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Perception of Engineering and Science Students on Smartwatch Gadget Usage

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Abstract

Smartwatches are the foremost well-known wearable gadget and progressively subject to experimental inquire about. In later a long time, the center has moved from uncovering determinants of smartwatch selection to understanding components that cause long-term utilization. The smartwatch usage is especially gaining much importance in the college going students due to the associated attractive inbuilt beneficial features. Based on this background, the present study was emphasized on understanding the perceptions of college going students in terms of assessing Knowledge, Attitudes and Practice (KAP) on the utilization of smartwatches in day to day life. The investigation was conducted in the two main streams of engineering and sciences with the sample size of 60 members each and thus had the total sample size of 120 students. Structured questionnaire was employed to evaluate the levels of KAP as low, moderate and high and accordingly data was interpreted. The findings clearly revealed that the levels of KAP found to be better in engineering students than science students but the differences calculated were not differed significantly. The overall mean scores calculated from the students of both streams had expressed with moderate levels of knowledge, attitudes and practices components. Efforts on raising the awareness among the students might be helpful to understand the various features in depth and extend the utilization of benefits to the maximum extent.

Keywords: *Smart watch, Gadgets, Engineering students, Science students, Perceptions*

Introduction

Electronic product performance has altered as a result of recent technical advancements. Similar to how regular phones have evolved into smartphones, watches have also evolved into smart watches. Customers are significant because they may utilize word-of-mouth and online reviews to influence the attitudes of other potential customers and to aid in the promotion of companies. The modern customer is too astute to purchase their needs through indirect ways. Consumer preferences are what motivate customers to buy particular products—they include their expectations, likes, stimulation, and tendencies. The social media has greatly increased public awareness of smart watches. According to the study's findings, new features and customer satisfaction are the primary factors influencing purchases of smart watches. Despite the growing demand for smart watches of different kinds, the manufacturer only takes a few proposals into account. To make its product more appealing and draw in potential buyers, the corporation must work to improve its features and alter its appearance [1].

Wearable technology, or WT, refers to hands-free smart electronic devices that may be attached to the body as accessories or integrated into clothes. Wearable technology is a commonplace device known as a smartwatch (SW). It functions similarly to a smartphone and is comparable to a traditional wristwatch. These functions include phone calls, text or video messaging, GPS guidance, internet access, weather updates, health and physical fitness data, and more. The market for SWs and wearable technology is growing daily. Activity trackers, heart rate monitors, temperature, and hydration levels are all monitored via flexible patches, smart watches, and fitness bands that assess the user's sleeping patterns. These devices receive information in real time through integrated onboard sensors and interpret the collected information [2, 3].

Wearable technology, smartwatches are meant to be your smartphone's buddy, gathering health data and making alerts easier to access. Additionally, they may now be customized and worn as a fashion statement. Recently, this combination produced startling adoption rates, raising the question of whether wristwatch users' preferences and levels of usage pleasure stem from the device's functional qualities or from its fashionable aspects. The smartwatch industry is predicted to reach over 100 billion dollars by 2027, having surpassed 20 billion dollars in 2019, according to Allied industry Research. Because of the high perceived value of this wearable technology, researchers have worked extremely hard in recent years to look at a variety of its features, including its hardware, advertising strategies, and usefulness [4, 5].

Methodology

The present young generation college going students are being changed in their lifestyle pattern that are mostly ready to adopt the advanced technologies owing to the ease, convenience and various interesting beneficial options. Dressing including accessories occupy prominent place among the college going students reflecting their personality. Smartwatches nowadays are gradually attracted by the college going students and replacing the conventional wearing wrist style due to the several associated utilitarian functional smart features. The literature on the smartwatch utility and perceptions on the usage is not being widely explored and hence the current investigation was focused on the Knowledge, Attitude and Practices (KAP) levels among college going students.

The research was conducted at Sri Padmavati Mahila Visvavidyalayam, Tirupati in Andhra Pradesh by purposefully choosing the two main streams viz., engineering and sciences students. Random sampling technique was followed in the selection of the sample with 60 students each and thus the total sample comprised 120 students. The study intended to understand clearly on the perceptions among the engineering and science students by evaluating knowledge, attitude and practices (KAP) on smartwatch usage.

Structured questionnaire was framed to collect information, interpret and assessed the levels as low, moderate and high. Each section comprised of five questions and the responses were obtained analyzed for each question which had scores based on the intensity of agreement as strongly agree (4), agree (3), neither agree nor disagree (2), disagree and strongly disagree (0). Based on the total score, the students were categorized into low (0-6), moderate (7-13) and high (14-20) while interpreting the data on KAP values in terms of frequency, percentage, mean scores and differences calculated for the levels of significance.

Results And Discussions

The frequency and percentage distribution of engineering students, science students and the total sample was obtained and presented in table no-1.

Table No-1: Frequency and percentage distribution of the college going students based on the levels of knowledge

S.No.	Knowledge level	Engineering students		Science students		Total	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
1	Low (0-6)	9	15.0	15	25.0	9	7.5
2	Moderate (7-13)	37	61.7	40	66.7	37	30.8
3	High (14-20)	14	23.3	5	8.3	14	11.7
Total		**60**	**100.0**	**60**	**100.0**	**60**	**100.0**

The data from the table revealed that one fourth of the science students (25.0%) had low knowledge levels on the utilitarian aspect of smartwatches and lower percentage was observed among engineering students (15.0%). Regarding moderate knowledge levels also, the science students scored higher (66.7%) than engineering students (61.7%). The import point was to be highlighted that nearly one fourth of the engineering

students (23.3%) expressed with high knowledge levels on the smartwatches usage. But, the percentage of high knowledge level was relatively lesser of below one tenth among science students (8.3%) against their engineering counterparts.

The overall students about 7.5 per cent only had low knowledge level indicating the familiarity to some extent among the college going students studied in both the streams. Majority of the students had moderate knowledge level and the remaining 11.7 per cent of students found to be fall under high knowledge category. The findings thus implicated that in spite of the popularity, stills the gap existed on the confident usage of smartwatch gadgets in the both streams with slightly better scores in engineering students.

The mean knowledge scores were calculated separately the three categories of low, moderate, high and also in the total sample. The differences were also assessed between engineering and sciences students using t-test and the corresponding mean scores were represented in table no-2 along with statistical inferences.

Table No-2: Mean knowledge scores among college going students based on the levels of knowledge

S.No.	Knowledge level	Engineering students Mean ± SD	Science students Mean ± SD	t-Value	P-Value	Total Mean ± SD
1	Low (0-6)	3.78 ±1.20	3.87 ±1.13	0.1827	0.8567 ^{NS}	3.83 ±1.13
2	Moderate (7-13)	9.00 ±1.62	9.45 ±1.84	1.1368	0.2593 ^{NS}	9.23 ±1.74
3	High (14-20)	17.29 ±1.68	16.60 ±2.07	0.7381	0.4705 ^{NS}	17.11 ±1.76
Total		10.15 ±4.64	8.65 ±3.80	1.9377	0.0550 ^{NS}	9.40 ±4.29

The observations from the table denoted that mean scores of science students was slightly more than engineering students both on low and moderate levels of knowledge but the difference was not significant statistically. The mean score on knowledge category was 3.78 ±1.20 and 3.87±1.13 and in the moderate knowledge category were 9.00 ±1.62 and 9.45 ±1.84 respectively in engineering and science students. On contrast, the knowledge score on high category was greater in engineering students (17.29 ±1.68) than sciences students (16.60 ±2.07) but seemed to be not differed significantly.

The overall mean knowledge score was observed as higher among engineering students (10.15±4.64) than science students (8.65 ±3.80) but the differences between the two streams were not significant statistically. The mean knowledge score among the total college going students studied in the low category was 3.83±1.13, moderate category with 9.23 ±1.74 and high category with 17.11±1.76 respectively. The overall mean knowledge score was noticed as 9.40 ±4.29 denoting that the mean value was fall under moderate category.

Table No-3: Frequency and percentage distribution of the college going students based on the levels of attitude

S.No.	Attitude level	Engineering students		Science students		Total	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
1	Low (0-6)	3	5.0	8	13.3	11	9.2
2	Moderate (7-13)	38	63.3	36	60.0	74	61.7
3	High (14-20)	19	31.7	16	26.7	35	29.2
Total		**60**	**100.0**	**60**	**100.0**	**60**	**100.0**

The results from the table indicated that the selected college going students (13.3%) had better attitude towards utilization of smartwatches as evidenced minimum percentage of low category (9.2%), majority of them had moderate attitude (61.7%) and substantially good number of students had high attitude on smartwatch usage. The findings thus well demonstrated that the college students were ready to accept for the use of smartwatch with positive attitude.

Comparatively, the science students had more of low attitude category than the engineering students (5.0%) which was an indication of much better opinion on smartwatches among engineering stream rather than science stream. The moderate and high attitude categories were found to be much better among engineering students (63.3, 31.7%) than science students (60.0, 26.7%).

The mean attitude scores in engineering and science students were presented in table no-4 for the three different categories of low, moderate and high attitude and correspondingly the total sample also in the respective categories. The differences were also analyzed between engineering and science students using t-test and represented in the same table.

Table No-4: Mean attitude scores among college going students based on the levels of attitude

S.No.	Attitude level	Engineering students Mean ± SD	Science students Mean ± SD	t-Value	P-Value	Total Mean ± SD
1	Low (0-6)	3.00 ±1.00	4.50 ±1.20	1.9188	0.0872 NS	4.09 ±1.30
2	Moderate (7-13)	9.18 ±1.80	8.47 ±1.18	2.0000	0.0493 NS	8.84 ±1.56
3	High (14-20)	16.68 ±1.89	16.44 ±2.13	0.3635	0.7186 NS	16.57 ±1.97
Total		11.25 ±4.34	10.07 ±4.35	1.4913	0.1386 NS	10.66 ±4.37

The observations from the table clearly showed that the better opinion on the usage of smartwatch gadget were identified among engineering students with higher mean scores in moderate (9.18±1.80) and high attitude (16.68±1.89) categories. The mean scores among the science students were 4.50 ±1.20, 8.47 ±1.18 and 16.44 ±2.13 respectively in the three respective attitudinal categories. Whatever the differences might be the mean scores between engineering and science students were not differed statistically. The overall mean attitudinal scores were 4.09 ±1.30, 8.84 ±1.56 and 16.57 ±1.97 respectively in the respective categories of low, moderate and high. The overall mean scores in engineering students (11.25±4.34) were slightly higher than science students (10.07±4.35). The mean score among the total subjects was 10.66 ±4.37 denoting that on an average the college students had moderate attitudes towards smartwatch usage. The frequency and percentage distribution of practices on application of smartwatches in the daily activities among the engineering and science students in the three different categories was presented in table no-5. The level of significance was evaluated through t-test between engineering and science students and the results were represented in the same table.

Table No-5: Frequency and percentage distribution of the college going students based on the levels of attitude

S.No.	Practices level	Engineering students		Science students		Total	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
1	Low (0-6)	16	26.7	22	36.7	38	31.7
2	Moderate (7-13)	38	63.3	35	58.3	73	60.8
3	High (14-20)	6	10.0	3	5.0	9	7.5
Total		**60**	**100.0**	**60**	**100.0**	**60**	**100.0**

The important point was to be emphasized that in spite of better knowledge and attitude on smartwatch utility, the practice component seemed to be slightly lower being reflected by more of low practices (31.7%) category and less percentage of high category (7.5%). Yet, the moderate usage was noted as observed by the substantial number of college students were using smartwatches moderately about 60.8 per cent.

The practice component found to be better among the engineering students than science students as evidenced by lesser percentage of low category (26.7%) and higher percentage of moderate (63.3%) and high practice (10.0%) categories. The mean practice scores among science students were 36.7, 58.3 and 5.0 per cent respectively in the respective categories.

Table No-6: Mean practice scores among college going students based on the levels of practice

S.No.	Practice level	Engineering students Mean ± SD	Science students Mean ± SD	t-Value	P-Value	Total Mean ± SD
1	Low (0-6)	3.50 ±1.21	3.64 ±1.14	0.3554	0.7244 ^{NS}	3.58 ±1.15
2	Moderate (7-13)	9.21 ±1.76	9.00 ±1.53	0.5432	0.5887 ^{NS}	9.11 ±1.65
3	High (14-20)	17.00 ±1.79	16.00 ±1.00	0.8819	0.4071 ^{NS}	16.67 ±1.58
Total		8.47 ±4.13	7.43 ±3.68	1.4477	0.1504 ^{NS}	7.95 ±3.93

The mean practice score was found to be better in the engineering students than science students with lesser mean score of low category (3.50±1.21) and greater mean scores of moderate (9.21±1.76) and high practices scores (17.00±1.79) than science students. The mean scores in the sciences students were 3.64±1.14, 9.00±1.53 and 16.00 ±1.00 respectively in the respective categories. The differences evaluated between engineering and science students did not differed significantly.

The overall mean scores among the total subjects denoted as 3.58 ±1.15, 9.11±1.65 and 16.67±1.58 respectively in the respective three categories. The mean practice score among the engineering students was observed as 8.47 ±4.13, in sciences students as 7.43 ±3.68 which showed not much significant differences with the overall mean score of 7.95 ±3.93. The overall mean values both in engineering (8.47±4.13) and sciences students (7.43±3.68) fall under moderate practice category.

The use of “smart wearable technologies” or “wearable gadgets/gadgets” has currently improved exponentially [6]. Wearable gadgets are available 431 distinct forms, such as fitness/well-being trackers, smartwatches, clever glasses, faraway headsets, clothing, bracelets, rings, necklaces, and more [7] and are utilized in diverse industries, such as entertainment, fitness, medical, gaming, industrial, and way of life sectors. Smartwatches, the maximum not unusual place sort of wearable gadgets, provide lots of capabilities and responsibilities to its customers, such as timekeeping, song streaming, speaking with friends, receiving notifications, and making telecell, smartphone calls [8]. They also can foster a healthful way of life via way of means of encouraging customers to consume accurately and workout on an everyday basis [9].

Conclusion

Smartwatches are exceedingly advanced within the data and communications innovation industry for their numerous capacities that intrigued clients, such as notices that are synchronized with smartphones and other applications; smartwatches can moreover offer persistent information checking capacities, such as step-counting, heart rate following, vitality utilization as well as physical movement observing, which can advance wellbeing. The investigations have affirmed the positive impacts of smartwatches on preventive healthcare and self-management for unremitting infections; they can moreover work as a device advertising real-time wellbeing data to healthcare experts. The initiatives from the professionals to educate the students on the simple tool of smartwatch usage to integrate the academics and monitoring the health may fetch wider benefits to the students.

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