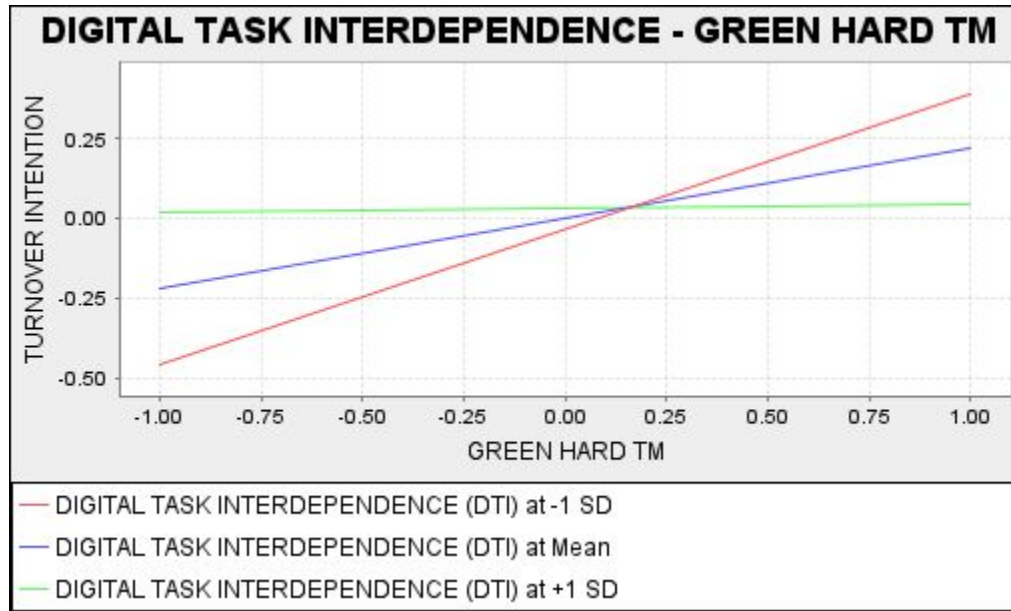


Figure 6: Interaction effect of DTI on the relationship between green hard TM and turnover intention

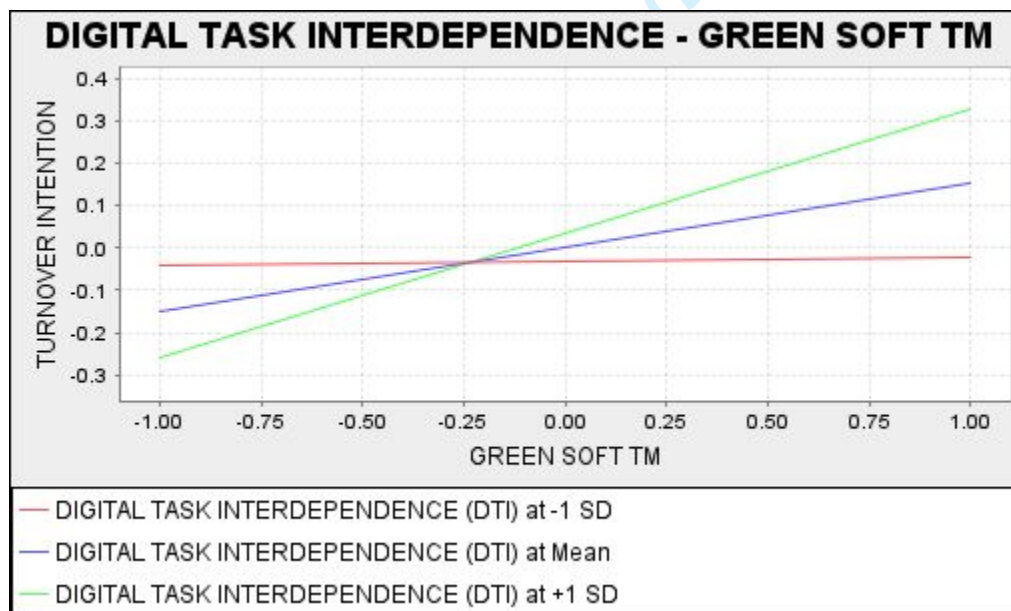


Figure 7: Interaction effect of DTI on the relationship between green soft TM and turnover intention