

# Technostress creator and work life balance: a systematic literature review

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**Abstract:** Over the last decade, the issue of work-life balance has gained visibility internationally due to ongoing usage of ICT that creates technostress on employee. Work-life balance should be a key concept to all employers today, especially to those with an increasing number of people in the organization and due to the additional demand for work that they imply. The best work-life balance situation is when an employer can manage work timetables and schedules for some leisure activities in a way that suits the employees. Managing both work and life aspects by ensuring a good relationship between them should be the primary objective. It creates a quality of life for each individual. Therefore, work stress is undoubtedly one of the employees' most significant problems, especially involving computer technology such as mobile phone technology, car alarms, emails, calls, and voicemails. That is called technostress. Technostress is the term used to describe the stress phenomenon induced by the inability to manage, due to using computer technology. A range of literature exists that shows the relationship between technostress creator and work-life balance either based on online data, google scholar, and PhD theses. This systematic literature review had been conducted by using PICO criteria. The four elements included in the PICO used to formulating these research questions are population, intervention, comparison, and outcome. This paper presents a systematic literature review using PRISMA collection method, to provide collective evidence on their implementation and how important work-life balance is for employees. The review reports on 120 sources from 1300 articles, providing insights into the range of technostress creator and work-life balance in existence. It also highlights the benefits and challenges encountered through work-life balance policy implementation for future research.

**Keywords:** technostress creator, PRISMA method, PICO criteria and work-life balance.

## 1. Introduction

Every individual is, in particular, an essential part of the family and society in general. In today's business world, work-life balance is a critical factor in the achievement of organizational objectives. Work-life balance should be a key concept to all employers today, especially to those with an increasing number of people in their organization and due to the additional demand for work that they imply. According to Greenhaus, Collins, and Shawn (2003), the best work-life balance situation is when an employer can manage work timetables and schedules for some leisure activities in a way that suits the employees. Managing both work and life aspects by ensuring a good relationship between them should be the primary objective. Employees try their best to remain in the organization by putting more time at work, which may be harmful to their personal life. It is noted that an employee who does not have a proper work-life balance ends up in conflict with peers and strained relationships with family members, and depression (Foy, Dwyer, Nafarrete, Hammoud, & Rockett, 2019). Hence, employers need to develop strategies that help employees balance their work and their personal lives with a changing pattern in working hours that is quite different from the standard one that usually operates from 9 a.m. to 5 p.m. That change will significantly impact employees' health if they need to work beyond the normal eight-hours of work (Wong, Alias, Bhoo-Pathy, Chung, Chong, Kalra, & Shah, 2020).

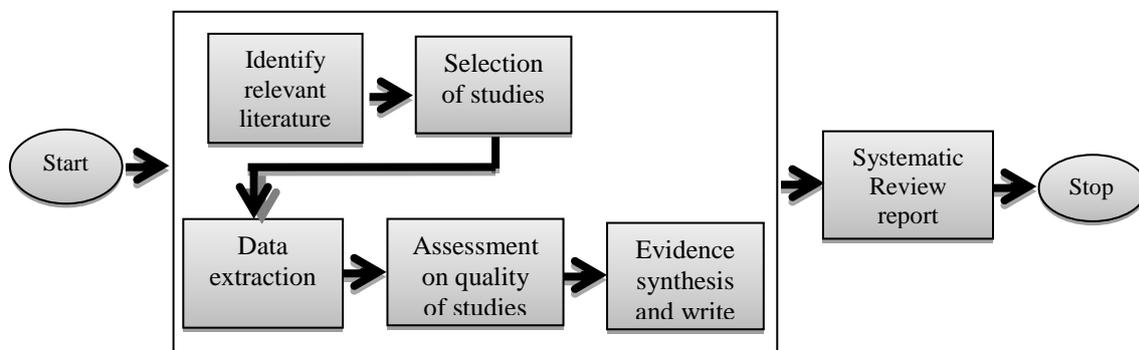
According to Kupersmith (1992), besides working eight hours in the office, employees also spent another seven hours per week working from home. Especially for female employees, though they are already burdened with duties and responsibilities as a mother and wife at home, they are still required to perform various office operations online. They spent a lot of time in the workplace and at home using computers. They use computers to browse the Internet, check messages, and interact with online colleagues regarding work. Technology that facilitates a higher workload on

these individuals has developed a new phenomenon of a problem called technostress. Tools that can be used to perform work nowadays may include smartphones (Blackberry, iPhone, etc.) and PC tablets (iPad, Galaxy tab, etc.), and are no longer limited to computers. Additionally, numerous PC-like working gadgets can be used these days (as stated above), for making employees' work less complicated (Choi, Kim & Cho, 2011). Sarabani, Carter, and Compeau (2020) also supported this statement about employees using technology to improve themselves to perform tasks. But at the same time, technology imposes a lot of pressure on them when managers expect them to work more quickly and do more for the organization.

As stated above, technostress is the term used to describe the stress phenomenon induced by the inability to manage, due to using computer technology. Technostress is a common adaptation disorder caused by the failure to cope with new computer technology in a healthy manner (Geetanjali, & Rao, 2020). For example, in a study conducted by Caruso (2006), long working hours with computer technology may expose employees to various risks such as sleep deprivation, illness, and weak work recovery. Past studies have shown that employees are now struggling to deal with fast technology changes in work task performance (White, Behrend & Siderits, 2020). Benamati (2001) and Gallivan (2004) suggested that it would be valuable to carry out research to determine the extent of technology anxiety currently being experienced by employees in business organizations.

## 2. Methodology

Systematic literature review (SLR) is a means or ways to conduct a literature review based on the question or topic area or phenomena of interest (Kitchenham, 2004). SLR is also a tool that targets to provide a systematic summary of the evidence in the specific region. In order to achieve the end result, there are six levels that want reviewing and some of which with iteration. Adopted from (Salleh, 2008), the stages illustrated in Figure 1 are crucial and serve as guidance when conducting the real evaluation.



**Figure 1.** Stages in a systematic Review Process

### 2.1. Research questions

Systematic literature review requires the formulation of research questions that are used to guide the search and extraction processes. A good question should incorporate the four elements included in the PICO as described in Table 1 (Cindy, Zoe & Alexa, 2014). The first stage in locating studies relevant to the research questions that need to be addressed, is to identify search term that will be used in the search process. These search elements can be regarded as the key for research question, which includes the four elements PICO (Population, Intervention, Comparison and Outcome). These components can be considered as main key elements in research question. Following the systematic literature review, this paper takes into consideration all empirical studies that focus on technostress creator and work life balance.

**Table 1.** Research Question as Structured by the PICO Criteria

No	Criteria	Description
1.	Population (P)	
2.	Intervention(I)	Work -life balance
3.	Comparison (C)	Null
4.	Outcome (O)	

Table 1 highlights the major search terms based on the PICO criteria that addressed the study's research elements. These major search terms serve as a basis to derive relevant research terms that are used in the search process of primary and secondary sources. This paper reports on the research question formulated for the SLR. In order to identify and evaluate all available research on technostress creator towards work life balance; the following research questions are formulated:

RQ1: What research has been conducted on technostress creator towards work-life balance?

RQ2: What is the most influence technostress creator towards work-life balance?

## 2.2. Conducting the review

The first strategy in identifying relevant literature is to develop a search string that will be used the search process. Other than the primary search terms (see Table 1), this stage involves the use of synonyms alternate spelling and abbreviations of the search terms derived from the previous stage. One of the search terms has been identified with all the key words, it will be compiled into a search string that will be used in the search process. The searching can be done by using Boolean operators OR and AND. Operator OR is used to group the diverse forms (e.g. alternate spelling and synonyms) of individual search terms. Meanwhile the AND operator is used to link the difference search terms into a single search string. Besides that, a systematic review was conducted by using the guidelines from the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (Liberati, Altman & Tetzlaff, 2009). A two-stage search strategy was applied. In the first stage, bibliographic databases (ProQuest, Web of Science, Emerald insight, and UiTM Library) were systematically searched by screening titles, abstracts and topics, and applying keywords depending on the database. Search terms included technostress creator and work life balance. Various observational quantitative human studies addressing ICT use, stress, depression, and mental health in working populations (at work or at home office) were eligible for inclusion in the review. Studies were excluded if they focused on non-working population, were not written in English, and where the report was inadequate to thoroughly evaluate the methods and results. In addition, we chose to limit the review to more recent publications, including only studies published from the year 2000 until December 2018. Secondly, a snowballing technique was used, where references of references were pursued in order to further detect reports of studies not found in the database search. Studies were initially identified by title and abstract, and later included after a full text evaluation. The latest search was conducted in January 2017.

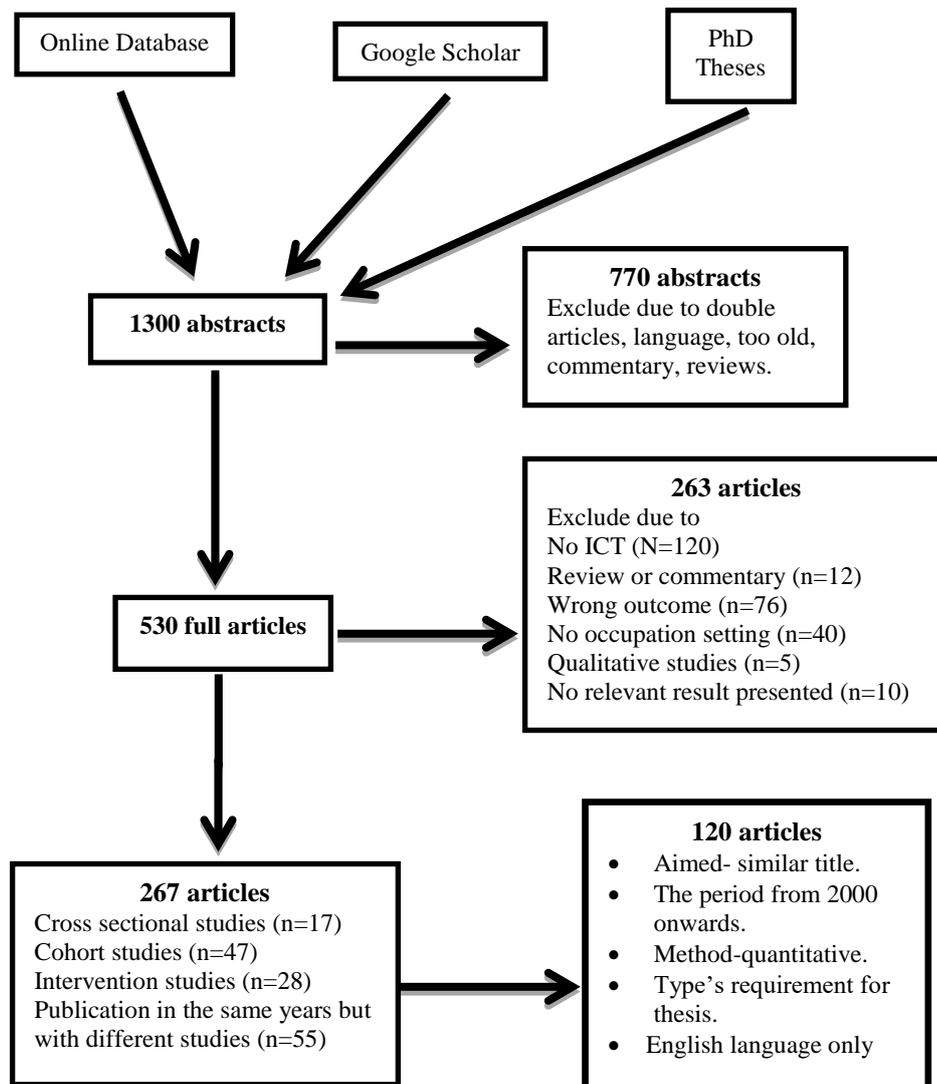
## 2.3. Inclusion and exclusion

Initially, each paper retrieved will go through the reading process on i) title, ii) abstract and keywords, and iii) full text. Nevertheless, the final studies selected will be determined from the inclusion and exclusion criteria. The results are then compared and if any disagreement persists, a discussion will be conducted. At the beginning of the study, 1300 articles were selected from primary online database, google scholar and PhD theses. In the next phase, only 120 out of those studies met the inclusion criteria. The function of the inclusion and exclusion criteria is to ensure that only relevant articles are selected in the SLR.

**Table 2.** Inclusion and Exclusion Criteria

Inclusion criteria	<ul style="list-style-type: none"> <li>• Aimed- Technostress creator and work life balance.</li> <li>• The period from 2000 onwards.</li> <li>• Domain- Technostress creator towards work life balance: psychological health as a mediating.</li> <li>• Method- quantitative.</li> <li>• Types- article, conference paper, peer review, book, and journal.</li> <li>• Language- English language only</li> </ul>
Exclusion criteria	<ul style="list-style-type: none"> <li>• Studies that do not match with research question excluded.</li> <li>• Studies that are written in another language aside from English are excluded</li> <li>• Studies that contain videos are not included</li> <li>• Studies that involve own assumption or personal view are disregarded</li> <li>• Studies presented by authors without supporting evidence are eliminated.</li> </ul>

At the initial selection stage process, all the articles extracted go through a screening process. Screening involves looking at the title and the abstract in order to identify relevant articles. Figure 2, illustrates the approaches of conducting searches and the selection of related studies.

**Figure 2.** PRISMA collection method Flow

## 2.4. Data collection and analysis

In the data extraction process, a form was designed to gather evidence relating to the research question posed in the studies. According to Kitchenhand (2007), a data extraction process needs to be performed by two or more researchers referred to as the “extractor” and “data checker”. Data extraction carried out on all papers that pass the screening process stage.

A checklist is in developing, in order to list the important criteria expected from the primary studies (Salleh, 2008) the data extraction from design for the SLR study is shown in Table 3. The form consists of two sections: i) Study’s Information Data, and ii) Data relevant to Answering the Research Questions.

**Table 3.** Data Extraction Form

Data Item	Description
<b>Study’s Information Data</b>	
Study ID	Refers to the unique identification given to the articles
Title	Refers to the label of the article.
Year of Publication	Refers to the article’s publication year.
Reference type	Refers to whether the publication is in the form of a journal/conference/thesis/unpublished work.
Publisher	Refers to the name of the publisher or proceeding
<b>Data Relevant to Answering the</b>	<b>Research question</b>
RQ1: What research has been conducted on technostress creator towards work-life balance?	Research question to focus on
RQ2: What is the most influence technostress creator towards work-life balance?	

## 3. Discussion

### 3.1. RQ1: What research has been conducted on technostress creator towards work-life balance?

Based on the finding, 31 studies out of the selected 120 discuss on technostress creator towards work-life balance. Each of the articles discusses a different area and the technostress creator’s perspective towards work-life balance. Most research on technostress towards work-life balance focuses on the job satisfaction and organization commitment issues. The 31 studies identified are conducted in different industries namely: librarian, banking, manufacturing, and IT profession. The studies were published between the years 2005 until 2018. These findings may conclude that technostress affect work-life balance amongst both parties, which were employees as well as employer. Based on an analysis on the types of research approach employees these shows that 95% of the studies used a survey (quantitative) method to analyses the data, whereas 5% used an interview method and case study (qualitative) prospectively. Table 4 summarizes the 31 papers focusing on technostress and work-life balance.

**Table 4.** Studies on Technostress towards Work-life balance

<b>Title</b>	<b>Author/ Year</b>	<b>Area</b>
Understanding teleworkers technostress and its influence on job satisfaction.	Ayoung Suh & Jumin Lee (2017)	Job Satisfaction
The sources and consequences of mobile technostress in the workplace	Pengzhen yin, Robert M. Davison, Yiyang Bian, Ji wu & Liang Liang (2014)	Workplace
Use of information communication technology and stress, burnout, and mental health in older, middle-aged, and younger workers – results from a systematic review	Gabirele, Grave & Eva (2017)	Age Workers
Perceived Information and Communication Technology (ICT) Demands on Employee Outcomes: The Moderating Effect of Organizational ICT Support	Arla Day, Stephanie Paquet, Natasha Scott & Laura Hambley (2012)	Employee Outcome
The effect of organizational environment on technostress of employees	Parisa Akhtari, Mahsa Mohseni and Maryam Naderi, Amir Parviz Akhtari & Ahmad Torfi (2013)	Organization Environment
Minimizing The Effects of Technostress in Today's Organization	Okebaram & Sunday Moses (2013)	Organization commitment
An Empirical Analysis of Correlation Between Technostress and Job Satisfaction.	Asad Khan Hamid Rehman & Dr. Shafiq-ur-Rehman (2013)	Job Satisfaction
The Impact of Technostress on Organisational Commitment among Malaysian Academic Librarians	Ungku Norulkamar Ungku Ahmad, Salmiah Mohd Amin & Wan Khairuzzaman Wan Ismail (2017)	Organization commitment
Moderating Effect of Technostress Inhibitors on the Relationship between Technostress Creators and Organisational Commitment	Ungku Norulkamar Ungku Ahmad, Salmiah Mohd Amin & Wan Khairuzzaman Wan Ismail (2014)	Organization commitment
The Influence of Techno stress and Organizational-Is Related Support on User Satisfaction in Government Organizations: A Proposed Model and Literature Review	Hadziroh Ibrahim, Yusliza Mohd Yusoff & Nur Zahiyah Othman (2014)	User Satisfaction
The moderating impact of perceived organizational support on the relationship between technostress and role stress	Kanliang Wang & Qin Shu (2008)	Stress Role
Social Media, Technostress and Workplace Deviance: An Evidence from The Software Houses in Pakistan	Muhammad Yasir, Dr. Saima Batool, Dr. Faisal Khan & Amina Imran (2016)	Workplace
Understanding the effect of technostress on the performance of banking staff	Samuel Owusu-ansah, Isaac Nyarko Adu & Julius Quarshine Azasoo (2016)	Performance

Technostress in Relation to Job Satisfaction and Organisational Commitment among IT Professionals	Rajesh Kumar, Roshan Lal, Yashu Bnasal & Saran K.Sharma (2013)	Job Satisfaction and Organizational Commitment
Technostress and Wellness	Marelize Van Eck (2005)	Wellness
Stress Related Issues Due to Too Much Technology: Effects on Working Professionals	Katherine Walz (2012)	Workplace
Technostress creators and job outcomes: theorizing the moderating influence of personality traits	Shirish C. Srivastava, Shalini Chandra & Anuragini Shirish (2015)	Job Outcome
Work-Related Communication Technology Use Outside of Regular Work Hours and Work Life Conflict: The Influence of Communication Technologies on Perceived Work Life Conflict, Burnout, Job Satisfaction, and Turnover Intentions (20104)	Kevin B. Wright, Bryan Abendschein, Kevin Wombacher, Michaela O'Connor, Megan Hoffman, Molly Dempsey, Christopher Krull, Audrey Dewes & Audrey Shelton	work hours on perceptions of work life conflict, burnout, turnover intentions, and job satisfaction
The effect of mobile technology usage on work engagement and emotional exhaustion in Japan	Yuka Fujimoto, Ahmed Shahriar Ferdous, Tomoki Sekiguchi & Ly-Fie Sugianto (2016)	Work Engagement and Emotional Exhaustion
Silent Issues of ICT Era: Impact of Techno-Stress to the Work and Life Balance of Employees	Agota Giedre Raisiene, & Steponas Jonusauskas (2013)	Work-life balance
Psychological factor of technostress: Empirical evidence on Indian organizations	Chandranshu Sinha & Ruchi Sinha (2012)	Interpersonal conflict, Work Overload, Work-Family Conflict, Role Overload, Role Conflict, Role Ambiguity, Psychological Capital, Role Anxiety & Insecurity, Invasion of Privacy, and Cognitive Processing
Social Network Sites in Businesses: Combating Technostress	Murad Moqbel & Valerie L. Bartelt (2018)	Work-related attitudes and turnover intentions
Does Techno-invasion Trigger Job Anxiety? Moderating Effects of Computer Self-efficacy and Perceived Organizational Support	Jinnan Wu, Nannan Wang, Wenjuan Mei & Lin Liu (2017)	Organization Support
Technostress in Information Technology Managers: A Quantitative Examination Of The Effect Of Transformational, Transactional, Or Laissez-Faire Leadership Style	Stacy L. Boyer-Davis (2014)	Leadership style (Transformational, Transactional, and Laissez-faire) and Individual characteristics (age, gender, Education and industry experience)
A Factor analysis approach to antecedents of Technostress: A Study of State Bank of Patiala	Dr. Dhiraj Sharma & Tavleen Kaur Gill (2014)	Factor Analysis
Boundary-less work and digital mobile media: A qualitative exploration of employees' work-life balance in the context of constant online availability	Hanna Holmgren (2018)	Work-life balance
Techonostress in Organizations: A Review of Literature	Mahapatra & Pillai (2018)	Work life employee in organization

A Comparative Study of Technostress In Public Sector And Private Sector Banks In India (With Special Reference To Agra City)	Shweta Jain (2016)	Work-life balance
New Technologies Smart, or Harm Work-Family Boundaries Management? Gender Differences in Conflict and Enrichment Using the JD-R Theory	Chiara Ghislieri, Federica Emanuel, Monica Molino, Claudio G. Cortese & Lara Colombo (2017)	Gender
Benefits and stressors Perceived effects of ICT use on employee health and work stress	Katharina Ninaus, Sandra Diehl, Ralf Terlutter, Kara Chan & Anqi Huang (2015)	Health and Work Stress
Technostress: Trends And Challenges In The 21st Century Knowledge Management	Marilyn L. Laspinas (2015)	knowledge Management

### RQ2: What is the most influence technostress creator towards work-life balance?

This section discusses on the factor that influences technostress towards work-life balance. From SLR, 14 articles as shown below discuss on the factors. Table 5, lists the publications, which include the names of the authors and the factors discussed in their articles.

**Table 5.** Factor of technostress towards work-life balance

Author/ Year	Factor
Ayoung Suh & Jumin Lee (2017)	<ul style="list-style-type: none"> <li>• Telework</li> <li>• Job characteristics theory.</li> <li>• Technostress Model.</li> <li>• Intensity of teleworking (IOT)</li> </ul>
Pengzhen yin, Robert M.Davison, Yiyang Bian, Ji wu & Liang Liang (2014)	<ul style="list-style-type: none"> <li>• Habit</li> <li>• Mobile Technostress Inhibitors (self-efficiency)</li> <li>• Job Satisfaction</li> </ul>
Parisa Akhtari, Mahsa Mohseni and Maryam Naderi, Amir Parviz Akhtari & Ahmad Torfi (2013)	<ul style="list-style-type: none"> <li>• Using appropriate software with simple usage.</li> <li>• Creation of suitable environment for connection between</li> <li>• Employees and technologies.</li> <li>• Creation of stable and secure environment.</li> <li>• New technologies to employees</li> </ul>
Okebaram & Sunday Moses (2013)	<ul style="list-style-type: none"> <li>• Negative self-image, depression</li> <li>• Technological avoidance</li> <li>• Implementing and maintaining technology in an organization can be difficult</li> <li>• Decreased health and wellness</li> <li>• Negative information seeking habits</li> <li>• Uncertainty in both organization workers and customers</li> </ul>
Asad Khan Hamid Rehman & Dr. Shafiq-ur-Rehman (2013)	<ul style="list-style-type: none"> <li>• Job Satisfaction</li> </ul>
Ungku Norulkamar Ungku Ahmad, Salmiah Mohd Amin & Wan Khairuzzaman Wan Ismail (2017)	<ul style="list-style-type: none"> <li>• Workplace</li> <li>• Implementation of technology.</li> <li>• Consequence in organization</li> </ul>
Ungku Norulkamar Ungku Ahmad, Salmiah Mohd Amin & Wan Khairuzzaman Wan Ismail (2014)	<ul style="list-style-type: none"> <li>• Employee attitude in organization</li> <li>• Organizational commitment of academic librarians</li> </ul>

Hadziroh Ibrahim, Yusliza Mohd Yusoff & Nur Zahiyah Othman (2014)	<ul style="list-style-type: none"> <li>• Literacy support</li> <li>• Technical support provision</li> <li>• Technology involvement facilitation</li> <li>• Innovation support</li> </ul>
Samuel Owusu-ansah, Isaac Nyarko Adu & Julius Quarshine Azasoo (2016)	<ul style="list-style-type: none"> <li>• Gender</li> <li>• Age</li> <li>• Education</li> <li>• Computer efficacy</li> <li>• Experience</li> <li>• Support from administrators</li> <li>• End user training</li> <li>• Participation</li> <li>• Job satisfaction</li> <li>• Employee commitment performance</li> </ul>
Rajesh Kumar, Roshan Lal, Yashu Bnasal & Saran K.Sharma (2013)	<ul style="list-style-type: none"> <li>• attitude and involvement in job work</li> </ul>
Kevin B. Wright, Bryan Abendschein, Kevin Wombacher, Michaela O'Connor, Megan Hoffman, Molly Dempsey, Christopher Krull, Audrey Dewes & Audrey Shelton	<ul style="list-style-type: none"> <li>• Regular work hours</li> <li>• Outside work hours</li> <li>• Work life conflict</li> <li>• Perceived stress</li> <li>• Job burnout</li> <li>• Job satisfaction</li> <li>• Turnover intentions</li> <li>• Perceived usefulness</li> </ul>
Agota Giedre Raisiene & Steponas Jonusauskas (2013)	<ul style="list-style-type: none"> <li>• Working with several working with several ICT tools at the same time.</li> <li>• Task overlapping difficulties identifying work beginning and end.</li> <li>• Necessary to work quicker due to increase workload</li> <li>• Work overload</li> <li>• Imbalanced work and leisure time</li> <li>• High motivation to gain/update knowledge that eases work with ICT</li> <li>• Wide scale of usage of ICT benefits</li> </ul>
Mahapatra & Pillai (2018)	<ul style="list-style-type: none"> <li>• Employee Productivity</li> <li>• Job Satisfaction</li> <li>• Organizational Commitment</li> <li>• Role Conflict</li> <li>• Role Overload</li> <li>• End-user Performance</li> <li>• Job Stress</li> <li>• Role Ambiguity</li> <li>• Intention to extend the use of ICTs</li> <li>• Job Burnout</li> <li>• Job Engagement</li> <li>• Work Exhaustion</li> <li>• Emotional Exhaustion</li> </ul>
Shweta Jain (2016)	<ul style="list-style-type: none"> <li>• ICT Tools</li> </ul>

### 3.2. Limitation of the study

Although this study adheres to the methodology suggested by Kitchenhand, (2004), it is still with some restrictions, namely the elaboration of the keywords selection and the criteria for inclusion and exclusion, based on the judgement of the researcher. In order to improve future research, we suggest the inclusion of all online databases and outlets used by practitioners to

publish articles on technostress and work-life balance. In addition, the selection criteria include only completed research papers. Furthermore, all selected articles are determined and judged on the basis of the researcher's knowledge and guidelines that followed. Although a consensus meeting was set up, the researcher bias still presents an associated risk that should be minimized when assessing each paper's contribution.

## 4. Conclusion

Technostress creator affects both professional and private life. It can determine a reduction in job and life satisfaction and in productivity, and is often associated to the occurrence of psychological and behavioral disorders. Efforts should be made to recognize situations with a high risk of causing technostress to prevent its progressive development in a prospective way using mainly cohort studies. An organization can be a good example of an area to focus on determining the contribution of work-life balance to the system in organization. If an organization has a positive view of the technological stress on work-life balance, it will lead to a greater concern for attitude, behavior and work-life balance criteria in the organization. Limiting the research conducted also provides some direction for future research. Based on the finding, there seems to be a greater need to focus more on contributions and measurements of technostress towards work-life balance in any area.

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