

Time to push for baby tech

Despite a seismic shift in sophistication, availability and acceptance of consumer technologies, some industries have been resistant to innovation. One such is baby care. But things are beginning to change. For baby care brands that make the right moves at the right time, this is a golden opportunity.

Using digital devices and apps to make life easier and more connected is now second nature to many. Smart phone penetration makes this a global phenomenon, not just a developed world trend. And as more of the millennials who have grown up with these technologies reach childbearing age, there will be an impact on the baby care industry. This acceptance of technology is likely to manifest itself in a wave of new expectations and demands that are ripe to be met with innovation.

Many of the technologies we are familiar with today could be applied to baby care. Lack of digital transformation in this sector to date is largely due to consumer readiness, rather than technology gaps. But the tide is turning. And, as we've seen in other consumer sectors such as travel and finance, the pace of change could be immense.

▸ Digital transformation of baby care

Several converging factors indicate that 2018-20 could be a technological turning point for baby care.

In the developed world, working parents – especially mothers – are afflicted by 'time famine'. At the same time, the pressures, expectations and demands of parenting are more complex than ever, as summarised in a meme that's doing the rounds on social media:



How to be a mum in 2017:

Make sure your children's academic, emotional, psychological, mental, spiritual, physical, and social needs are met while being careful not to over stimulate, underestimate, improperly medicate, helicopter, or neglect them in a screen free, processed foods free, plastic free, body positive, socially conscious, egalitarian but also authoritative, nurturing but fostering of independence, gentle but not overly permissive, pesticide-free two-storey, multilingual home preferably in a cul-de-sac with a backyard and 1.5 siblings spaced at least two years apart for proper development also don't forget the coconut oil.

How to be a mum in literally every generation before ours:

Feed them sometimes.

Coordinating family life can be challenging, and parents are increasingly reliant on technology to manage day-to-day activities. From repeat-ordering groceries online to family organiser apps that give a single view of everyone's schedules.

The arrival of a new baby – whether it's a firstborn or not – is inherently disruptive. And solutions that bring some level of order to the inevitable chaos will perform well in the current market. This could translate into devices, apps and products that ease anxieties (is baby eating enough, sleeping enough, warm enough, cool enough, growing enough, meeting milestones?). And it

might result in new ways to enhance and document the joy of watching a baby's personality and intellect unfold.

↳ Innovation trailblazers

In 2016, the Consumer Electronics Show (CES) included a BabyTech stream for the first time, underlining the notion that baby care is on the cusp of an innovation age. Many products showcased at the 2017 summit focused on fertility, pregnancy and breastfeeding. But digitised products geared directly towards the baby are beginning to make inroads too, with established brands and start-ups both gaining ground.

One product that captured attention at BabyTech 2017 was the Owlet Smart Sock baby monitor. Featuring heartrate and oxygen sensors, it's a wearable device enabling real-time monitoring and delivering push notifications via a mobile app. Fisher Price's Code-a-pillar, which teaches simple coding skills like sequencing and logic to young children, was also recognised in the summit's Bump Awards.

There are opportunities to embed technology throughout the baby care ecosystem. Initially, different applications will appeal across different markets and territories. Then, as early adopters embrace new developments, longer term success and wider roll out will be partly reliant on their advocacy and endorsement.

Our work in this sector gives us a collective vision of where the industry is going. By combining this insight with our understanding of market and technology trends, we can pinpoint which areas will be at the forefront of innovation in baby care.

↳ Watching them grow

Integration of smart technologies into everyday products such as baby monitors is going to be a clear leader. We've already seen rapid evolution in this space: from analogue listening systems to video monitors to sensor mats. Sudden infant death syndrome (SIDS) is an underlying fear for many parents, and these products can ease the anxiety that some feel. However, as sensor technology becomes more sophisticated,

devices can move beyond allaying SIDS fears to also provide a more complete picture of baby health, wellbeing and development.



↳ Baby wearables

As sensors continue to get smaller and cheaper, we'll see greater emergence of unobtrusive devices like the Owlet Smart Sock. Because these are worn by babies during sleep or at play, they can measure a wider range of indicators in real-time, from body temperature, respiration and pulse to movement, hydration and sleeping/waking patterns. This provides a useful platform to track and record data over time. It also enables snapshots of a baby's vital signs to be extracted and compared with their normal range. For parents and medical professionals handling a fractious baby, this could enable quicker diagnosis of potential illness, enabling more effective and targeted treatment.

↳ Milestone communities

We also expect to see a rise in devices that combine sensors with other measurement technologies, such as digital tape measures. Overlaying sensor data with information about physical factors, such as weight, body length and head circumference gives a comprehensive picture of a baby's progress. This can provide assurance to parents that their child is in the 'good zone' of development. There is also scope for parents of babies at similar ages and stages to connect via online communities and forums, asking questions and sharing experiences.

Over time, these communities could become a

valuable source of robust insight rooted in both anecdotes and algorithms. Combining physical data about babies with their behavioural tendencies and parental experiences could reinforce – or debunk – commonly held truths about baby development. From the six-week growth spurt to three-month sleep regression and nine-month nap resistance, the internet abounds with theories and advice. Smart devices and connected communities could deliver a more objective view of what babies experience at different stages and how this manifests itself in their behaviour. Interpreting the needs of pre-verbal children can be especially challenging for first-time parents; smart technologies could help them better understand their child. Even if it just provides reassurance that they're in the midst of one of the inevitable phases of babyhood.



↳ Crying analysis

Some parents claim to know what their baby needs based on the pitch, tone or tempo of its cry. There's a consensus that rhythmic, repetitive crying indicates hunger whereas a slow, whiny cry means the baby is tired. Other types of crying might be related to discomfort, illness, pain, fear or boredom.

This subjective viewpoint could be explored by product developers and given a more objective framework. Personalised devices optimised to interpret the precise nature of a baby's cry could help parents. It could also make it easier for other carers to meet the baby's needs, providing welcome peace of mind for mothers returning to work.



↳ Allergy monitoring

Cosmetics and toiletries, the largest baby care segment, also holds opportunities for digital transformation. For babies suffering with skin conditions such as eczema, the efficacy of treatments or the impact of environmental factors such as diet and frequency of bathing could be measured with digital photography based apps.

Likewise, if a food allergy is suspected, devices could be used to record consumption and monitor the development of skin inflammation or digestive symptoms. This could help families manage their own baby's condition, and make it easier for medical professionals to assess symptoms and their probable causes when considering treatment options. What's more, collection and analysis of this data at scale could provide valuable insights for product development teams.

↳ Cognitive development & play

Physical development and wellness is just one aspect of baby care. The early weeks and months involve much cognitive and emotional development. Watching lights and pictures, hearing sounds and voices, experiencing colour and texture, being held and touched are all vital to stimulate and comfort a baby.

Clearly 'iPad babysitting' is not ideal. But there is scope for a middle ground where technology enhances play and exploration, rather than simply 'spoon-feeding' stimulation. The Fisherprice Code-a-pillar is an early example of developments we will see in this space.

While Code-a-pillar is geared towards the 3-6 years age bracket, its principles could be applied to baby play.



These technologies could track and highlight key moments of progression from babyhood to childhood. This will appeal to parents wanting to record their baby's development for posterity. But it could also offer advantages for children who are developmentally delayed, or provide early indicators if a child faces challenges in certain areas, such as making emotional connections.

→ Developing world applications

The focus of the above 'how to be a mum' meme could rightly be considered a first world problem. But demand for technologies to improve baby care is just as pronounced in the developing world. Parental understanding of factors such as nutrition, hygiene and health has escalated in communities that traditionally had lower access to education. There is a growing market for affordable technologies that enable parents to monitor the development and progress of babies and young children in these regions.

The infant mortality rate in India is the highest in the world, with 34 per 1,000 children not reaching their first birthday in 2016. Some of the underlying causes relate to birth asphyxia and neonatal sepsis. But malnutrition and poor sanitation are also factors. The same is true for some other developing countries such as Nigeria, Pakistan and Congo.

India's national health ministry aims to bring the country's infant mortality rate down to single figures in the next 15 years. Simple technologies coupled with

smartphone applications could play a fundamental role here. For instance, providing communities with cardboard dip tests for urine and faeces could enable rapid local diagnosis of illnesses such as cholera. Sharing this data with regional medical centres could then trigger response mechanisms for treatment and to curb infection rates.

What's more, babies' physical development could be measured and tracked more effectively. Digitally recording and tracking data such as weight, body length and head circumference would provide a snapshot of health in areas with malnutrition. This could provide a benchmark for nutrition programmes and enable more intelligent deployment of resources.

→ A giant leap for baby-kind?

With the global baby care industry forecast to reach \$121bn by 2025, many companies are hoping to maximise their slice by satisfying the increasing demand for baby tech. How can you ensure your product is at the forefront of new developments?

It's not all about shiny new technologies for digitally competent parents. Success will come to brands that understand and invest in the richest intersections of demand, readiness, infrastructure and capability. Naturally, reputation and trust are critical factors, giving established brands an advantage. But there is no room for complacency. Legacy business models and embedded cultures could make them resistant to change and vulnerable to disruption.

We believe the baby care revolution will be spearheaded by two types of business:

1. innovative start-ups that quickly engender trust
2. established brands that quickly embrace digital transformation.

You can't talk about digital transformation without considering its lifeblood: data. Technical capabilities only represent one part of the innovation equation - collection and analysis of data is also paramount.

In a cybersecurity conscious world, baby care brands need to adopt hyper-secure systems and processes that have been proven in sectors such as defence and

banking. In Europe, The General Data Protection Regulation (GDPR) will have major repercussions for the management and profiling personal data. Many people express concern about the amount of personal data held by companies. When it comes to babies' personal data this is likely to be even more pronounced.

The baby care market is on the cusp of major change. But if some of the more ground-breaking developments – like artificial intelligence – are to take hold there is a fundamental need for transparency and clarity surrounding the use and protection of personal data. This will require education as well as innovation.

So, we expect digital transformation to involve a rapid succession of baby steps, rather than an overnight revolution.

One final word of caution. Whether your tech is geared towards health and wellbeing or playing and learning, parents need to have ultimate control of device output and settings. Baby care brands ignore the adage 'mother knows best' at their peril.

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