

**Table A1 The clustering results of product attributes of Huawei Mate 9**

No.	Category	Content
1	software	软件(software), 程序(software), APP, 浏览器(browser), QQ, 王者(game), 界面(interface), 图标(icon), 视频(video)
2	cpu	麒麟(kylin), 处理器(processor), 芯片(chip), CPU, cpu, Cpu
3	ios	ios, iOS, IOS
4	key	键(key), 按键(key), 音量键(volume button), 电源键(power button), 键盘(keyboard), 边框(fram)
5	packing	包装(packing), 盒子(box), 外包装(box), 包装盒(packing box), 盒子(box), 箱子(box), 纸箱(carton), 纸盒(carton)
6	insurance	保险(insurance), 意外险(accident insurance)
7	storage	内存(memory), 存储(storage), 容量(capacity), 4GB+32GB, 128G, 64G, 32g, 6G, 64g, 128g, 6g, 32G, 6GB+128GB, 6G+128G, 4GB+64GB
8	battery	电量(power), 充电(charge), 电池(battery), 续航(battery-life), 待机(standby), 耗电量(power consumption), 发热量(calorific value)
9	store	实体店(physical store), 专卖店(specialty store)
10	loan	白条(IOUs), 24 期(24 instalments), 手续费(service charge), 利息(interst)
11	feel	手感(handle), 质感(texture)
12	nick	痕迹(nick), 划痕(nick)
13	price	价格(price), 价位(price)
14	seller	卖家(seller), 商家(merchant), 售后服务(after-sales service), 态度(attitude)
15	photo quality	画质(picture quality), 色彩(colour), 图像(photo)
16	software testing	安兔兔跑分(antutu benchmark), 安兔兔(antutu)
17	brand	苹果(iphone), 三星(Samsung), 水果(iphone), Mate, mate9, mate9, Mate9, M9, MATE9, m9, mate, P9, MATE, v9, V9, 6plus, mate9pro, p9, p10, P10, iphone, MATE7, MATE8, Mate8, M8, 7p, ios, m8, 7P, 7plus, vivo, iPhone7, iphone7, oppo, iPhone, 6s, mate7, mate8, 6p, M7, 6S, v8, V8, 诺基亚(Nokia), P7, m7, mate2, note, 6P, S7, note3, p7, s7, 5s, P8, Mate7, p8
18	screen parameters	分辨率(resolution ratio), 清晰度(clarity), 2k
19	visual	亮度(brightness), 显示(display)
20	screen	屏幕(screen), 屏(screen), 大屏(big screen), 触摸屏(touch screen), 曲面(curve screen)
21	style	设计(design), 工艺(craft), 风格(style), 做工(craft)
22	appearance	外观(appearance), 外形(shape), 外表(appearance)
23	telecom service	信号(single), 电信(China Telecom), 联通(China Unicom), 移动(China Mobile), 网络(internet), wifi, WIFI, 2G, 3G, 4G
24	logistics	物流(logistics), 快递(express), 送货员(delivery man), 配送(delivery), 运输(transportation)
25	system	系统(system), 操作系统(system), iOS, 安卓(android), EMUI, IOS, UI, EMUI5, 主题(theme), 字体(font), 桌面(desktop)
26	camera	相机(camera), 摄像头(camera), 镜头(camera lens), 照相(take photo), 莱卡(Leica), 成像(image formation), 摄像(camera shooting), 莱卡双摄(dual Leica), 拍照(take photo), 照相机(camera)
27	performance	性能(performance), 硬件(hardware), 配置(configure), 黑科技(black technology), 防水(waterproof), 指纹(finger-print), 导航(navigation), NFC, nfc
28	colour	黑色(black), 颜色(colour), 摩卡金(Moca Gold), 白色(white), 灰色(grey), 银色(silver), 金(gold), 香槟金(champaign gold), 陶瓷白(ceramics white), 金色(gold), 月光银(Silver moonlight)
29	acoustic	音乐(music), 音质(tone quality), 喇叭(sound), 通话(conversation), 音乐(music), 立体声(stereophonic), 听筒(telephone receiver), 铃声(bell), 扬声器(loudspeaker)
30	discount	红包(red packet), 优惠券(coupon)
31	shell	膜(membrane), 壳(shell), 保护壳(shell), 保护膜(protective film), 保护套(smart cover)
32	gift	赠品(gift), 礼物(gift), 礼品(gift)

**Table A2 The clustering results of product attributes of Mi 5**

No.	Category	Content
1	software	软件(software), 程序(software), APP, app, 浏览器(browser), QQ, 王者(game), 界面(interface), 图标(icon), 视频(video), 菜单(menu), 手电筒(flashlight), ui, UI, 收音机(radio)
2	cpu	处理器(processor), CPU, cpu, Cpu
3	ios	iOS
4	key	键(key), 按键(key), 音量键(volume button), 键盘(keyboard), 边框(fram), 按钮(button), HOME, home, Home
5	packing	包装(packing), 盒子(box), 外包装(box), 盒子(box), 包裹(package)
6	insurance	保险(insurance), 意外险(accident insurance)
7	storage	内存(memory), 内存卡(sd card) 3G, 32G, 3GB, 32GB, 64GB, 64g, 32g, 64G, 3g, 内存卡
8	battery	电量(power), 充电(charge), 电池(battery), 续航(battery-life), 耗电量(power consumption), 快充(fast charge), 电源(charger), 充电器(charger)
9	store	实体店(physical store), 专卖店(specialty store)
10	loan	白条(IOUs)
11	feel	手感(handle), 质感(texture)
12	nick	痕迹(nick), 划痕(nick)
13	price	价格(price), 价位(price), 价钱(price)
14	seller	卖家(seller), 态度(attitude)
15	photo quality	画质(picture quality), 图像(photo)
16	software testing	安兔兔跑分(antutu benchmark), 安兔兔(antutu)
17	brand	小米(mi), 苹果(iphone), 华为(huawei), 三星(samsung), iPhone, vivo, 索尼(sony), 5s, 5S, note2, note, 牌子(brand), 2s, 2S, 4c, Note, 水果(iphone), oppo, Note3, P9, pro6, note3
18	screen parameters	分辨率(resolution ratio), 清晰度(clarity), 2.5D, 灵敏度(sensitivity)
19	visual	亮度(brightness), 视觉(visual)
20	screen	屏幕(screen), 屏(screen), 触摸屏(touch screen)
21	style	设计(design), 工艺(craft), 风格(style), 做工(craft)
22	appearance	外观(appearance), 外形(shape), 外表(appearance), 颜值(appearance)
23	telecom service	双卡双待(dual cards dual standby), 卡槽(card slot), sim, SIM, 全网通(fit all networks), 信号(single), 电信(China Telecom), 联通(China Unicom), 移动(China Mobile), 网络(internet), wifi, WIFI, 2G, 3G, 4G, 4g
24	logistics	物流(logistics), 快递(express), 送货员(deliveryman), 配送(delivery), 快递小哥(deliveryman)
25	system	系统(system), MIUI, 安卓(android), 菜单(menu), miui8, MIUI8, 主题(them), 操作系统(operate system), MIUI7, miui7
26	camera	相机(camera), 摄像头(camera), 照相(take photo), 照相机(camera), 像素(pixel), 对焦(focusing), 光学防抖(optical steady shot)
27	performance	性能(performance), 硬件(hardware), 配置(configure), 黑科技(black technology), 导航(navigation), NFC, nfc, 红外线(infrared ray), 蓝牙(Bluetooth)
28	colour	黑色(black), 颜色(colour), 白色(white)
29	acoustic	音乐(music), 音质(tone quality), 喇叭(sound), 通话(conversation), 音乐(music), 立体声(stereophonic), 听筒(telephone receiver), 铃声(bell), 扬声器(loudspeaker)
30	discount	红包(red packet), 优惠券(coupon)
31	shell	膜(membrane), 壳(shell), 保护壳(shell), 保护膜(protective film), 保护套(smart cover), 外壳(shell), 后盖(back shell), 钢化玻璃(tempered glass)
32	gift	赠品(gift), 礼物(gift), 礼品(gift), 自拍杆(selfie stick), 耳机(headset), 充电宝(portable battery)