

Wearable Activity Technology (WAT) Is Improving Employees Health & Productivity

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Abstract - A, wearable device is a technology that can wear on the human body. These device have become a more common part of the technology world as companies have started to evolving more types of devices that are small enough and lightweight to wear and that include powerful sensors that can collect and deliver information. A wearable technology increases in the popularity day by day, developers and researchers continue to find new ways of using it. It includes heart and insulin monitors and much more ways to help businesses train, track and monitor employees. This is important for those who spend long hours sitting at their desks or remote employees that might be much less physically active. Smart watches Not only help to monitor health, but they can give you reminders when it's time to get up and be active or when you have been sitting too long. But these are just a few of the uses for wearable in the business world that can help increase productivity, manage health and save costs all together.

Key Words: Wearable device, Fitness Tracker, Wearable Technology, Wearable's, Employee health and productivity.

1.INTRODUCTION

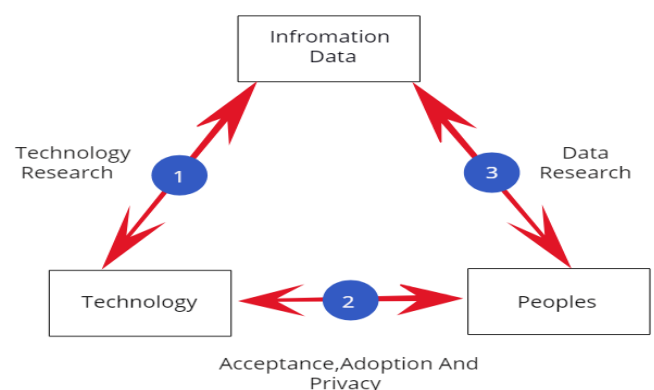
Wearable devices such as activity trackers in the area of Internet of Things (IOT) such as Hardware, sensors, software, and connectivity are effects that enable objects to exchange data via internet with a manufacturer, operator, and other connected devices, without requiring human interaction. Wearable devices have a variety of applications which grows as the field itself expands. It appears importance in consumer electronics with the popularity of the smart watch and activity tracker. Apart from commercial uses, wearable technology is being used in military, hospitals and healthcare.

When employees are provided with more resources to be better and more efficient at their jobs, their satisfaction rates increase. And when they're using wearable to stay fit and in shape and to collaborate with one another, their satisfaction rates will increase too. Healthy and productive employees are more satisfied employees. Better for employee wellness, fitness, and safety. Wearable that help employees stay active and fit will increase their overall rates of wellness and fitness and will decrease your organization's healthcare costs. Some devices will track steps taken and heart rates and will notify employees when and if they need to get moving, your

organization will have the data it needs to negotiate better rates from healthcare entities. In addition, some wearable devices will notify employees when their physical safety is at risk for instance, when they're lifting something inappropriately or sitting down for long stretches of time with terrible posture. So, you'll have fewer safety issues to handle and fewer long-term side effects that come with them.

2. LITERATURE REVIEW

Wearable Activity Trackers research based on three key elements that can define studies of information technology. The relationship between 'Technology' and 'Information' components, primarily reflects 'technology' focused studies, which have been investigated in the current literature. The WAT research situated on this axis is not particularly concerned with human interaction and instead focuses more on precision, reliability, accuracy, and the ways that WAT technological features and capabilities can be improved to better capture and represent data. The relationship between 'Technology' and the 'User', reflects the plethora of other WAT research fields which we have classified 'Acceptance and Adoption (Abandonment)', 'Behavior change', 'Medical Contexts' and 'Privacy'. The research situated on this axis concerns the interaction of technology, its design and capacities, with the user's needs, perceptions and expectations. We propose that the more existential interrelationship between people and their information needs, represents an integral research gap in the understanding, research and design of WAT. A fuller explication and discussion follow.



As opposed to acceptance and adoption research in this field, which has begun to extend WAT user interaction studies outside of lab settings, research with a technology focus has remained predominantly lab-based and short term. This growing group of experimental studies therefore lacks longitudinal perspective, and may fail to embrace the complicated ways in which devices' technological functionality effectively records and reflects users' nuanced activity in natural settings, and over time. Users may embark on a broader range of fitness activities in their daily lives (e.g., energy expenditure) than can be adequately captured and assessed through lab-based experiments alone. Further, not only might user activity be more complex in "the wild," but the same WAT can undergo changes in technological capabilities over time. For example, many wearable activity trackers provide automatic and/or manual updates to their firmware, which can change the measurement properties of the instrument over time, and consequently change the reliability and validity of its data collection and analysis mechanisms. Future technology focused research would clearly benefit from the use of longitudinal studies of WAT in natural settings, with greater recognition of how their technological features may evolve over time.

3. OBJECTIVES

1. To study the about Wearable Activity Trackers uses in employee wellness and productivity.
2. To understand advantages of the use of Activity Trackers for Employee Health and Productivity.
3. To highlight the challenges in the use of Wearable Activity Trackers.

4. WAT For Employees Wellness And Productivity

The corporate are handing out health-related rewards for wellness-related activities is a very good approach to helping create a healthy culture at work. Well Steps has a variety of employer groups who like to hand out wearable devices as incentives, or rewards for doing healthy activities. Today's wearable devices are data collection tools. Device can gather binary data on changes in movement, direction, location, and even skin temperature. The challenge for Employees health programs is how to acquire and use this data. It's quite easy: the wearable device beams data on computer website and mobile app where the employee can see what their activity rates have been, monitor their sleep, heart rate, how many steps are taken and look at calories expended in activity. Individual data is observed and used by individuals. There's two ways that this can happen. Manufacturers of wearable devices will create a s/w package called an API. This API are allowing the data from the device to be collected and managed by other software device.

These devices use different algorithms and sensors to calculate human readable metrics based on sensor output. Traditional step counters use pedometers to detect daily step counts. Although cheap and energy efficient, pedometers are not accurate as accelerometers, which is the current standard for collecting data. All modern fitness

trackers and smart watches have an accelerometer. Compared with research tools, these devices are considered less accurate for some measurements. However, they are generally less invasive, cheaper, have more functionality, are more user-friendly, and are increasingly being used in research. Most accelerometer-based fitness wearable's measure acceleration in three directions and can be used to estimate the type of movement, calculate energy expenditure (EE), count steps and energy intensity, as well as estimate sleep patterns and much more. The reliability and validity of these metrics varies. There are found high validity for steps but low validity for EE and sleep. Furthermore, they found reliability for steps, EE, distance, sleep to be high for some devices. There some wearable's have gyroscopes, barometers, magnetometers and altimeters. A gyroscope can increase device accuracy by measuring gravitational acceleration, that is, angular velocity and orientation, and better estimate which activity type a person is performing. A magnetometer is a digital compass and can be improve motion tracking accurately by detecting the orientation horizontal or vertical it of the device relative to magnetic north. Accelerometers, gyroscopes, and magnetometers are often combined into an inertial measurement unit (IMU). Most mobile phones use IMUs to calculate orientation, and an increasing number of fitness wearable's include this unit to give more accurate metrics. Barometers or altimeters detect changes in altitude and can be used to improve some metrics as well as report additional metrics PPG (Photoplethysmography) is a relatively new technique in wearable's. Photoplethysmography (PPG) is an optical technique to estimate HR by monitoring changes in blood volume beneath the skin. A LED light-emitting diode projects light onto the skin, which is affected by the HR and reflected back to the sensor. However, ambient light, tissue, movement, and compression affect the light, resulting in cleaning algorithms and signal noise often use accelerometer data to assist HR estimation. There is some evidence that gyroscopes could be used to reduce PPG signal noise, so we are likely to see more devices in the future used with PPG sensors. To further enrich the PA data collection, some devices have a built-in global positioning system (GPS) receiver. This is true for high-end fitness trackers and sports watches specifically targeting physically active people. With a GPS, it is possible to track more data, including position, speed, and altitude.

4.1 Advantage of the use of Activity Trackers for Employee Health and Productivity

1. Enhance efficiency at work

Wearable technology can make employees efficient as they can have information available on their devices without need their computer.

2. Increases workplace safety

Wearable technology can help indicate safety issues in the workplace such as stress monitoring. Fitness trackers can monitor stress levels by tracking your heart rate and also your sleep pattern, by analysing real life data will give employees information about stress.

3. Encourages employees to exercise

insurance companies or organizations may offer a reduced rate on gym memberships to encourage members to exercise.

4. Everything in on device

There is need to open an app and worry about to have enough battery even multiple apps open most trackers will automatically sync tracking activity via Bluetooth to your smart phone. it has sleep, heart rate, stress, step count trackers even it will notify mobile calls, e.g. whatsapp, facebook social networking apps notifications even it is having notification reminder that guides employee reminds meetings or its time to exercise or anything that will set by employee on the fitness tracker.

4.2. Challenges in the used of Wearable Activity Trackers

1. Wearable's are expensive.

Considering the budget per employee. it will give you activity trackers to employees free of charge or at a discount, or will the employee have to pay for full amount? purchasing activity trackers can expensive even if you get a discount for buying in bulk.

2. Wearable technology security risks.

health tracker are always connected to the internet and mobile device, this makes them more vulnerable to attacks. These gadgets are not always intact with rigorous encryption that protects personal data.

5. CONCLUSION

To summarize, wearable technologies play an increasing role in employees' lives and may have substantial utility for medical research. this research have demonstrated that fitness trackers are highly acceptable and feasible for use in a variety of applications. the integration of wearable technology into health research is still new, the field is evolving rapidly. how fitness trackers work and to educate employee that trackers are a tool to guide with goal-setting, self-monitoring. Employee may benefit from a reminder that the tracker alone will not be sufficient to initiate and sustain behavior change but that it can provide substantial assistance in helping the employees to understand his or her current activity level and track progress over time. Employees also need to understand that trackers are generally accurate enough to be useful for these purposes. Thus, they are ideally suited for use in an iterative process of behavior change in which user observe their current level of activity, set a somewhat higher goal, achieve and sustain that goal, and repeat this cycle until the eventual goal is reached.

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