European Economic Letters
ISSN 2323-5233
Vol 15, Issue 1 (2025)
http://eelet.org.uk

Thematic Analysis of New Product Development Practices by the Medical Devices Industry in India

Amitkumar Dave

Doctoral Student, School of Doctoral Research and Innovation, GLS University, Ahmedabad 380059 INDIA, helloamitdave@hotmail.com

Dr. Deepa Vyas

Faculty of Management, GLS University, Ahmedabad 380059 INDIA, deepa.vyas@glsuniversity.ac.in,

Bhavik Kaushik Thaker

Country manager, US & Canada, Intellipro Group Inc, NC, USA, thaker.bhavik@gmail.com

Abstract

Background: The Indian medical device sector is one of the fastest-growing healthcare segments in India. The sector, however, faces a problem of heavy dependence on imports. The root cause of this problem is less focus on R&D and new product development.

Objectives: The objectives were to deep-dive into the views of senior management of medical device companies on academic collaborations, management and infra support, training, motivation and incentivisation for the R&D teams, and impact of companies' culture on new product development.

Method: This study is based on the interviews of senior management of 64 medical device companies on the critical themes for new product development. The themes and Subthemes under each theme were generated through the analysis of statements. Reflective stories for each theme were then constructed through an iterative process.

Results: It was evident that the medical device companies involved in new product development had fair clarity about their models and tactics for collaborations with academia. Committed infra and management support also existed in such companies. For R&D team members, money motivation had mixed responses. Almost all the respondents had clear views on the culture of their companies and its influence.

Conclusion: This deductive thematic analysis based on interviews of senior people and the analysis of themes like collaboration with academia, management and infra support, training for the R&D teams, motivation and incentivisation for the R&D teams, and influence of the culture of the companies reveals that the companies have clear plans for collaborations with the academia, and are also serious on infra and management support. Facilitation of industry-academia collaboration is a major area of attention for the authorities.

JEL Categories: I0, I1, I2

Keywords: Medical devices, R&D, Thematic analysis, Themes-Subthemes

1. Introduction

The medical devices sector in India has a value of about 11 bn (India Brand Equity Foundation, 2023). India is amongst the top twenty medical device markets in the world and ranks fourth in Asia (KPMG, 2022). There are about 750 – 800 Medical device manufacturers in India (Informa Market, 2020; Department of Pharmaceuticals, Ministry of Chemicals & Fertilizers, Government of India, February 2021). The most impressive part of the medical devices sector is its growth rate of 16.4%, compared to the world growth rate of 5.4% (India Brand Equity Foundation, 2023). However, the major issue with the sector is high dependence on Imports as imports cater to 70 to 80 % of requirements (India Brand Equity Foundation, 2023). In the year 2022, device imports grew by 41%, making 63,200 cr imports during 2021 -22, from Rs 44,708 crore in the previous year, based on the data of the Ministry of Commerce and Industry, India (BioSpectrum, 2022).

2. Literature review

2.1 *New Products Development*

The value chain for medical devices has, on one side, the activity of research and product development, and on the other end, the activity of packing & distribution, as per KPMG (2022). The countries that are involved in new product development are strong in exports while India is weak in this activity, like Vietnam and Mexico, which also have heavy import dependence (KPMG, 2022). New product development, thus, is an important differentiator. Stryker, one of the top ten global medical device companies today, changed the focus of the company to new product development from routine products, and this followed the path to leadership in the field. Stryker reached the level of USD 4.5 billion company under this strategy from being a marginal player in the field (Brown, 2007; Evans, 2016). This case also highlights the role of new product development through the focus on R&D for medical device companies.

2.2 *Multiple Technologies for New Medical Device Development*

A quick comparison between medicines and medical devices will show that devices involve a wide variety of technologies (Kahn, 1991). Convenience and suitability of use, as well as ergonomics, add to the complexity of device development (Martin, et al., 2008). Many medical device companies may have limited in-house knowledge to address such complex needs and some of the companies may use a collaboration model tying up with an academic institute. Such industry-academia collaboration can be an effective method for innovative technologies, solutions to specific issues, newer technology acquisitions, and access to experts & specialised team members (Chung, Ko & Yoon, 2021). However, the approach of the medical devices industry of India to R&D and new product development models including R&D team management has not been studied well.

2.3 *Conceptual Model*

Yee, et al. (2017) have discussed a conceptual model stating the R&D project performance for the medical device industry. This model discusses the effect of organisational factors like top management support, incentive systems, infrastructure support, training for the R&D team members and collaboration as the key factors for the success of an R&D project performance for medical devices. The model of Yee, et al (2017) and their study recognises critical factors of an organisation as important for R&D project success. These critical factors described in this model were considered as the major Themes for the present study.

3. Research Methodology

A qualitative research design was used to identify the patterns by interviewing the right people who can address the organizational factors, culture and their effect on R&D. The senior-most people, the heads of operations or entrepreneurs who had started the companies and who were actively involved in their companies' R&D and new product development projects were selected. Most of the information was gathered through clear but open questions, supported by suggestive leads. The pattern, sequence and structure of the questions were pre-designed around collaboration with academia, management and infra support, training for the R&D teams, motivation and incentivisation for the R&D teams, and influence of the culture of the company but the participants were encouraged to give deeper insights and qualitative data on the aspects described above, for the R&D area. The questions were open-ended and were to encourage the respondents to share as much information as possible about these areas. India has about 750 – 800 local Medical Devices manufacturers as per various reports (Informa Market, 2020; Department of Pharmaceuticals, Ministry of Chemicals & Fertilizers, Government of India, 2021; KPMG (2022). AiMed, the main industry association for the Indian medical devices manufacturers gave a list of 769 members on its website as of June 24. A complete list of these companies is not available from any data source. The Interview method was selected for the study and 60 valid interviews (60 companies) were planned considering the diversity of product mix in the sector, geographical diversity and size differentiation criteria. A very large number of companies were contacted with a request for an interview but like typical entrepreneurial companies, many had declined to share the information. The final number came to 64 interviews, after deducting a few rejected interviews. A convenience sampling method was used. The highest number of respondents were from Mumbai (14), followed by Delhi (12). Ahmedabad was the next (8).

4. Research Objectives

The research objectives for this study were to understand the views of senior management and to answer the following research questions-

1. What are the views of the medical devices industry towards collaboration with academia for new product development?

2. What is the approach to management and infra support, training for the R&D teams, motivation and incentivisation for the R&D teams?

3. What influence does the culture of the company have on the R&D strategies?

5. Data Collection and Data Analysis

Fairly detailed profiles of the companies were gathered from the databases and their web pages and also by rechecking the data with the respondents. This was followed by semi-structured interviews either personally or through a telephone call, lasting between 45 and 60 minutes. These interviews were audio recorded and transcripts were prepared through transcription software. Deductive Thematic Analysis was used where the organizational factors covered in the model described earlier (Yee, et al., 2017) were the main points around which the questions and probing were focused. These points were considered as the main themes and thus, the design was Deductive Thematic Analysis. The process of analysis was based on the methodology described by Vaismoradi et al. (2016). The process of Data Analysis is narrated below.

Table 1: The process followed for the analysis

Pre-coding stage Two major activities were undertaken – Transcript generation and grasping or digesting the crux (also termed "Familiarization" by specialists). Turboscribe program was used for transcript generation while nVivo and Dovetail programs were used for categorization and re-verbalization of the relevant notes. Original and re-stated notes were read repeatedly to grasp the ideas. This was a time-consuming but important step.

Themes and Subthemes Since the method was deductive, the themes were almost pre-decided based on the conceptual framework mentioned. Sub-themes were first listed and restructuring of categories/statements was processed, to shortlist the relevance of sub-themes, and then to put them under the themes.

Coding of sub-themes The process was carried out both manually as well as through the programs mentioned above. The word tree method was also useful for capturing the codes. Segregation of the parts relevant to themes was done and reassessment was performed for coding. During this step, "scrape" was removed from the scripts (like repetitions, probing points, reconfirmation clauses, and so on).

Writing Outcomes Most of the process was manual. The programs mentioned earlier helped to a great extent in the process, however. Revisions after reading some marked scripts again were also part of the process. Re-wording of the points and outcomes to capture the essence was followed. After this stage, clear patterns were emerging which were then scribbled for future notes.

Reflective Notes Notes based on the Outcomes, bullet points, Codes and Sub-themes to describe the essence were written and then connected with some interview comments, to complete capturing the qualitative aspects of the interviews. Sequencing of the subthemes was checked so that the flow of the points in the notes conveys the understanding gathered from the complete process.

Some research articles and cases studied during the literature review were seen being connected with the notes written reaffirming the sub-themes covered above.

6. Results

The salient themes covered in this paper are those which are described in the model described in Figure 1. Proper indexing and numbering of each respondent was done. The relevant responses are described as RespXX where XX represents the number in the master index for a particular respondent, for easy traceability.

Reflective notes for each major theme mentioned in the model of Figure 1 are written below.

6.1 Theme: Academia Collaboration

The responses under this theme narrate perspectives and challenges faced during industry-academia partnerships. Many respondents use this model effectively, but there are negative experiences also. Four sub-themes are as below.

6.1.1 Subtheme: Benefits

The benefits were mainly specialised knowledge, use of infra facilities, networking leading to more relevant contacts and some essential facilities for devices like radiation sterilisation services.

We can always get specialized knowledge or technological know-how, the latest know-how… (Resp27)

Specialized services, technology and knowledge backup are also objectives of the collaboration. One catheter manufacturer informed about this.

We were working with BARC long ago, and it was a good working arrangement. (Resp28)

Now this company is connected with more institutes that are offering such services.

6.1.2 Subtheme: Unique collaboration models

Quite a few respondents have remarked about bureaucracy and procedural delays during academic collaborations. This theme covers bypassing bureaucracy and procedural delays encountered in academic institutes without diluting the benefits of collaborations.

I mean, actually we have collaborations ..with independent professors... associated with some good universities and academic institutes… This is easier to manage .(Resp10)

A small specialized product start-up with wound care devices developed a model of tying up with colleges and hospitals to authenticate its products through such tie-ups.

They (academic institutes related to hospitals) do trials and then we collect the data and we publish the data. So they feel motivated and .. involved. It is ..a win-win collaboration because we are a small company, we can't afford big money to be paid. (Resp15)

In both these models, the industry partner benefits but the academic partner also gains. There are scopes of more such models creatively worked out for a beneficial partnership.

6.1.3 Subtheme: Collaboration not needed

When a company is not inclined to spend for R&D activity, its tendency to collaborate is also low or nil, as seen with old family-run companies.

We have been working for 30 years.…it is not necessary to have any collaboration. It is a management decision. (Resp3)

The basic driver to industry-academia collaboration is the R&D needs of a company in the absence of which, the collaboration need is not felt.

6.1.4 Subtheme: Negative experiences

There are cases where due to negative or not-so-conducive experiences, companies tend to avoid such collaborations. Re-starting of such relations is also difficult. The main causes were related to delays, bureaucracy, lack of understanding of the industry concern, and systems.

My experience of such collaborations is not very positive. Most of the colleges lack infrastructure for our type of products like electrical or electromagnetic products. The ecosystem .. is not conducive. (Resp22)

An industry partner may not have the patience or readiness to bear with the delays, procedural problems or internal dynamics of a college.

Actually, we had a collaboration with …. But this did not go further. There were lot many dynamics. We are in business, we don't want to enter into their politics. (Resp29)

I had actually initiated this (industry-academia collaboration) process, but it did not work out, unfortunately. (When probed ..) Better not to speak about our past experiences. The past is gone. (Resp27)

One example from a highly experienced industry veteran speaks about infrastructure issues affecting such relationships.

You see, IITs in India have the newest or the best instruments. However, after a year or so, these machines or instruments become dormant, ..nobody cares or nobody maintains that machine. (Resp33)

European Economic Letters
ISSN 2323-5233
Vol 15, Issue 1 (2025)
https://doi.org/10.52783/eel.v13i3.331
http://eelet.org.uk

6.2 Theme: Training

6.2. 1 Subtheme: Importance of training

Respondents seem fairly clear about the essentiality and importance of training. Almost all seem to accept that training is needed. Some companies take freshers, which also makes training necessary.

Training is important and is imparted mainly by our Japanese partner company. They get full training support. (Resp4)

They are young, fresh from college kind of people. And therefore, they need training. (Resp7)

Training is required. It is essential (but is not a motivator). (Resp30)

However, being entrepreneurs, there is always an eye on the cost aspect.

..If there is cost-effective training, I send them for training. I myself

also attend the training. (Resp1)

6.2.2 The objective of training seems to be to add what is missing in a person working for a job.

They are young, fresh from college kind of people. (Resp7). Training depends on the background of the staff members involved. (Resp38)

If there is a recruitment of trained people, training needs are disputed.

They are biomedical engineers. So training is not that critical. (Resp12); People are trained already, so additional training is not required. (Resp18); We get people who already have exposure in this field. So limited training.(Resp17)

6.2.3 Subtheme: Methodology

Many of the companies have overseas collaborations or their parent companies are abroad. Such companies have rich training experience and abundant material for training. The Indian counterpart uses these resources where possible.

Sometimes these German people come and they train our team.(Resp5)

Our team goes to the UK for training.(Resp62)

Training is important and is imparted mainly by our Japanese partner company.(Resp4)

Outsourcing of training from academic institutes is also not uncommon. Professors from academia have experience and qualifications for training.

These professors are good at training, and we have a collaboration with the college. They design some specific courses for us.(Resp2)

Professors whom I talked about, also impart some training. There are some workshops where we send them for training.(Resp10)

In Bangalore, we have a biomedical training institute.(Resp61)

In some rare cases, where the teams are small and the owner entrepreneur has hands-on experience of the line, he becomes a trainer for his juniors.

I am qualified and experienced. So, I take training for these people. I personally train.(Resp7)

6.3 Theme: Management Support

6.3.1 Subtheme: Degree of management support

Support by the top management team for the research and product development activity seems to be a clear choice. The companies that are committed to R&D activity for new product development also commit to the resources and support for infrastructure or IT investments. Direct involvement of top management of the entrepreneurial companies makes the top people understand what exactly is needed, and since many of these are technically qualified and experienced, the task for the R&D team becomes easy.

European Economic Letters
ISSN 2323-5233
Vol 15, Issue 1 (2025)
https://doi.org/10.52783/eel.v13i3.331
http://eelet.org.uk

Say on a scale of 1 to 10, we give almost 10, maybe 9, full support from our side (for infra support). 100% full support. (Resp4)

I am involved and I know what we need. R&D – it is a small team, so direct influence.(Resp30)

I know exactly what is to be given and what support is to be given.(Resp14)

.. R&D task is described very clearly and therefore management support goes without saying. (Resp2)

In two cases, the Indian company has an overseas tie-up for new product development and the Indian counterpart works under the guidance of the overseas partner. In one such case, the infra needs are prescribed by the overseas counterpart and are religiously followed.

Management support is always open, meaning whatever they need. When the protocol comes from the US, it is very clear that we need this, this, this and it is given. (Resp6)

6.3.2 Subtheme: Outsourcing of infra by management

Some one-time requirements for specific development may be a burden if invested. One respondent said that he avoids such one-time expenses and tries to get such requirements from outside, but he does manage this facility - a financially prudent decision.

If required, we use some outside laboratories, the incubation laboratories. They help us (for infra requirements). (Resp7)

6.3.3 Subtheme: Pre-planning and budgeting

One contract product development manufacturer also mentioned that the project quote is always inclusive of R&D equipment costs and also factors infra needed extra for a specific project. In such cases, full infra support is never a problem.

These R&D activities are project-based. They are all charged in our model when we give cost for B2B development costs.(Resp20)

6.4 Theme: R&D Team Incentives and Motivators

6.4.1 Subtheme: Motivating factors and Influencers

Encouragement and recognition, a simple motivator, highlighted in HR textbooks, seems to be working well even for R&D team members. Recognition is a basic human need and its influence as a motivator is realized by some of the entrepreneur-managers.

I also encourage them to communicate this Dubai visit to all his associates..so that he get motivated once he gets recognition. (Resp17)

In my opinion and experience, the most important part is recognition. If we recognize them, if we acknowledge their work ..that would be more productive than money or anything. Resp28

It is basically encouragement, encouragement to these people to do something really new and really unique… And of course, personal touch is very important. (Resp20)

Involvement and management support are also probably undermined but these are also used effectively by the managers in the picture. Rubbing shoulders by a senior person with R&D team members is, again, a tool quite overlooked but is effectively used by some senior managers–owners. The last sentence of the interview above reflects the same. There are more comments, below.

I personally interact with these development people and that gives a different kind of motivation because at my level if I am dealing with them, they will feel good. (Resp10)

Involvement in the form of explaining a bigger picture and a “pep-talk” are motivators too. This is described very emotionally by entrepreneur owners of start-up companies.

Because these are critical care products, burn patients who are burn victims.. get help from these products. So pep talk and motivation combined with their value system - if these two are combined, this works very well. (Resp7)

European Economic Letters
ISSN 2323-5233
Vol 15, Issue 1 (2025)
https://doi.org/10.52783/eel.v13i3.331
http://eelet.org.uk

When we select a person, we will just have to give a bigger picture, a bigger vision. The major motivator is this bigger picture. (Resp35)

6.4.2 Subtheme: Internal drive and R&D inclination as selection criteria

An inherent inclination for research or scientific thinking is what these managers look for, in a R&D team member. Other motivators may work well if this internal drive is strong. Their selection process for R&D team members focuses on this aspect of a candidate. To bear with a painstakingly slow and sometimes discouraging research process asks for this internal drive.

Long-term research will need internal motivation because results don't come immediately. Without that internal motivation in a person, his carrying R&D activity will not work out over a long time. (Resp10)

At the time of selection, we check whether the person has that internal motivation for doing the process or development of a product. And if the selection is right, the rest of the processes are smooth. (Resp26)

6.4.3 Subtheme: Money as a motivator

Money as a motivator has a mixed response. Some opinions talk of money as a positive, but this view is limited to some companies only. Larger, richer, well-established companies may have this approach but such large companies are very limited.

The motivation for most of them is stock options. Almost all of the senior research team members are part of our stock option program. (Resp40, a very large company, referring to senior R&D team members)

We pay quite well comparatively, .. in other words, you can say money is a major motivator. (Resp1)

This respondent is a startup company but the opinion of money-motivation is inconclusive from the statement. There are some clear opinions against money being a tool for motivation or retention.

Those who need money, we do not need them in our company. (Resp8)

It is not money. ..We are a small company, we are a startup, we can't compete on money. Those who we feel are money-oriented, we don't encourage them, we don't take them actually. (Resp11)

MNCs give huge money and I don't think their people are highly motivated. So in my opinion, money is not a motivator. (Resp22)

Either money is not appreciated as a motivator, or the respondents do not want to make money as the key to retention or motivation, being a self-limiting influencer. This was remarked even by larger companies that can very well afford to over-pay.

6.5 Theme: Infrastructure Support

6.5.1 Subtheme: Importance of infrastructure

Practically all the respondents clearly stated and confirmed the importance of infrastructure investments, some saying that infra expense is unrestricted.

Whatever is required (for development-purpose infra), it's always available because I am personally involved.(Resp4)

Infra and facility, are basic needs. Without infra, how will they work? Because otherwise that time would be wasted and they will get demotivated. (Resp21)

The words clearly reflect unrestricted investment in R&D infrastructure.

Infra is required because we are all producing high-end products. So infra support goes without saying. (Resp22)

6.5.2 Subtheme: IT Infrastructure

When asked about IT infrastructure, this is governed mainly by overseas tie-ups, as stated here.

Infra is not a problem because the communication and IT infra for communicating regularly with the US (partner), interacting regularly with the US is always available. (Resp6)

European Economic Letters
ISSN 2323-5233
Vol 15, Issue 1 (2025)
https://doi.org/10.52783/eel.v13i3.331
http://eelet.org.uk

6.5.3 Subtheme: Infra is secondary

There were, however, some contrary opinions mainly by the companies which do not spend much on the R&D part of the operations. Typically the style or culture of these companies was not R&D oriented.

We do not have next-generation products. These X-Ray machines are the basic products and we do not think there will be any need of infrastructure support in future. (Resp3)

If somebody complains about Infra, he is wrong. He is not an entrepreneurial R&D person. Entrepreneurship means adjustment. (Resp18)

6.5.4 Subtheme: Infra expense optimization

Almost all companies being entrepreneurial, have "invented" some expense optimization tricks which help them take care of infra needs by some innovative methods. One method is to use institutional infra support from an academic institute. One more is to use an incubation centre for this purpose. One more idea is to use their own infra of some other department.

Rest of the infra, many times we get from institutes like IIT, etc. when we collaborate. (Resp1)

*Because most of the infra required is combined with the production infra. So sometimes when the **machines are spare, they use those machines for R&D.(Resp21)***

6.6 Theme: Culture

6.6.1 Subtheme: Culture of learning, exposure, openness, flexibility, connecting with academia (Organization's Internal orientation traits)

Though not completely aware of the classical definition of Culture, the respondents - the top team members seem to be aware of the traits and beliefs to be nurtured.

Of course, the culture is inclined towards R&D. ..being a smaller operation, I talk to every person personally. So, how to define a culture, I do not know, but in our small organization, we do foster and we do promote R&D. (Res4)

Since the team sizes are smaller, this smaller size permits regular and intense interactions with team R&D members as mentioned in this example.

I am personally involved in R&D projects. I drive development. (Rsp16).

Openness and interdepartmental coordination are ingrained in some organizations as part of Cultural traits.

You can say this culture of cross-hybridization of knowledge is a motivator and is conducive to newer product development. (Resp22)

6.6.2 Subtheme: Culture of client interactions (External orientation)

Interactions with the clients and an eye on competition are part of the culture too.

We encourage conference participation within cost limits because then people interact and see what is being done by other competitors. (Resp30)

6.6.3 Subtheme: Focused therapy as the centre-point of culture

Areas of focus and core strength awareness make these entrepreneurial top team members sharper in their thinking about culture.

We follow a hedgehog strategy, meaning that we only build what we are really good at. We don't want to go everywhere. So focus. That is a strategy or part of the culture. (Resp 40)

6.6.4 Subtheme: Culture is important

There are some team heads who think that task orientation is important and not culture. However, not being highly aware of the classical definition, they seem to be unaware that this task orientation itself is their companies' culture.

As I said, this culture of instigating them or taking them away from their comfort zone and challenging them, you may say, is our culture. (Resp20)

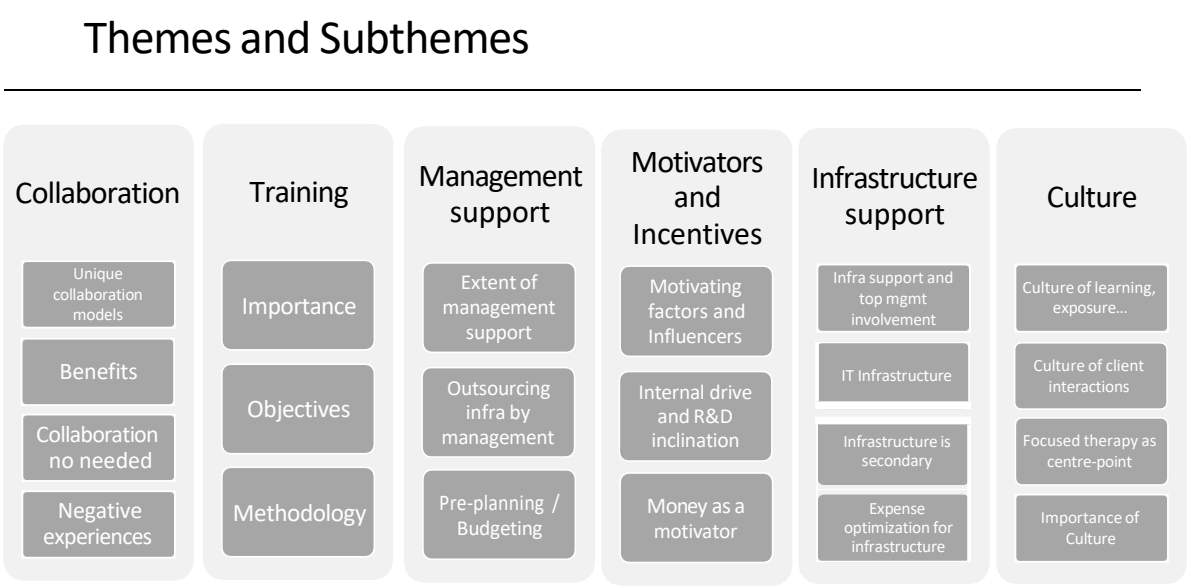
European Economic Letters
ISSN 2323-5233
Vol 15, Issue 1 (2025)
https://doi.org/10.52783/eel.v13i3.331
http://eelet.org.uk

7. Discussion

Themes and sub-themes detailed above are summarised in Figure 1, below.

While in many countries, industry-academia collaboration models are explored abroad and have proven their significant contribution to the new product development process for the healthcare and medical technology sector (Yuko, 2020; Lester & Sotarauta, 2007), widespread awareness and acceptance of such collaborations are missing in India. Some countries like Japan do have an old established culture of such collaboration as detailed at a length by Tsuruya, Kawashima, Shiozuka & Nakanishi (2018). This socio-cultural trait is yet to develop in today's India. Strong negative experiences preventing the development of such relationships seem as the major deterrent. Some remarks on these relations are so critical that re-starting the relations may not happen even in the future. The model used in Japan involving volunteer Co-ordinators who "bring" together the industry and academia representatives initiating active dialogue can be of specific importance in such cases. The role of policymakers is also important, as suggested by Etzkowitz and Leydesdorff (1998) in their highly debated Triple Helix model.

Figure 1 : Themes and Sub-themes from the analysis of the results.



The importance and objectives of the training seem very clear in the top leaders' thinking, as covered under the theme of Training. However, there was also no comment on the contribution of government agencies on the training front. This may be an important area missed out by the policymakers. Industry-wide training platforms and specifically prescribed training modules need serious thought at the level of the government bodies. Overseas partners giving training is a welcome development as these companies from developed nations are active in new product development and have rich material for imparting training. The role of academia in this aspect is also to be strengthened since a major strength of academia is teaching and training. An active interaction between the industry and academia where the industry needs of training are communicated can be a useful initiative. The role of training as a motivator is not pointed out by any respondent, a point worth noting. More than 95 % of the companies are first-generation entrepreneurial companies which were started by the current top team. The decision of new product development appears to be a conscious decision and part of their major strategies. In such cases, full support by the top management team is certain to predict. This is a clear observation during the interviews. High support for all the resources needed is also seen in this case. Many of these members are themselves experienced technical people which also may help. Where there are tie-ups with companies abroad, requirements of infra are prescribed for a specific project. The conceptual model considered does not mention the basic motivators like recognition and encouragement. These are universal positive stimuli and it seems that entrepreneurial managers are well aware of these influencers, and use them when applicable. Working of the senior managers along with the R&D team members, again, is a motivator which appears to have been undermined in the model stated, coming up as an effective motivator during the analysis. The right selection of candidates with a burning desire to do research and make them a part of a research team is an essential ingredient according to these respondents. Probably some of them have felt that desire at some point in time and therefore, may find it easy to recognize the same in a candidate

European Economic Letters
ISSN 2323-5233
Vol 15, Issue 1 (2025)
https://doi.org/10.52783/eel.v13i3.331
http://eelet.org.uk

while interviewing. Money motivator is a double-edged sword, as stated by the respondents, where a research team member can be easily taken away by paying more money. Also, the respondents know their limitation of not being able to pay a huge amount of money. All the respondents stated that infrastructure support is important and any compromise in this aspect will compromise the R&D teams' outcome. IT infra support was also confirmed. The only exceptions were the companies that did not have serious R&D plans. Optimization of infra investment by using facilities from academic institutions or technical incubation centres was also explored. Lack of infra is a major demotivator, though its availability may not have a high motivation effect.

The company's culture as a theme needs special mention here. It was found that all the senior respondents were aware of their companies' culture and were consciously nurturing that culture. Clarity about their culture was also evident, though some were not aware of the textbook definition of "culture". The importance of culture as an influencer was also recognized by all. Some of them described their cultural traits in abstract terms sometimes. Since the team sizes were small, and since these bosses were in direct touch with R&D teams regularly, communication on cultural traits was easy for them. Recognizing the influence of culture as well as nurturing their culture were common characteristics with the respondents.

8.0 Conclusion

A deductive thematic analysis based on interviews of senior people of the medical device companies of India reveals their thinking on the R&D strategies and tactics. The themes under analysis were collaboration with academia, management and infra support, training for the R&D teams, motivation and incentivisation for the R&D teams, and influence of the culture of the company. The companies seriously involved in R&D and new product development have clear plans for collaborations with the academia, and are also serious on infra and management support. Money as a motivator had mixed responses while on culture as well as its influence, almost all had clear and precise views. Involvement and support on the training platforms and facilitation of industry-academia collaboration are the areas of attention for the government authorities.

Limitations and further scopes of the study

Many of the sub-themes offer very good scopes for the future study. Some of these are vitally important and may need quantitative analysis, like Content Analysis technique. It is also important to understand the views of academicians also on such collaborations. A study covering this part is absent in this study which is a limitation of the current study, and offers future scopes for such a study.

References

1. Brown J. (2007) "Growth and innovation in medical devices: a conversation with Stryker chairman John Brown. Interview by Lawton R. Burns", Health affairs (Project Hope), 26(3), w436 - w444. https://doi.org/10.1377/hlthaff.26.3.w436
2. Chung, J., Ko, N., & Yoon, J. (2021) "Inventor group identification approach for selecting university-industry collaboration partners", Technological Forecasting and Social Change, 171, 120988. https://sci-hub.se/10.1016/j.techfore.2021.120988
3. Das, S. (2022, November 30), "We are more than hopeful and positive that the govt will act upon for separate dept of medical devices", An interview with Mr. Rajiv Nath, Forum Coordinator, AIMED. BioSpectrum. https://www.biospectrumindia.com/article/pdf/22311
4. Department of Pharmaceuticals, Ministry of Chemicals & Fertilizers, Government of India (February 2021). Boosting the Indian Medical Devices Sector. https://pharmaceuticals.gov.in/sites/default/files/Final%20Boosting%20of%20Medical%20Devices%20Industry%20-%20Report%20-%202023.pdf
5. Etzkowitz, H. & Leydesdorff, L. (1998) "Triple helix of innovation: Introduction", Science and Public Policy, January 1998
6. Evans, R. (2016, June) "Device Talks: The leadership lessons of John Brown, the man who built Stryker", https://www.medicaldesignandoutsourcing.com/leadership-lessons-john-brown-man-built-stryker/

7. India Brand Equity Foundation (2023). Medical Devices Industry in India. https://www.ibef.org/industry/medical-devices

8. Informa Market (2020) "Healthcare Insights for India Top 5 countries for import and export of medical devices", https://www.indiahealth-exhibition.com/content/dam/Informa/indiahealth-exhibition/en/downloads/INDIA%20Health-Import%20Export%20Report.pdf

9. Kahn, A. (1991): 6. The Dynamics of Medical Device Innovation: An Innovator's Perspective. Institute of Medicine (US) Committee on Technological Innovation in Medicine, Gelijns, A. C., & Halm, E. A. (Eds.). (1991). The Changing Economics of Medical Technology. National Academies Press (US). doi: 10.17226/1810.

10. KPMG (2022) "Enabling growth and innovation in the Indian medical devices sector", https://apacmed.org/enabling-growth-and-innovation-in-the-indian-medtech-sector/

11. Martin, J. L., Norris, B. J., Murphy, E., & Crowe, J. A. (2008) "Medical device development: the challenge for ergonomics", Applied ergonomics, 39(3), 271 - 283. https://doi.org/10.1016/j.apergo.2007.10.002

12. [10.] Tsuruya, N., Kawashima, T., Shiozuka, M., Nakanishi, Y., & Sugiyama, D. (2018) "Academia-industry Cooperation in the Medical Field: Matching Opportunities in Japan", Clinical therapeutics, 40(11), 1807 - 1812. https://doi.org/10.1016/j.clinthera.2018.10.010

13. Vaismoradi, M., Jones, J., Turunen, H., & Snelgrove, S. (2016) "Theme development in qualitative content analysis and thematic analysis", Journal of Nursing Education and Practice, 6, 100 - 110. http://dx.doi.org/10.5430/jnep.v6n5p100

14. Yee, Y., Tan, C. L. & Ramayah, T. (2017) "A Proposed Model for Improving R&D Project Performance in the Medical Devices Industry", Global Journal of Business and Social Science Review (GJBSSR), 5(3), 43 - 50. https://doi.org/10.35609/gjbssr.2017.5.3(6)

15. Yuko, A. (2020) "Introduction of Medical Device Development through Industry–Academia Collaboration by the Hamamatsu Method", Advanced Biomedical Engineering, 9, 112 - 116. https://doi.org/10.14326/abe.9.112