Submission by: Havi Bohra (210429)*,* Sourav Sharma (211055).

Research Questions:
1. What do people expect from smart-watches?
2. What do people miss about smart-watches compared to analog ones?
3. Is smart-watch more burdensome to a person?
4. What are the key challenges with smart-watches?
5. Will smart-watch replace the analog ones?

Data gathering method:

We conducted semi-structured interviews focusing on smartwatches. Our approach involved preparing a set of fundamental questions, including an introduction, overview, consent, detailed inquiries, and closing questions.

Additionally, we asked a few followup questions. We engaged with two participants, both female students, and the interviews lasted nearly 25 minutes each. Notably, one participant regularly wore a smartwatch, while the other preferred an analog watch, and that even occasionally.
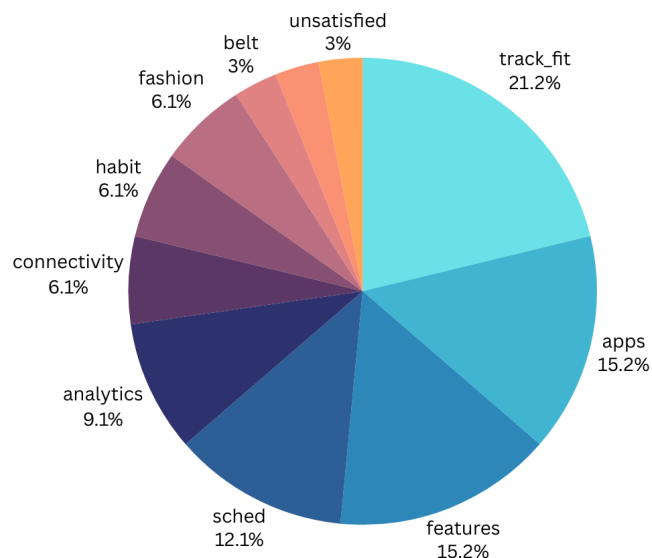
Data analysis method:

First of all, we have again gone through both interview notes. After which, we read our research questions again and restructured and unitized the interview notes, on the basis of their relevance to the research questions.

We collaboratively crafted a unified codebook, ensuring that each code corresponded to the pertinent sections of the interview. Initially, we formulated 21 codes, engaging in discussions to refine them. Ultimately, after consideration, we settled on a comprehensive set of 24 codes to annotate and analyze our interview notes.

Results:

Here are the conclusions based on our analysis, in order of research questions:
1. According to our analysis, a notable expectation from smartwatches is their capability for fitness and health tracking, which can be seen in 21.2% of the codes (see figure below prepared using coded data). Also, participants emphasized other features and applications catering to music, scheduling, and reminders.
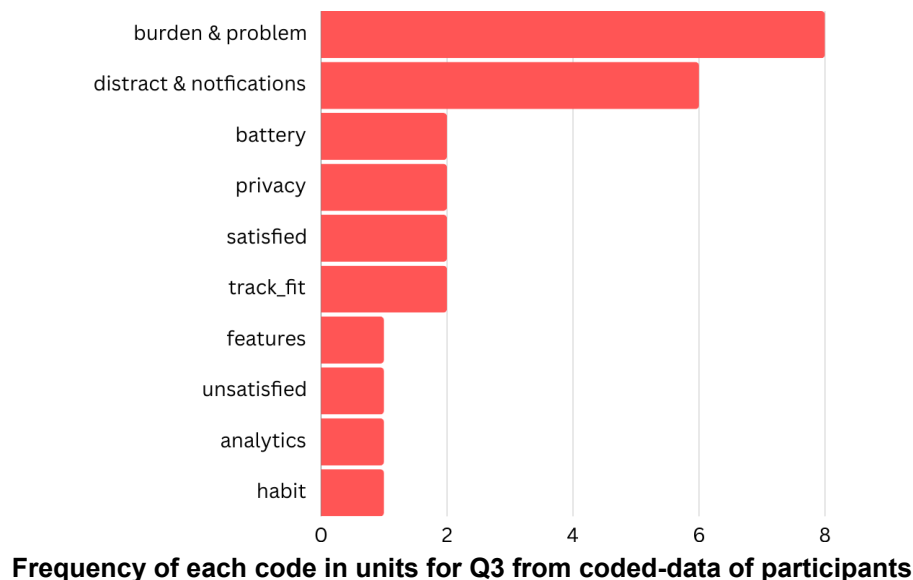

Percentage of each code in units for Q1 from coded-data of participants

2. Regarding the perceived shortcomings of smartwatches compared to analog ones, it can be stated that smart-watches are lagging in terms of style and comfort features. Participant 2 even mentioned, "I had rashes on my wrist, when I first used the smart-watch and they didn't cure until I changed the wrist belt."

   Additionally, concerns about privacy and security, particularly regarding sensitive health data are there. Participant 1 suggested, " Respective companies should ensure privacy for their customers properly.".

3. In assessing the burden of smartwatches on individuals, our analysis identified that most biggest (see figure below prepared using coded data) concern is centered on the distractions of notifications and calls interrupting important tasks, such as attending classes. Divergent opinions were noted regarding charging cycles, reflecting varying perspectives on the issue, hence there are responses of code *satisfied* too.

Frequency of each code in units for Q3 from coded-data of participants

4. Key challenges associated with smartwatches, from our analysis, include concerns about their:
   ● Aesthetics (Fashion, Style and Comfort),
   ● Privacy implications regarding health data,
   ● Charging cycles and Battery life,
   ● Difficulty in adoption for older generations.

5. Both participants concurred that while smartwatches have made significant inroads into the market, they are unlikely to entirely supplant analog watches. This sentiment was rooted in the recognition of additional roles analog watches play, such as fashion accessories, antique collections, or even as jewellery, as emphasised by both participants multiple times during the interview.

Limitations:
- **Small Sample Size**: Interviewing only two participants, both of whom were girls, might not provide a representative sample of the larger population. The opinions and experiences of these two individuals may not reflect perspectives that exist among smartwatch users.

- **Lack of Diversity**: As both participants were from similar demographic backgrounds, the research lacked diversity. Different groups of people may have varied experiences and perspectives on smartwatches.

- **Generalisation Issues**: The findings from such a small sample may not be generalizable to a larger population. The experiences and opinions of these two participants may not reflect the views of other smartwatch users, especially those with different demographics or preferences.

Possible improvements:
- **Increasing sample size** and including participants from **diversified demographics**
- Should consider the technological familiarity of participants in demographics too.

APPENDIX
a. Initial list of interview questions (from HW1):
- Can you tell us a bit about yourself and your daily routine?
- Do you like wearing watches?
- What is the primary reason for wearing watch?
- Which kind of watch do you wear or like to wear (smart or analog) ?
  If Smart Watch or Both:
    - What motivated you to get a smartwatch?
    - Do you prefer smart watches over analogue ones? and why?
    - Are there specific features or apps on your smartwatch that you find most useful?
    - What are the challenges you face while wearing a watch? (e.g. battery life, charging, connectivity, notifications, distractions, etc.)
    - Do you use your smartwatch for fitness or health tracking? If yes, which features do you find most beneficial?
    - Have you noticed (or do you think) any positive impacts on your health or fitness routines due to the smartwatch?
    - Have you noticed any general trend or perception of smartwatches among your peers? What do you think about it?
    - Do you think smart watches can help with learning? If yes, how?
    - Are there specific improvements or new features you would like to see in future smartwatch models?
    - Do you think smartwatches will continue to play a significant role in your life in the coming years?
    - How concerned are you about the security and privacy of your data on the smartwatch?
    - What measures do you take to ensure the security of your smartwatch?
    - In your opinion, how has owning and using a smartwatch impacted your daily life?
  If Analogue Watch or Both:
    - Do you wish to buy a smartwatch in future?
    - Do you think analog watch is better than smart one? and why?
    - Do you feel that your analog watch meets all your needs?
    - If you were to add some features to analog watch, what would you like to add?
    - Have you ever considered trying a smartwatch, even if just out of curiosity?
    - How important are the style and aesthetics of the watch to you?
    - Do you believe that analog watches offer a unique sense of fashion?
    - Do you know about fitness and health tracker related features in smartwatches? If yes, what do you think about it?
    - Have you noticed any general trend or perception of smartwatches among your peers? What do you think about it?
    - Can you think of a scenario where you might consider switching to a smartwatch in the future?
    - Do you think smart watches can help with learning? If yes, how?
    - Do you think that in some years, smartwatches will be very common and will replace analog watches? and why?
    - In your opinion, how does owning and using a smartwatch impact one's life?
- Would you recommend a smartwatch to your parents and grandparents, and why?
- Would you recommend a smartwatch to your peers, and why?
- Would you recommend a smartwatch to your next generation, currently in schools, and why?
- Do you want to ask anything or give us any feedback?

b. **Final Codebook, Coded-data of each participant per interviewer, IRRs of units:**
Can be seen in the pages below, and for a more interactive view, one can follow the link:
📗 Assignment2
Note: For calculating IRR in each unit, we coded each line of responses and then put the corresponding $N(c1 \cap c2) / N(c1 \cup c2)$ in front of it. Just below each unit, we took the sum of the numerators in the above expression and divided it by the sum of the denominators in the above expression.

c. **Overall IRR computation:**
IRR averaged over all 10 units(5 per participant) comes:
(15/19 + 8/10 + 12/15 + 13/16 + 9/10 + 15/18 + 9/10 + 11/13 + 18/22 + 6/8) / 10 = **0.8250**
Hence, a notable IRR of **82.50 %** was achieved.

d. **Negotiated Codes:**
As our IRR **82.50 %** is already in the good range (above 80%)**,** we already had most of the codes the same. In the Codebook itself (please see in the page below), we made a column counting no. of times of a code was negotiated. Clearly, *problem, features* and *unsatisfied* , were the most debatable codes.
Also, we do not had any un-negotiated code.

Code Name	Description	Examples	Negotiated no. of times
track_fit	tracking of fitness and health	foot-counts	2
apps	apps available in smart-watch	calls, spotify.	0
sched	scheduling features and applications	lists, alarms.	2
fashion	fashion and style		1
analytics	Analytics from various apps		0
privacy	Security and personal data privacy		0
battery	Charging and battery life		0
belt	wrist belt of watch		0
distract	Distractions due to notifications and other things		0
features	features in smart watches		3
antique	Antiqueness of watch		0
problem	problem or issue		4
replace	In favor of smart watch has/will replace analog ones		2
not_replace	Not in favor of smart watch has/will replace analog ones		1
satisfied	expressing satisfaction with smart-watch on something		1
unsatisfied	expressing dissatisfaction with smart-watch on something		3
smart	prefers /pros of smart watch		0
analog	prefers /pros of analog or cons of smart		1
comfort	Comfortness in wearing watch		1
connectivity	Connectivity of smart-watch		0
hard	Difficulty in using or understanding smart-watch		1
notification	Notifications in smart-watch		1
habit	Habit / routine formation		0
burden	Burden / frustration in using smart-watch		2

Units	Participant 1	Sourav's Codes	Havi's Codes	IRR	Agreed Final Codes
	What do people expect from smart-watches?				
1	Use for- spotify, tracking fitness, scheduling task, style, fashion scene, calling someone, trends,	track_fit, apps, fashion, sched	track_fit, sched, fashion, apps, features	4/5	track_fit, sched, fashion, apps, features
	fitness apps, health improvements , to do list, calander, seeing time	track_fit, apps, sched, features	track_fit, sched, apps, features	4/4	track_fit, sched, apps, features
	It can't help in learning, fitness analytics wouldhelp in taking health precautions	hard, analytics, unsatisfied	track_fit, analytics, unsatisfied	2/4	track_fit, analytics, unsatisfied
	footsteps count, physical maintainence, forms habit	habit, track_fit, analytics	track_fit, habit, analytics, features	3/4	track_fit, habit, analytics, features
	access mobile apps, calls, connect my phone,	apps, connectivity	apps, connectivity	2/2	apps, connectivity
				15/19	
	What do people miss in smart-watches compared to analog ones?				
2	Better Style, Better fashion,	fashion, unsatisfied	fashion, unsatisfied	2/2	fashion, unsatisfied
	People who likes antique things prefer analog watch, privacy, security,	antique, privacy, analog, unsatisfied	antique, analog, privacy, fashion, problem, unsatisfied	4/6	antique, analog, privacy, fashion, problem, unsatisfied
	it's not party wear,	fashion, unsatisfied	fashion, unsatisfied	2/2	fashion, unsatisfied
				8/10	
	Is smart-watch more burdensome to a person?				
3	No, fitness analytics would help in taking health precautions	analytics, track_fit, satisfied	track_fit, analytics, satisfied	3/3	track_fit, analytics, satisfied
	yes, It will causes distraction during classes	distract, problem	distract, problem, notfication	2/3	distract, problem, notfication
	Security and privacy are also a problem, companies should ensure privacy to customers in a better way	privacy, problem, features	privacy, problem, unsatisfied	2/4	privacy, problem, features, unsatisfied
	Charging is not an issue, it has to be done,	battery, satisfied	battery, satisfied	2/2	battery, satisfied
	extra burden to silent it before classes	burden, notification, distract	burden, notification, distract	3/3	burden, notification, distract
				12/15	
	What are the key challenges with smart-watches?				
4	Charging is not an issue, it has to be done,	battery, satisfied	battery, satisfied	2/2	battery, satisfied
	Security and privacy are also a problem, companies should ensure privacy to customers in a better way	privacy, problem	privacy, problem, unsatisfied	2/3	privacy, problem, features, unsatisfied
	will not recommend to people of older generation as it is hard to learn unless they are willing to	hard, burden	hard, burden	2/2	hard
	Most of the people are just using for seeing time and carrying in peer pressure, they do not use its feature	features, satisfied	features, unsatisfied	2/3	features, satisfied
	Very limited styles available in smart watches	fashions, unsatisfied	fashion, analog, unsatisfied	2/3	fashion, analog, unsatisfied
	yes, It will causes distraction during classes	distract, problem, notification	distract, problem, notfication	3/3	distract, problem, notfication
				13/16	
	Will smart-watch replace the analog ones?				
5	Smart watch has replaced largely analog watches	smart, replace	smart, replace	2/2	smart, replace
	I see very few people wearing analog watches these days	smart, replace	smart, replace	2/2	smart, replace
	People prefer buying smart watches when buying new one	smart, replace	smart, replace	2/2	smart, replace
	Only antique likers prefer analog watches	antique, analog, not_replace	analog, not_replace, antique, replace	3/4	analog, not_replace, antique, replace
				9/10	

Units	Participant 2	Sourav's Codes	Havi's Codes	IRR	Agreed Final Codes
	What do people expect from smart-watches?				
1	Connected to Phone, reminder, track steps, panic alerts	connectivity, track_fit, features, apps	connectivity, sched, track_fit, apps, features	4/5	connectivity, track_fit, features, apps,sched
	Mainly health records, there are some apps where friends can compete in terms of health records	apps, analytics, track_fit	track_fit, apps, features, analytics	3/4	apps, analytics, track_fit
	Good battery life, more stylish, less comfortable wrist belt on watch,	battery, belt, fashion, comfort	battery, fashion, belt, comfort, unsatisfied	5/5	battery, fashion, belt, comfort, unsatisfied
	Helps in forming habits and forming routine, more and more features help	habit, features, sched, track_fit	habit, features, track_fit	3/4	habit, features, track_fit, sched
				15/18	
	What do people miss in smart-watches compared to analog ones?				
2	Analog watches are more stylish	fashion, analog	analog, fashion	2/2	analog, fashion
	Company should also focus on features rather than style	features, fashion	features, fashion	2/2	features, fashion
	Analog watches are jewellery kind of thing, while smart watches are not	antique, analog, fashion	fashion, antique, analog	3/3	fashion, antique, analog
	Privacy, security	privacy, burden, problem	privacy, problem	2/3	privacy, burden, problem
				9/10	
	Is smart-watch more burdensome to a person?				
3	Frequent charging is required	battery, burden	battery, problem, burden	2/3	battery, problem, burden
	Notification distracts in class	distract, notification, problem	distract, notification, problem	3/3	distract, notification, problem
	When it is not with me, I think it should had been with me	burden, habit	habit, problem, burden	2/3	burden, habit
	Fear of privacy of health data	privacy, track_fit, burden, problem	privacy, problem, track_fit, burden	4/4	privacy, problem, track_fit, burden
				11/13	
	What are the key challenges with smart-watches?				
4	If it discharges than it is of no use	battery, problem	battery, problem	2/2	battery, problem
	Notifiaction distraction in class	notification, distract, problem	distract, notification, burden, problem	3/4	notification, distract, problem
	Fear of privacy of health data	privacy, problem, burden	privacy, problem, track_fit, burden	3/4	privacy, problem, burden
	No problems with connectivity	satisfied, connectivity	connectivity, satisfied	2/2	satisfied, connectivity
	poor battery life, analog watches are more stylish and	battery, fashion, analog, unsatisfied, problem	battery,problem, fashion. analog, unsatisfied, comfort	5/6	battery, fashion, analog, unsatisfied, problem
	Will not recommend to older generation as it's difficult to learn, wrist belts are generally not so com	belt, hard, comfort	hard, comfort, belt, problem	3/4	belt, hard, comfort
				18/22	
	Will smart-watch replace the analog ones?				
5	Analog watches wont be replaced totally as it is used as jewellery kind of thing	antique, analog, fashion, not_replace	analog, fashion, antique, replace, not_replace	4/5	analog, fashion, antique, replace, not_replace
	People uses analog watches as fashion	fashion, analog	fashion, analog, not_replace	2/3	fashion, analog, not_replace
				6/8	