Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
Factors affecting virtual employee engagement in India during Covid-19

Vijesh Chaudhary, Smrutirekha Mohanty, Poonam Malik, A. Apsara Saleth Mary, Jnaneshwar Pai Maroor, M.Z.M. Nomani

1. Introduction

The way organizations operate is continuously being changed by new business models, exponential systems, agile operating methods, and regulation. This transition, based on values of human experience and that in turn can lead to sustainable changes at behavioral, cultural, and organizational levels, is only intensified by the COVID-19. Many organizations are rapidly changing their procedures due to the rapid spread of coronavirus (COVID-19) worldwide. Several companies have switched their entire workforce to temporary telecommuting and remote work. Like other employee-characters, there is believed to be a change in employee engagement as well. This research seeks to examine and statistically assess factors that could impact the employee engagement level. We collected data from 208 employees who are working from home in India with online questionnaire. Engagement scores have been calculated using UWES-14 (Utrecht Work Engagement Scale). We examined the impact of total 10 variables using multiple regression analysis. Our regression results suggest that proper virtual tools, contact by the organization leaders, mental health checkup and virtual training increase the employee engagement. Female employees are found to be more engaged than male employees while working from home. The number of kids are found to have a negative impact on employee engagement. This implies that if the number of kids increases, the virtual employee engagement decreases. Our results could not find any significant impact of virtual teamwork, marital status, and entertainment tools on employee engagement. Based on the research results, this study makes few recommendations. First, organizations should facilitate the improvement of virtual tools such as internet speed and personal computer configuration. Second, the salary employees should not be decreased. Third, the top organization leaders should maintain frequent contact with the employees, increase virtual training, and should encourage the employees to undergo the regular mental health checkup.

Selection and peer-review under responsibility of the scientific committee of the 1st International Conference on Computation in Materials and Applied Engineering – 2021.
and values [1]. If an employee is involved, he is conscious of his responsibility in the company objectives and motivates his colleagues to succeed. The employee's positive attitude to his place of employment and to his set of values is often referred to as his/her positive relationship with his/her work. Employed staff go beyond the task of executing their excellent functions [2].

Employed people are also becoming high-performing companies – those who want to learn new abilities, are self-motivated, creative, and pro-active. Studies have shown that these worthwhile achievements can provide as much efficiency as four workers on average [3]. The advantage is that they are always the best ambassadors in the enterprise, and talk about the organization well. Engaged – The employee has faith in the company, wants to better his job and his work, is prepared to do what it takes to support the company successfully and is inspired by its representatives. The hallmarks of a committed worker are effectiveness and excitement [4].

Disengaged – The employee does nothing more than the minimum, shows little enthusiasm for his work and sees work as an exchange of time in order to ensure continuous paychecks. Disengaged employees are also employed workers who, for one reason or another, have lost their passion [5].

Actively disengaged – The employee doesn't like their work and shows this misery everywhere he or she goes and breaks down its negativity in the company [6].

2. Literature review

The literature on the employee engagement found different engagement factors at different organizations and at different countries [7]. Among the determinants of the employee engagement is leadership. Leadership has a positive effect, particularly through support and feedback. In order for employees to be supported adequately, regular communication between employees and leaders is necessary. It is now more important than ever that leaders seize the opportunity to discover how their employees work, to provide guidance to help them with any challenges or barriers, to identify support they need, to ensure adequate resources are available, to establish and review tasks and objectives and to provide meaningful feedback and support.

Another factor of the employee engagement in the literature is showing the appreciation and acknowledge effort [8]. The recognition of work and accomplishments by employees has shown increased commitment, enthusiasm and work success. Recognition and recognition of workers results in a large number of positive results by common actions such as suggestions and thanksgiving.

| Table 1 | UWES-14 (Utrecht Work Engagement Scale) 14 factors: 6 * 5 * 6. |
| --- | --- |
| Vigor |  |
| 1 | At my work, I feel bursting with energy (VI1) |
| 2 | At my job, I feel strong and vigorous (VI2) |
| 3 | When I get up in the morning, I feel like going to work (VI3) |
| 4 | I can continue working for very long periods at a time (VI4) |
| 5 | At my job, I am very resilient mentally (VI5) |
| 6 | At my work, I always preserve, even when things do not go well (VI6) |
| Dedication |  |
| 1 | I find the work that i do full of meaning and purposes (DE1) |
| 2 | I am enthusiastic about my job (DE2) |
| 3 | My job inspires me (DE3) |
| 4 | I am proud on the work that i do (DE4) |
| 5 | To me, my job is challenging (DE5) |
| Absorption |  |
| 1 | Time flies when I am working (AB1) |
| 2 | When I am working, I forget everything else around me (AB2) |
| 3 | I feel happy when I am working intensely (AB3) |
| 4 | I'm immersed in my work (AB4) |
| 5 | i get carried away when I'm working (AB5) |
| 6 | It is difficult to detach myself from my job (AB6) |

| Table 2 | Dependent and independent Variables. |
| --- | --- |
| Variables | Type | Details | Purpose |
| Engagement | Dependent variable | Virtual engagement score of each employee. The variable is calculated with UWES (Utrecht Work Engagement Scale) | As the dependent variable |
| Sex | independent variable (Categorical) | Sex of each employee | To check whether the gender of employees affect the virtual employee engagement (Hypothesis 1) |
| Salary | independent variable (Continuous) | Monthly salary of each employee | To check whether the monthly salary of employees affect the virtual employee engagement (Hypothesis 2) |
| Contact | independent variable (Continuous) | Number of contact the leaders do with each employee | To check whether the contact with leaders affect the virtual employee engagement (Hypothesis 3) |
| Mental | independent variable (Continuous) | Number of monthly mental health checkup | To check whether the monthly mental health checkup affect the virtual employee engagement (Hypothesis 4) |
| Tools | independent variable (Categorical) | Right virtual tools such as fast Wifi connection at home | To check whether the right virtual tools affect the virtual employee engagement (Hypothesis 5) |
| Training | independent variable (Categorical) | Online training for each employee | To check whether the virtual trainings affect the virtual employee engagement (Hypothesis 6) |
| Enter | independent variable (Categorical) | Entertainment activities such as online Yoga class, fun quizzes etc. | To check whether the entertainment activities affect the virtual employee engagement (Hypothesis 7) |
| Team | independent variable (Categorical) | Virtual teamwork | To check whether the virtual teamwork affects virtual employee engagement (Hypothesis 8) |
| Marital | independent variable (Categorical) | Marital status of employee | To check whether Marital status of employees impact the virtual employee engagement (Hypothesis 9) |
| Kids | independent variable (Continuous) | Number of kids at home (if the employee is married) | To check whether the number of kids impact the virtual employee engagement (Hypothesis 10) |
| u | Residuals | The error term or residual of OLS model | To capture the unknown leftover variables from the model |
In their simplest form, acknowledgement gives workers a stronger sense of appreciation, gives valuable input on how well they do things, creates confidence, increases morale and engagement, and reduces the burnout risk.

Recognition is one of the best and easiest methods to continue as it takes little time and costs nothing in our current state of perturbation and uncertainty [9]. It is a time to remember the values of gratitude to leaders and workers and to inform employees that they respect and appreciate their efforts to persevere in their employment in spite of current problems. Organizations should take informal methods for their team members to recognize and reward their efforts.

Another factor of the employee engagement is performing engaging activities. In case of virtual work, only because the staff is not together physically, doesn’t mean that they cannot have fun together or share downtime – meetings do not always have to take place in person [10].

One of the most crucial factors of the employee engagement is having the right virtual tools in place with a dispersed staff, an employee have to work much harder to make remote working or WFH workers feel like they are part of the business culture [11]. The degree of employee engagement can have an important impact. And companies should allow remote staff to work together as if they really were next to each other to get the most from them.

Past studies have also recommended to enable virtual team-work and collaboration

One thing is to have the right equipment. Another is to have a tradition of cooperation. It is crucial, according to the studies, encourage cooperation and partnership, even in difficult situations, to be with one another. Teams should, for instance, carry their day-to-day positions to the virtual world to understand how everyone works and how team members can support one another. Companies should Find out how everybody has done and whether they respect and appreciate their efforts to persevere in their role [13].

There are various virtual group tools to improve the employee engagement. First, emotional Training: company will improve your team’s self-awareness and social skills through the leadership education and growth program of EM. Second, training in practical time management: help team eliminate distractions and leverage time when working at home or in the workplace. Third, clear communications training: Help the team to improve both oral and written communication skills. Clear communication training [14].

Employee Engagement Activity are becoming crucial in today’s working environment. As difficult as social distance can be, the commitment does not have to be as linked inside the walls of the workplace as it was, use this opportunity to learn about each other and what is really good for the team. The top management can be open for new ideas [15]. There are some recommendations found in the past studies. For example, virtual yoga or training classes—members of a team will take turns running a class or jointly enter a certified online training course.

Another recommendation is the Happy Hour Online – in this case, a team collect favorite video conference site together as a party to share a few drinks together [16].

3. Research objectives and hypotheses

3.1. Research objectives

The main objectives of this research is to determine which factors increases or decreases the employee engagement in India. To achieve this objectives we test 10 hypotheses in order to check whether different tools suggested in literature and corporations can increases the employee engagement [17].
3.2. Hypothesis

Hypothesis 1: gender of employees affect the virtual employee engagement
Hypothesis 2: monthly salary of employees affect the virtual employee engagement
Hypothesis 3: contact with leaders affect the virtual employee engagement
Hypothesis 4: monthly mental health checkup affect the virtual employee engagement
Hypothesis 5: right virtual tools affect the virtual employee engagement
Hypothesis 6: virtual trainings affect the virtual employee engagement
Hypothesis 7: entertainment activities affect the virtual employee engagement
Hypothesis 8: virtual teamwork affects virtual employee engagement
Hypothesis 9: Marital status of employees impact the virtual employee engagement
Hypothesis 10: number of kids impact the virtual employee engagement

3.3. Methodology

3.3.1. UWES (Utrecht work engagement Scale)

To assess the degree of job commitment the UWES (Utrecht Work Engagement Scale) uses 3 scales: Vigor, dedication and absorption. This is a test of how to assess the involvement of individuals as well as groups: [18]

“a positive, fulfilling, work-related state of mind that is characterized by vigor (VI), dedication (DE), and absorption (AB).”

1. Vigor: refers to high energy and stamina during the job, readiness to spend effort and perseverance in difficulty [19].
2. Dedication refers to being interested, meaning, challenged and enthusiastic, inspiring and proud to find in work.
3. Absorption means that an employee focuses entirely and are involved in work, whereby time goes quickly and he/she has trouble detaching yourself from your work.

3.3.2. Multiple regression analysis

After calculating the employee engagement score, we run the multiple regression analysis. The model is given below. [20]

\[ \text{Engagement} = \alpha + \beta_1 \text{Sex} + \beta_2 \text{Salary} + \beta_3 \text{Contact} \\
+ \beta_4 \text{Mental} + \beta_5 \text{Tools} + \beta_6 \text{Training} + \beta_7 \text{Enter} \\
+ \beta_8 \text{Team} + \beta_9 \text{Marital} + \beta_{10} \text{Kids} + \epsilon \]

where, \( \alpha, \beta \) denote the intercept and coefficients of the Multiple regression model.

3.4. Data

We collected the primary data of different employees who have been working from home across the different states of India. Initially, the questionnaire was sent to 300 employees through emails and social media. Only 208 employees have responded. 41% of total respondents were female, and 59% were male. [21]

4. Results

The multiple regression results shows that gender have negative coefficients. Sex = 1, if employee is male, and sex = 0 if the employee is female. Therefore, the results implies that male employees has less engagement score than female. The reason might be because the female employees relatively feel comfortable at home than males. The impact of salary is positive. This means that if the salary is big, the employee engagement score increases. The contact is also found to be significant. This suggest that if the employees are frequently in contact with organization’s top management, their engagement score increase. The mental variable is also significant. This implies that if the employees check their mental health and wellbeing, they can be more engaged in their works from home. The virtual tools is found to be a significant factor. This shows that the speed of internet connection, the speed of computers, and the well-functioning of the virtual software has positive impact on employee engagement. The virtual training, according to our results, has positive effect on employee engagement score. This implies that if the companies launch virtual training for their employees, the employees become more engaged in their works from home. The regression table shows that the entertaining activities, virtual teamwork, and marital status have no significant effect on employee engagement score. The number of kids, however, has negative effect on employee engagement. This implies that if the number of kids increases, the employee engagement declines [22–25].

The R-square and the adjusted R-square in the regression table show that the model fit. The R-square is 0.62. This means that according to the R-square, about 62% of the variation in the dependent variable is explained by the independent variables. The adjusted –square is 0.60. This implies that according to the adjusted R-square, about 60% of the variation in the dependent variable is explained by the independent variables. Again, the p-value of 0.0003 implies that the model is significant at 1% level of significance.

5. Conclusion

The main objective of this research was to examine and determine the factors that affect the employee engagement of the employees who are working from home. We have collected the primary data from 208 employees who were working from home. We sent the questionnaire through email and social media sites. After collecting the data, we calculated the engagement score of each employees. The employee engagement score was then used as the dependent variable. The independent variables are: sex, salary, contact by top management, mental health checkup, online tools such as fast internet and fast computer, virtual training by companies, entertainment activities facilitated through the companies, virtual teamwork, marital status, and number of kids. We applied the multiple regression model along with t-statistics and P-values. The results suggest the following: female employee have more engagement score than male, employees with more salary tends to have more engagement score, employees in contact with top management have more engagement score, mental health checkup improves the engagement scores, proper virtual tools increase the chance of more engagement, virtual training improves the engagement, more number of kids hamper the employee engagement, and finally, virtual teamwork, online entertainment activities and marital status do not have significant impact on virtual employee engagement.

This research concludes that the companies should consider regular contact of top management with employees, launch virtual training. The companies, according to our results, should not decreases the salaries of the employees. And finally, the there should facilities and assistance to guide the employees on how to improve the virtual tools such as internet connection and smooth functioning of personal computers.
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.

References

[1] M. Attridge, Measuring and managing employee work engagement: a review of the research and business literature, J. Workplace Behav. Health (2009), https://doi.org/10.1080/1555240903184398.
[2] M. Bedarkar, D. Pandita, A study on the drivers of employee engagement impacting employee performance, Procedia - Social Behav. Sci. (2014), https://doi.org/10.1016/j.sbspro.2014.04.174.
[3] V. Benuyenah, Conflict perspectives in international business organisations: the changing trends and its management, Manage. Leadership Governance (2013) 417.
[4] V. Benuyenah, B. Boukareva, Making HRM curriculum relevant—a hypothetical practitioners’ guide, J. Work-Appl. Manage. (2018).
[5] V. Benuyenah, B. Pandya, Measuring employee happiness in the UAE-integrating organisational data into the national statistics, Int. Rev. Manage. Mark. 10 (3) (2020) 83–92.
[6] S.C. Bolton, M. Houlihan, Are we having fun yet? A consideration of workplace fun and engagement, Employee Relations (2009), https://doi.org/10.1108/01425450910991721.
[7] N. Chanana, Sangeeta, Employee engagement practices during COVID-19 lockdown, J. Public Affairs (2020), https://doi.org/10.1002/pa.2508.
[8] C. Coffman, The high cost of disengaged employees, Gallup Manage. J. Online (2002).
[9] E. Cohen, Employee training and development, in: CSR for HR: A Necessary Partnership for Advancing Responsible Business Practice, 2014, https://doi.org/10.9774/gleaf.978-1-907643-30-9_10.
[10] J.A. Gruman, A.M. Saks, Performance management and employee engagement, Hum. Resour. Manage. Rev. (2011), https://doi.org/10.1016/j.hrrm.2010.09.004.
[11] R.J. Joshi, J.S. Sohdi, Drivers of employee engagement in Indian organizations, Source: Indian J. Ind. Relations (2011).
[12] J. Kim (Sunny), A. Gatling, The impact of using a virtual employee engagement platform (VEEP) on employee engagement and intention to stay, Int. J. Contemp. Hospitality Manage. (2018), https://doi.org/10.1108/IJCHM-09-2016-0516.
[13] R. Lewis, E. Donaldson-Feilder, T. Tharani, Management competencies for enhancing employee engagement, Cipd (2011).
[14] S. Markos, M.S. Sriravi, Employee engagement: the key to improving performance, Int. J. Bus. Manage. 5 (12) (2010) 89.
[15] S. Osborne, M.S. Hammoud, Effective employee engagement in the workplace, Int. J. Appl. Manage. Technol. (2017), https://doi.org/10.5590/ijamt.2017.16.1.04.
[16] B. Plester, A. Hutchinson, Fun times: the relationship between fun and workplace engagement, Employee Relations (2016), https://doi.org/10.1108/ER-03-2014-0027.
[17] A.M. Saks, Antecedents and consequences of employee engagement, J. Manage. Psychol. (2006), https://doi.org/10.1108/02683940610690169.
[18] W.B. Schaufeli, A.B. Bakker, in: Utrecht work engagement scale Preliminary Manual Version 1.1, Occupational Health Psychology Unit Utrecht University, 2004, https://doi.org/10.1037/0033-3129-000.
[19] Wilmar B. Schaufeli, A.B. Bakker, M. Salanova, The measurement of work engagement with a short questionnaire: a cross-national study, Educ. Psychol. Measur. (2006), https://doi.org/10.1177/0013164405282471.
[20] F.F. Shaik, U.P. Makhecha, Drivers of employee engagement in global virtual teams, Australasian J. Inf. Syst. (2019), https://doi.org/10.3127/ajis.v23i0.1770.
[21] A. Shimazu, W.B. Schaufeli, S. Kosugi, A. Suzuki, H. Nasuwa, A. Kato, et al., Work engagement in Japan: validation of the Japanese version of the utrecht work engagement scale, Appl. Psychol. (2008), https://doi.org/10.1111/j.1464-0597.2008.00333.x.
[22] Bin A.S. Shmailan, The relationship between job satisfaction, job performance and employee engagement: an explorative study, Issues Bus. Manage. Econ. (2016).
[23] B. Shuck, T.G. Reio, T.S. Rocco, Employee engagement: an examination of antecedent and outcome variables, Human Resour. Dev. Int. (2011), https://doi.org/10.1080/13678868.2011.601587.
[24] L. Sun, C. Bunchapattanakul, Employee engagement: a literature review, Int. J. Human Resour. Stud. (2012), https://doi.org/10.5296/ijhrs.v9i1.14167.
[25] S.Y. Tsai, Effect of yoga exercise on premenstrual symptoms among female employees in Taiwan, Int. J. Environ. Res. Public Health (2016), https://doi.org/10.3390/ijerph13070721.