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RESEARCH ARTICLE

USE OF ADAPTIVE TECHNOLOGIES, ADVANTAGES AND CHALLENGES IN HOME OFFICE

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Abstract

This article aims to emphasize the use of technology applied in the home office modality, explaining its aspects, tools used, and management of activities performed, whose main way is to explore its benefits as well as its resulting negative points in the exercise of this work model. Using research to promote such evidence, and data collection via multiple choice forms in environments surrounded by professionals who have performed or performed this function expressing the need for the adequacy of this modality, also seeks to unravel the challenges surrounding its application and external factors that can evidence or demystify its importance, factors that evidenced the need for digital inclusion of business employees and the adequacy of organizations in accordance with the labor reform in Brazil about the home office.

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Introduction:-

Information technology (IT) plays a key role in the exponential increase in the use of technologies in the home office, according to Dias (2000) who conducted a survey involving 43 companies in Brazil and their managers respectively, claim that the use of IT increases the quality of its services, facilitates the execution of tasks and improves the productivity of the team as a whole, which consequently provides better adaptation in the teleworking or home office scheme.

According to studies published by Dell (2016) the home office in addition to reducing traffic congestion, provides a reduction of pollutants in the environment due to the decrease in CO₂ emissions produced by urban transport vehicles. Studies published in Zendesk (2021), in addition to reducing traffic stress, other advantages stand out, such as: flexibility, savings for employee and company, quality of life, privacy and comfort.

According to the article published by SEBRAE (2022), negative effects were also detected, in which the possibility of extending the working day, social isolation, conflicts between personal and professional matters stand out.

Given the context caused by the SARS-CoV-2 virus pandemic (COVID-19) the home office modality gained strength and became a trend in several industries, according to a survey prepared by the Fundação Instituto de Administração (FIA) in 2020, 46% of national companies adopted the distance work model during the pandemic (MELLO, 2020).

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Once the factors that guide the home office modality are presented, the current study proposes through quantitative research and scientific basis, raising issues such as: advantages, disadvantages, and the main technologies that facilitate the adaptation of the modality.

Theoretical Reference

The distance work regime is not a new modality, the theme has been discussed since 1970. Companies such as IBM and Hewlett-Packard have been evaluating the sport since the 1990s (ROCHA and AMADOR, 2018).

According to the Report Home Office Brazil (SAP, 2016) it is estimated that five out of thirteen companies take the practice of distance work, where one in thirteen employees is home office.

According to the trend report (ZENDESK, 2021), 46% of respondents consider that they do not have the right tools to succeed at work at home, in addition approximately 35% believe that it is necessary to have the best tools to perform well.

Based on these studies, the present research was structured in 8 topics, which are:

1. Home Office Benefits
2. Disadvantages of Home Office
3. Virtual meetings or Video conferencing
4. Management of teams or activities
5. Cloud file storage and sharing
6. VPN
7. Google Forms
8. IBM SPSS Statistics

Advantages Of Home Office

The advantages identified in the research were the partial or total reduction of travel, freedom with clothing, flexibility of schedules, cost reduction, less distraction and increased productivity. Other studies point to quality of life, comfort, family proximity as advantages (SEBRAE 2020; FILARDI 2020).

Telework also adapts to other places, such as cafes, co-working environments and even restaurants. One of the advantages is to avoid spending and time with commuting and traffic jams. The possibility of being able to work from anywhere also allows greater flexibility and comfort to the worker. According to SAP Consultores Associados, 77% of professionals who perform their activities in home office say that one of the main objectives is to improve the quality of life. Another positive point for some activities is the management of the time itself according to the matter of the Secretariat of Social Communication of the Superior Labor Court (SECOM/TST, 2020).

According to the publication of the Superior Labor Court, the Labor Reform (Law 13.467/2017) introduced a new chapter in the CLT dedicated especially to the theme: it is Chapter II-A, "Telework", with articles 75-A and 75-E. According to the text, although the work is carried out remotely, there are no significant differences in relation to worker protection. The rights are the same as that of a normal worker. That is, you will be entitled to a signed wallet, vacation, 13th salary and FGTS deposits (SECOM/TST, 2020).

Home Office Disadvantages

The disadvantages addressed in the research were the effects of social isolation, increased working hours, lack of support, difficulty in progress in the career plan, impossibility of abstention due to illness or personnel and increased costs and expenses for the employee. Other studies point to the lack of infrastructure, conflict between work and personal life as a disadvantage (ROCHA & AMADOR, 2018).

There are numerous challenges that can be encountered from the employee's point of view, distractions, children, friends, isolation, procrastination, creation of work addiction, lack of support or technical support, household noises, are disadvantages that can hinder or hinder the adaptation of the home office model (M. S. Brik & A. Brik, 2013).

Another challenge is found in Article 62 of the CLT that defines in which situations the employer is not obliged to pay overtime and additional nights, among the modalities listed in the article telework is one of them, that is, due to the difficulty of effectively performing control over the employee's work day, there is no right to pay unless the

employer has a form of employer control of the journey, in this way it will be possible to recognize the additional ones according to Law No. 13,467 (2017).

Virtual Meetings Or Video Conferences

Virtual meetings or video conferences are real-time interactions that take place over the internet with integrated audio and video capabilities and private or group chat. Videoconferences are able to establish communication with anyone and anywhere, in this way facilitates the conduct of business or activities regardless of location or geographical limitations.

The methodology of videoconferences was already widespread in the business environment, for business meetings, but with the advent of the Covid-19 pandemic it also spread among school environments (Zilse, Weber & Floriani, 2021).

Team Or Activity Management

They are tools that allow the management of teams, projects and activities in an easy and practical way, allowing to maintain the demands of organized activities using mostly the Kanban methodology.

Kanban is a visual work management system, which seeks to drive each task through a predefined workflow of work (TOTVS, 2022).

Task management software is a tool that allows monitoring the status of an activity, assigning tasks to a team, sharing links, documents and information important to the completion of each task (TRELLO, 2021).

Cloud File Storage And Sharing

In a corporate environment, exchanging information and documents is common and routine. There are several collective or individual file storage platforms, making it difficult to unexpectedly lose important information and documents.

Cloud storage is a tool used for storing files and documents in an internet provider and can be used by a heterogeneous community of end recipients. The tool provides remote services such as data, software, and computing of a user on a network (Kalaiprasath, 2017). Thus, cloud storage contributes to the ease of data access, so that regardless of where the user is, it is possible to obtain data easily and quickly, so users can synchronize the data on any device with the security guaranteed by the service provider (Chandra & Hartono, 2018).

VPN

Information security should be taken into account for the home office work model, as employees often manipulate sensitive and sensitive data.

VPN is a virtual private network that allows the user to connect to a network over the Internet securely and confidentially. VPN creates an encrypted connection, known as vpn tunnel, and all internet traffic and communication is transmitted through that tunnel, ensuring data security and privacy (Alhambraitbr, 2020).

Remote access VPN allows a user to connect to a network and access its services and resources remotely. The connection is secure and private and occurs over the internet (Alhambraitbr et al., 2020).

Google Forms

Google Forms is a tool for creating and managing searches, and allows you to create questionnaires and registration forms. Developed by google, it was launched in 2018.

For Mota (2019), some of the features of Google Forms: possibility of access in any place and time; agility in data collection and analysis of results, because when answered they appear immediately; ease of use among other benefits. In summary, Google Forms can be very useful for collecting and analyzing statistical data, facilitating the search process.

The great advantage of using Google Forms for search, whether academic or opinion, is practicality in the information collection process. The author can send to respondents via e-mail, or via a link, so everyone can respond from anywhere (Mota et al., 2019).

IBM SPSS Statistics

SPSS (Statistical Package for the Social Science) is a platform with statistical modules that offers a set of features for statistical and graphical analysis with a wide range of data. Developed by IBM, its latest version is 28.0.1.

The statistical package has as main functions, the preparation and validation of data; decision trees; regression models; advanced statistical models; Tables; Trends; Categories; geospatial analysis and simulation functions (Santos, 2018).

Methodology:-

For the accomplishment of this study, a descriptive quantitative research was developed in order to better understand from the point of view of employees in home office regime the advantages and challenges faced, as well as technologies that allow a better adaptation and convenience in the execution of their daily activities.

Quantitative research becomes understandable only when opinions, problems and information are expressed in the form of numbers. It refers to the research that uses quantification both in the modalities of information collection and in the treatment of information, using statistical techniques, from the simplest to the most complex (MICHAEL, 2015).

According to Perovano (2014), descriptive studies are constituted from relational analysis of variables, which makes it possible to specify the effects generated in certain processes through analysis and identification of data or characteristics.

The search was carried out using the Google Forms tool and made available via link to the respondents, of which 60 participating employees work directly on a home office regime. Respondents work in private and public sector areas.

The questionnaire has 20 statements, divided into 3 topics: advantages, disadvantages and technologies. We used the Likert scale to verify the degree of agreement of the respondents in each of the topics mentioned.

The Advantages and Disadvantages topics were represented on the 5-point Likert scale, ranging from (1) to completely disagree to (5) completely agree. The variables obtained, used 12 of the 16 statements in the questionnaire, achieved a good internal coefficient (Cronbach's alpha coefficient), according to the data below:

1. advantage: $\alpha=0.71$ (substantial).
2. disadvantage: $\alpha=0.45$ (moderate).

The topic technologies were represented in the Likert scale of 5 points, with variation from (1) to not know the (5) optimal. Four questions were used in a multiple choice grid format of the 16 statements in the questionnaire, reaching an almost perfect reliability coefficient (Cronbach's alpha coefficient) according to the low data:

Ease of use: $\alpha=0.86$ (almost perfect).

Using the IBM SPSS Statistics software for Windows, the Cronbach's alpha coefficient of each topic was calculated, which returned the level of average correlation between items, reliability of the questionnaire and consistency of the questions.

For Lee J. Cronbach (Cronbach, 1951), founder of the research tool, the alpha coefficient is an index used to measure the reliability and internal consistency of a scale, that is, to assess the magnitude in which the items of an instrument are correlated.

The reliability classification of Cronbach's Alpha Coefficient can be represented according to the data in table 1.

Table 1:- Reliability classification of cronbach's Alpha coefficient (α).

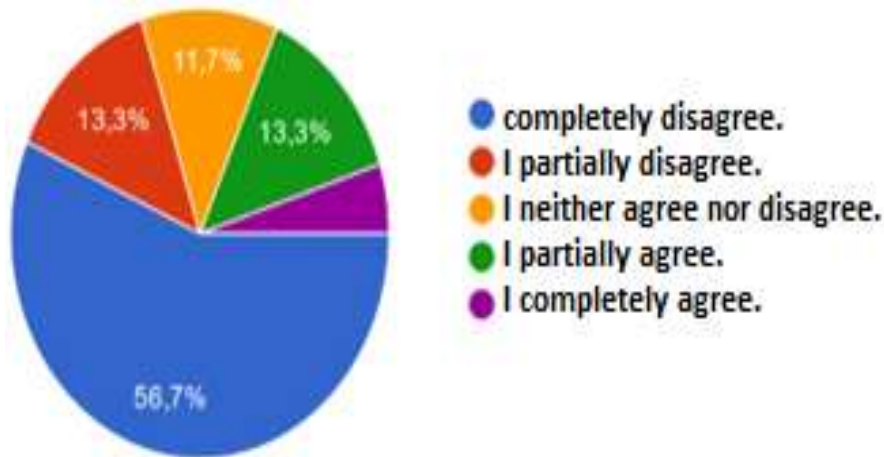
Classification	Cronbach's alpha coefficient(α)
Small	0 a 0,20
Reasonable	0,21 a 0,40
Moderate	0,41 a 0,60
Substantial	0,61 a 0,80
Almost perfect	0,81 a 1,0

Source: Landis, 2000.

Results:-

The first question addresses the social distancing or depression caused by this modality, of the 60 respondents 56.7% completely disagree that the home office modality can cause feelings of isolation or depression. In second place, the alternatives were partially agreed and I partially disagree with 13.3% each. With 11.7% the alternative does not agree or disagree appears in third place. And finally the alternative I completely agree represents 5% of respondents.

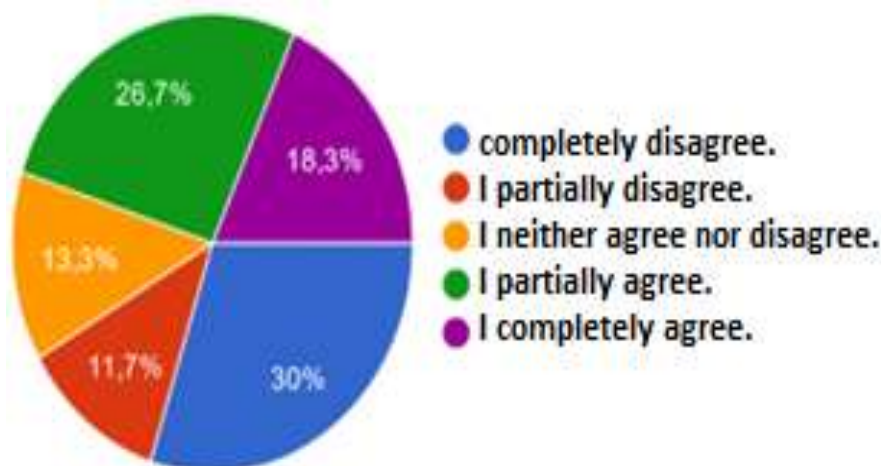
Graph 1:- Topic Disadvantages / Question: Do you feel isolated or depressed?



Source: Authors, 2022.

The second statement addresses the disadvantage related to the increase in working hours for employees in home office. 30% of the participants disagree completely and 11.7% partially disagree, while participants who do not agree or disagree represent 13.3%, however 26.7% partially agree and another 18.3% completely agree that the working day tends to continue.

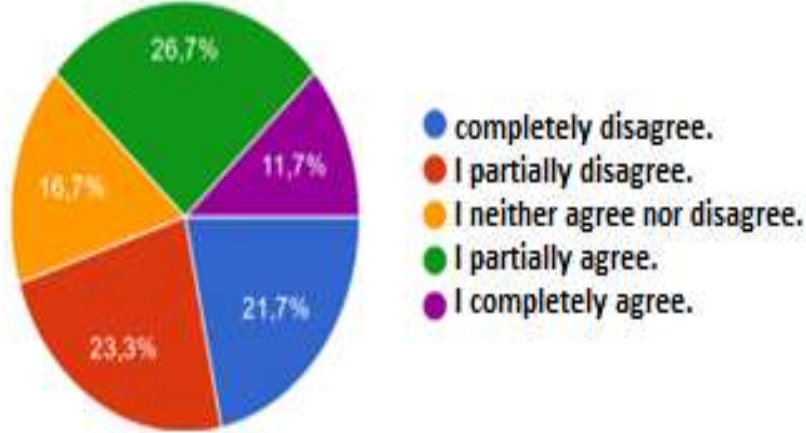
Graph 2:- Disadvantages Topic / Affirmative: Increased working hours.



Source: Authors, 2022.

The third question addresses the difficulties related to the lack of support and personal help related to the employer. First was the alternative, which partially agrees with 26.7%. Secondly with 23.3% the alternative that partially disagrees. Third, the alternative that completely disagrees was 21.7%. The alternative that does not agree or disagree appears in fourth place with 16.7% and lastly with 11.7% of respondents, they completely agree.

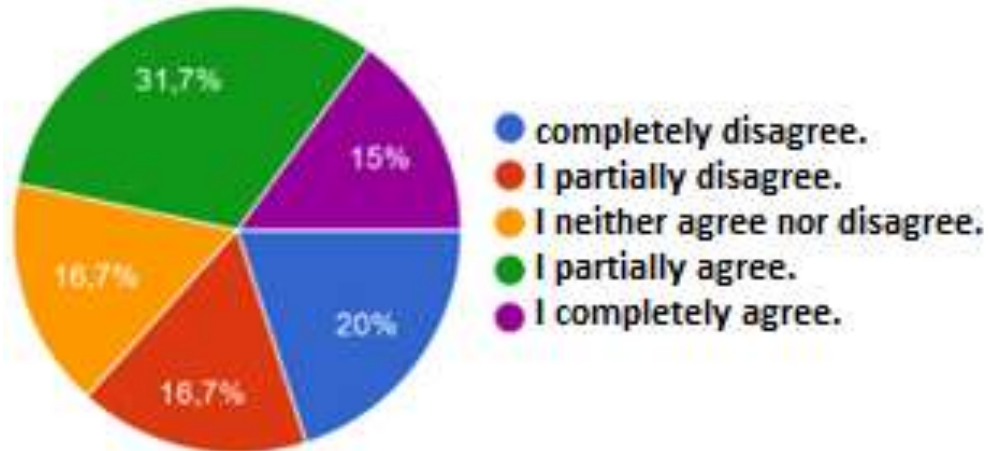
Graph 3:- Disadvantages Topic / Affirmative: Lack of support and personal help.



Source: Authores, 2022.

The fourth statement deals with the difficulty that employees working in home office can suffer to make progress in the career plan. 15% agree completely, 31.7% partially agree. On the other hand, respondents who do not agree or disagree represent 16.7% of the participants. Also with 16.7% appears the alternative that partially disagrees followed by 20% the alternative that completely disagrees that in the home office regime can hinder in some way the progress in the professional career.

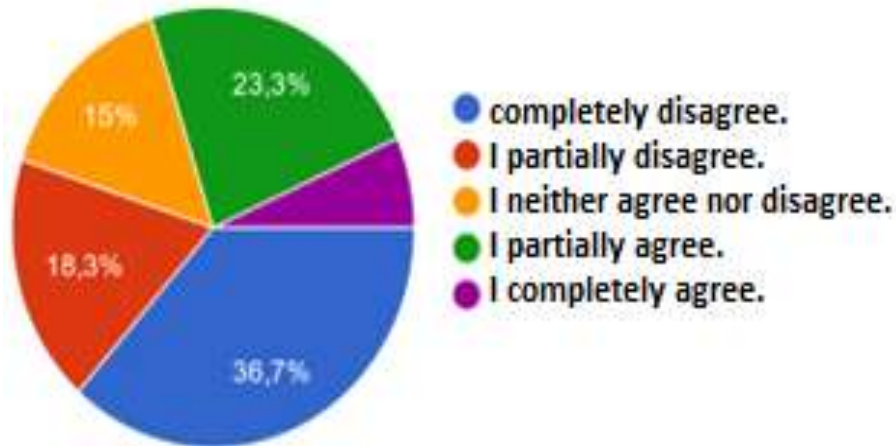
Graph 4:- Disadvantages Topic / Affirmative: Difficulty in progress in the career plan.



Source: Authors, 2022.

The fifth question addresses the impossibility of abstaining for reasons of illness or personal reasons, of the 60 respondents 36.7% completely disagree and 18.3% partially disagree, 15% of the participants do not agree or disagree, on the other hand 23.3% partially agree followed by 6.7% who completely agree to have difficulties to leave their respective activities and professional obligations.

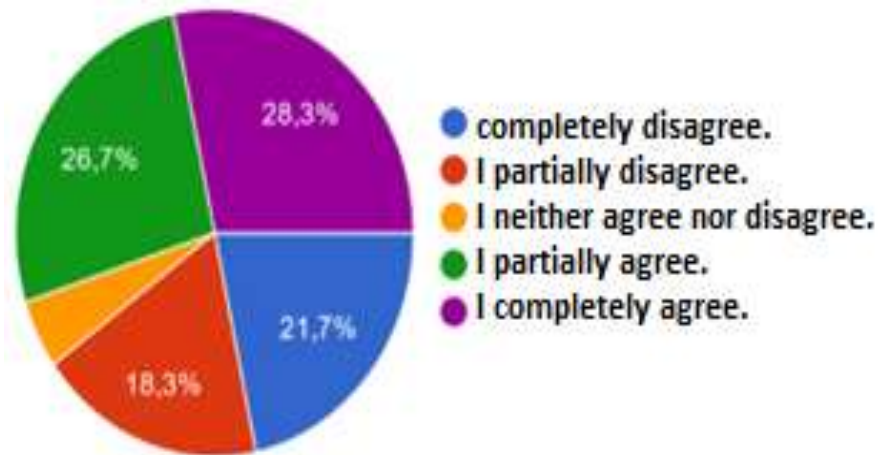
Graph 5:- Disadvantages topic / Affirmative: Impossibility of abstention for reasons of illness or personal.



Source: Authors, 2022.

The sixth statement reports problems related to the increase in costs and expenses for employees working in the home office regime. 28.3% of respondents agree completely, 26.7% partially agree, only 5% do not agree or disagree, but another 18.3% partially disagree followed by 21.7% who completely disagree that the distance work model provides an increase in costs and expenses for employees.

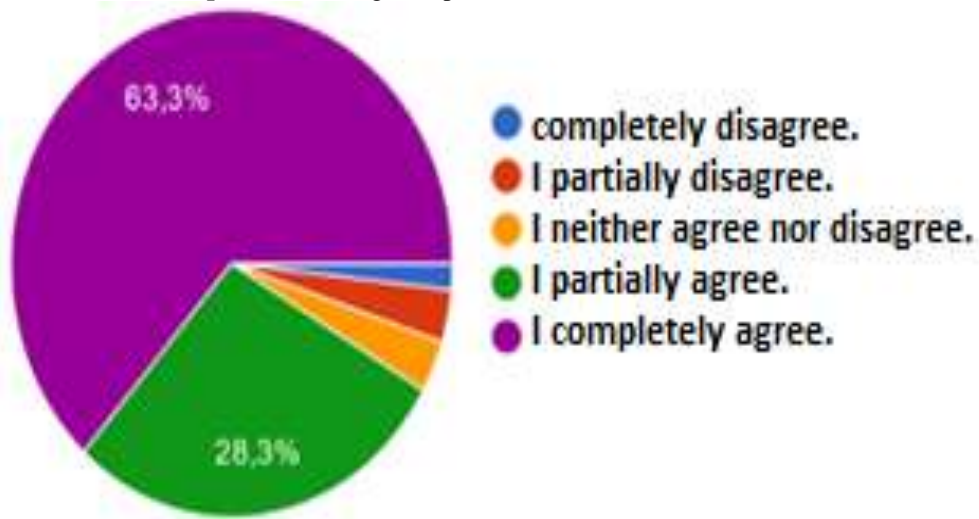
Graph 6:- Disadvantages / Affirmative Topic: Increased costs and expenses for the employee.



Source: Authors, 2022.

The seventh question is related to the advantages in the home office modality and brings as the theme the non-displacement of the employee to the employer. With a large advantage 63.3% of respondents agree completely, followed by 28.3% who partially agree. Tied with 3.3% appears the alternatives do not agree and do not disagree and partially disagree. And finally the alternative I completely disagree comes up with 1.7%.

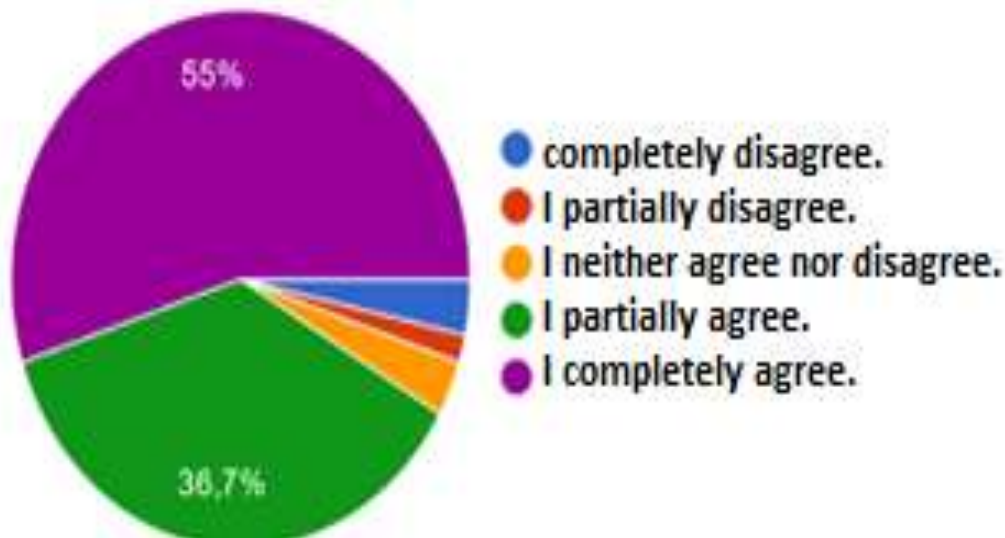
Graph 7:- Advantages Topic / Affirmative: No need to move.



Source: Authors, 2022.

The eighth affirmative addresses the advantage of freedom with clothing. With great advantage first with 55% gets the alternative completely agree. Secondly, the alternative partially agrees with 36.7%, tied with 3.3%, the alternatives do not agree or disagree and disagree completely in third place, and finally the alternative partially disagrees with 1.7%.

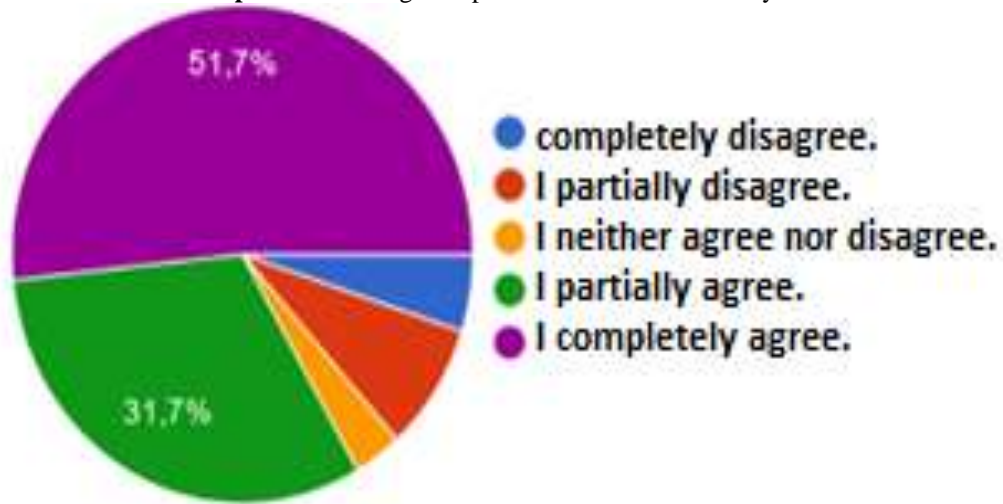
Graph 8:- Advantages Topic / Affirmative: Freedom with clothing.



Source: Authors, 2022.

The ninth question deals with flexibility as an advantage and the employee. 51.7% of the participants agree completely, followed by 31.7% who partially agree. Respondents who do not agree or disagree are represented by 3.3%, however 8.3% partially disagree with the statement, along with 5% who disagree completely.

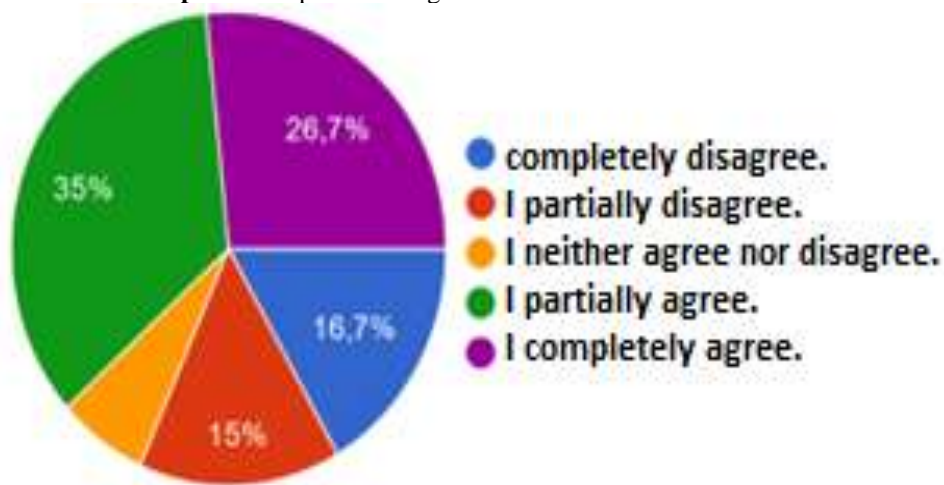
Graph 9:- Advantages Topic / Affirmative: Flexibility.



Source: Authors, 2022.

The tenth issue deals with cost reduction as an advantage. The alternative completely agreed with 26.7%, while 35% partially agree. 6.7% of the participants answered that they do not agree or disagree, followed by 15% who partially disagree and 16.7% who completely disagree.

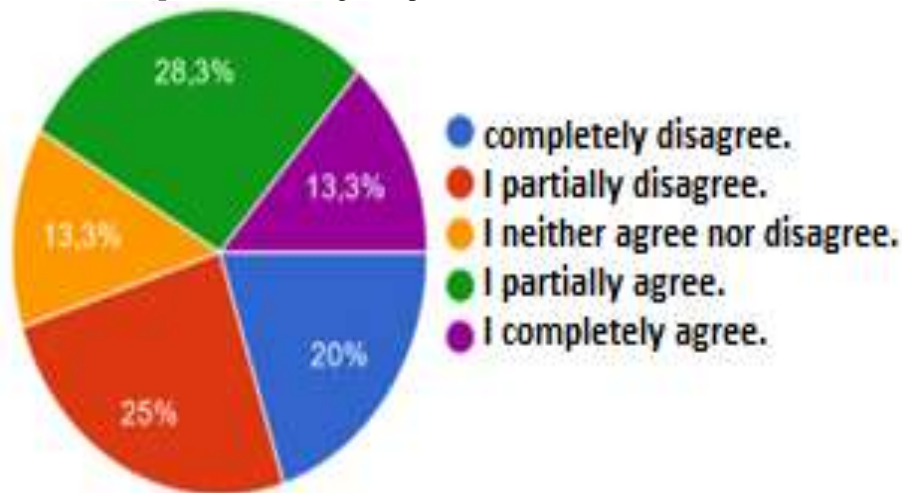
Graph 10:- Topic Advantages / Affirmative: Cost Reduction.



Source: Authors, 2022.

The eleventh question addresses as an advantage a smaller distraction, which can vary in several ways, such as: children, family, noise coming from urban areas, constructions, among others. 13.3% agree completely, already 28.3% partially agree. Neutral respondents who chose to answer that they do not agree or disagree represent 13.3%, however 25% partially disagree and 28.3% disagree completely.

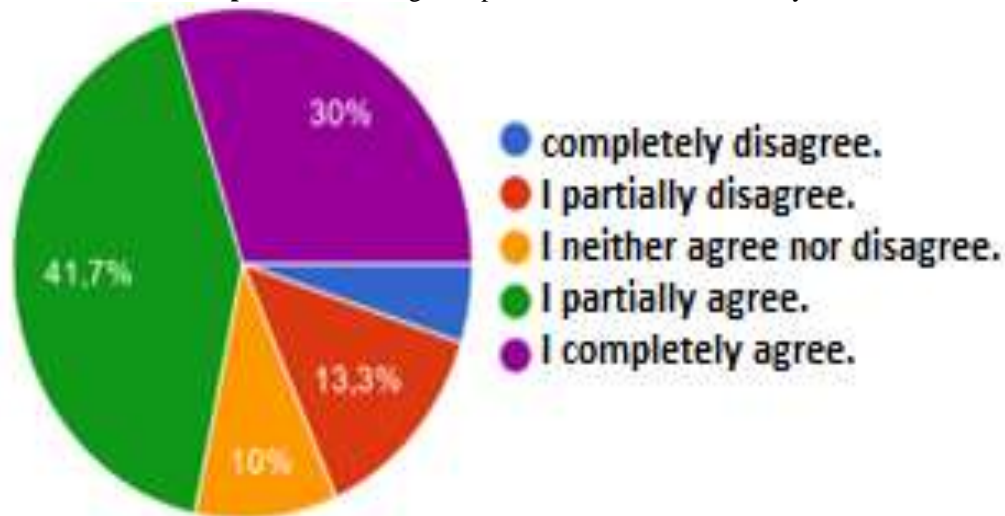
Graph 11:- Advantages Topic / Affirmative: Less Distraction.



Source: Authors, 2022.

The twelfth question addresses as an advantage the productivity that may or may not be related to clothing, flexible hours, non-commuting to the workplace, family environment, among others. According to the favorable respondents, 30% answered that they fully agree and 41.7% partially agreed. On the other hand, the participants who answered that they do not agree or disagree appear with 10%, however, 13.3% partially disagree and 5% disagree completely.

Graph 12:- Advantages Topic / Affirmative: Productivity.



Source: Authors, 2022.

The next questions were addressed in multiple choice grid, and for this reason the results will be presented and classified by software.

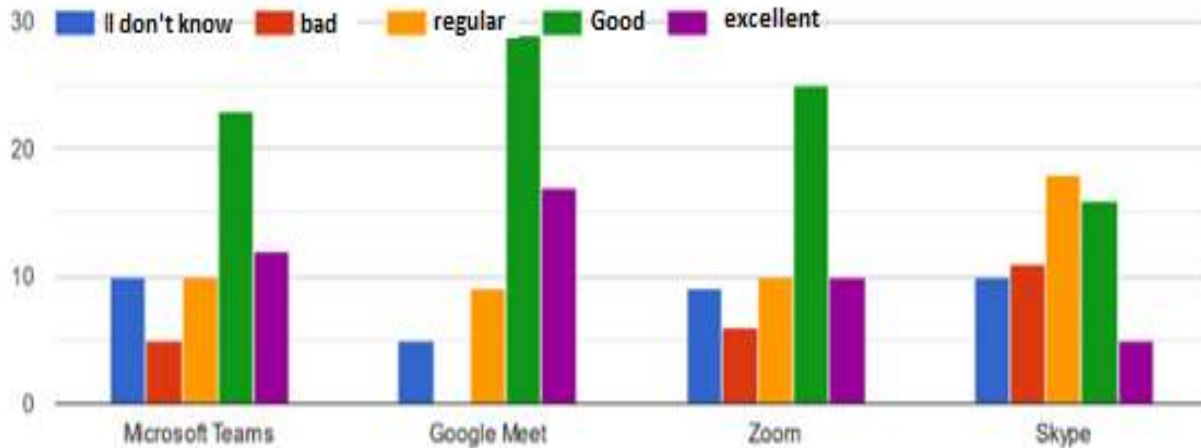
Regarding the opinion regarding videoconferencing technologies, the software was classified as follows:

Microsoft Teams, of the 60 respondents 12 find the tool great, 23 rated it as good, 10 regular, however 5 responded badly and 10 respondents claim not to know the tool.

Google Meet, 17 respondents agree that the tool is great, 29 think good, 9 regular, but none of the respondents found the software bad and only 5 claim not to know the technology.

Zoom, of the 60 respondents 10 find the tool great, 25 classify as good, 10 regular, however 6 answered as bad and 9 respondents claim not to know the software.

Skype, 5 respondents agree that the tool is great, 16 think good, 18 regular, but 11 respondents think the software is bad and 10 claim not to know the technology.



Graph 13:- Opinion on video conferencing technologies.
Source: Authors, 2022.

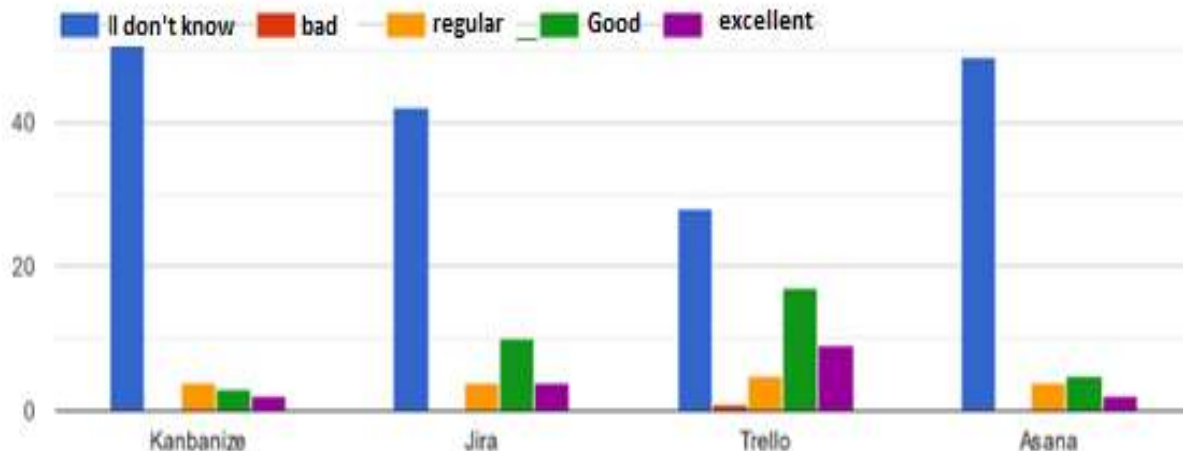
Regarding the opinion regarding activity management technologies, the software was classified as below.

Kanbanize, of the 60 respondents, 2 think the tool is great, 3 rated it good, 4 regular, however no respondent found the software bad and 51 respondents claim not to know the tool.

Jira, 4 respondents agree that the tool is great, 10 think good, 4 regular, but none of the respondents found the software bad and 42 claim not to know the technology.

Trello, of the 60 respondents 9 find the tool great, 5 classify as good, 4 regular, however 1 participant classified the tool as bad and 28 respondents claim not to know the software.

Asana, 2 respondents agree that the tool is great, 5 think good, 4 regular, no respondent found the software bad and 49 claim not to know the technology.



Graph 14:- Opinion on activity management technologies.
Source: Authors, 2022.

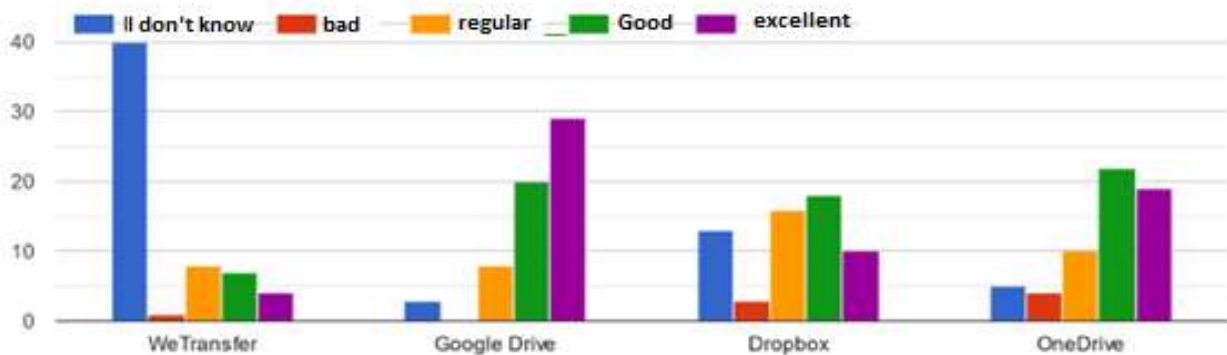
Regarding the opinion regarding file sharing technologies, the software was classified as follows:

WeTransfer, of the 60 respondents 4 find the tool great, 7 rated as good, 8 regular, however only 1 classified as bad and 40 respondents claim not to know the tool.

Google Drive, 29 respondents agree that the tool is great, 20 think good, 8 regular, but none of the respondents found the software bad and only 3 claim not to know the technology.

Dropbox, of the 60 respondents 10 find the tool great, 18 classify as good, 16 regular, however 3 responded as bad and 13 respondents claim not to know the software.

OneDrive, 19 respondents agree that the tool is great, 2 think good, 10 regular, but 4 respondents think the software is bad and 5 claim not to know the technology.



Graph 15:- Opinion on file sharing technologies.

Source: Authors, 2022.

Regarding the opinion regarding VPN security technologies, the software was classified as below.

Cisco AnyConnect, of the 60 respondents 3 find the tool great, 9 rated as good, 5 regular, however only 1 classified as bad and 42 respondents claim not to know the tool.

Akamai Enterprise Application Access, no participant classified the technology as great, 8 responded well, only 1 regular, no participant responded badly and 51 claim to be not knowing the software.

Google Cloud VPN, of the 60 respondents 5 find the tool great, 14 classify as good, 5 regular, however no participant responded bad and 36 respondents claim not to know the software.

McAfee Safe Connect VPN, 4 respondents agree that the tool is great, 13 think good, 9 regular, but 1 respondent thinks the software is bad and 33 claim not to know the technology.

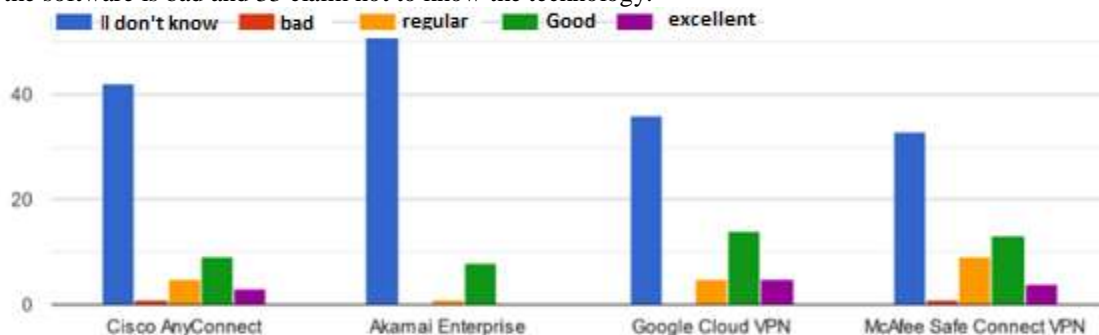


Figure 16:- Opinion on VPN security technologies.

Source: Authors, 2022.

Discussion Of Results:-

After the presentation of the results of the research, it is possible to notice the main factors faced by employees in home office regime, being challenges, benefits, and technologies more used for adaptation.

Taking into account the challenges addressed, we can highlight the increase in working hours, difficulty in progress in the career plan and the increase in costs and expenses for employees, as the main challenges according to respondents. This conclusion was possible through the mostly positive answers regarding the statements in the topic disadvantages.

With regard to the advantages of the modality, the research was able to highlight how the main factors, non-displacement, freedom with clothing, flexibility, cost reduction and productivity. This conclusion can be obtained because respondents agree partially or completely of the statements regarding the benefits of the home office benefits topic.

Regarding the technologies that help adapt the modality, video conferencing and file sharing software are among the most used. For video conferencing, respondents' preferred tools were: Google Meet and Zoom. Now addressing the solutions for file sharing stand out google drive and onedrive software. This ranking is formed by the totality of positive responses in relation to the tools.

On the other hand, the technologies of activity management and virtual private network (VPN) were the ones that proved to be few users or less knowledge by respondents. As for the activity management tools, most respondents stated that they did not know the software listed, and trello and jira software was substly highlighted. The situation is slightly better with regard to safe browsing solutions for VPNs, but far from being a satisfactory result still predominantly unknown by most respondents, Google Cloud VPN and McAfee Safe Connect VPN software stand out modestly.

Conclusion:-

In this study, we tried to explain the Home Office modality as much as the factors that imply in its application and usability, highlighting the advantages and disadvantages that can be found in the path to this task. The questions were answered according to the view of employees who worked or acted within the work model proposed by this article.

Through data collected via multiple choice forms, we can evidence that the telework modality adds benefits bringing physical, mental and emotional well-being to most employees who perform this function. It was evidenced that the telework brought satisfactory results for the collaborator due to this exercise.

There are numerous and several factors that surround the Home Office modality, a process that requires a lot of adaptation as much as the employee, seeking to exercise their obligations in a legitimate and responsible way, as well as the adequacy of the business in accordance with the law to provide a healthy and legal experience to the representatives of the proposed model.

We can conclude that the recent factors and events as mentioned above have further shown the need for the inclusion of telework today, increasingly seeking the adjustment and improvement of the modality always aiming to maintain a good relationship between the companies and employees participating in this arduous process, and that still tends to improve and grow gradually, since, regardless of the back-ups found along the way, the proposed model came to facilitate the process for both involved.

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