



RESEARCH ARTICLE

Applying the Business Model Navigator to MART: Innovation and Sustainability in Formula Student Competition

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ABSTRACT

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This study applies the Business Model Navigator to MART, a multidisciplinary team of students from the University of Málaga that competes in the Formula Student competition. The objective is to optimize its business model to improve financial sustainability and sponsor relations, while reinforcing its educational focus. By employing the four steps of the Business Model Navigator—initiation, ideation, integration, and implementation—key opportunities were identified to diversify revenue streams, enhance the perceived value for sponsors, and improve the team’s organisational structure. The results indicate that the implementation of this approach enabled MART to expand its sponsor network, strengthen sponsor relationships, and establish a more solid and sustainable business model. Despite the achievements, certain challenges remain, such as managing the growing organisational complexity and balancing professionalization with the team’s educational mission. This study provides an in-depth analysis of the effectiveness of the Business Model Navigator in a competitive and educational context like Formula Student.

INTRODUCTION

Málaga Racing Team (MART), founded in 2016, is a multidisciplinary university team composed of over 70 students from the University of Málaga (UMA), participating in Formula Student (FS), an international competition that challenges university students to design, develop, and compete with a race car. FS is an educational project that evaluates both the technical skills of the teams in building the vehicle and the commercial viability of the projects (FSS, 2024). In this competition, students acquire competencies in areas such as engineering, business management, and innovation, preparing them to face professional challenges (Solis and Romero, 2017).

MART is made up of students from various disciplines, organised into two main areas: technical and business. The technical area is responsible for the design and manufacturing of the vehicle, while the business area focuses on securing sponsors, managing finances, and communicating the Project (MART, 2024). This multidisciplinary approach has allowed MART to successfully compete in several editions of Formula Student, earning significant recognition in international competitions in Spain and German. However, the need to ensure long-term financial sustainability, as well as to enhance its attractiveness to sponsors, has prompted the team to explore new ways to optimize its business model.

Business Model Navigator (BMN), developed by the University of St. Gallen, is a structured methodology that facilitates innovation in business models (Gassmann et al., 2013). Based on the analysis of more than 300 successful business models, BMN proposes a series of patterns that can be applied to optimize an organisation’s performance (BMILab, 2024).

The objective of this study is to apply the BMN to MART to analyse its business model, identify areas for improvement, and generate new growth opportunities. This approach seeks to increase the team's financial sustainability, enhance its value proposition to sponsors, and strengthen the training of its members, enabling MART to continue competing successfully in FS and expand its impact in both university and business contexts.

This paper is organised as follows: the methodology section describes the four steps of the BMN and their application to MART. Next, the results section presents the expected benefits of this implementation. The discussion section addresses the impact of the methodology on MART's financial viability and internal management. Finally, the conclusion section offers key reflections and recommendations for future applications of the BMN in similar contexts.

METHODOLOGY

This study implements the BMN, developed by the University of St. Gallen, in the case of MART, with the aim of identifying opportunities for improving its business model and ensuring its long-term sustainability within the FS competition. The process follows the four phases of the BMN (Gassman et al., 2020) adapted to the specific context of MART: *initiation*, where the current business model is analysed; *ideation*, in which new ideas are generated; *integration*, to ensure internal and external consistency of the ideas; and *implementation*, where the new model is validated and refined.

Initiation

The initiation phase focused on reviewing MART's current business model. Interviews were conducted with team leaders from both the technical and business areas, as well as with current sponsors, to identify the strengths and weaknesses of the existing business model. Additionally, the team's ecosystem, including sponsors, academic institutions, and other stakeholders, was analysed to understand how value is currently generated for sponsors and how revenues are sourced.

Ideation

The ideation phase was crucial for generating new value propositions and revenue streams for MART. Workshops and brainstorming sessions were held with team members, external advisors, and experts in marketing and sponsorship. During this phase, various patterns from the BMN were applied, selected for their potential to strengthen MART's value proposition and enhance its financial sustainability (Table 1).

Table 1. Selection of patterns from the BMN to be applied to MART

Pattern	Explanation
Crowdfunding	This pattern enables MART to engage the community in financing the project. Through crowdfunding campaigns, the team can raise funds for specific aspects of vehicle development or participation in competitions, fostering community involvement and support.
Experience selling	This pattern allows MART to offer immersive experiences to sponsors, such as participation in FS events, visits to the team's workshop, or the opportunity to accompany the team during competitions. This strategy adds value to sponsorship beyond mere brand visibility.
Add-on	The team can offer additional services to sponsors in exchange for increased investment. This includes offering different levels of sponsorship, where larger sponsors can gain premium visibility on the vehicles and at events, while smaller sponsors can access more basic sponsorship packages.
Pay-per-use	This pattern allows sponsors to pay based on the visibility they receive at key events or specific competitions, enabling them to adjust their investment according to the perceived benefits. This approach offers

	flexibility and ensures that sponsors only pay for the actual value generated.
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Integration

During the integration phase, the ideas generated in the ideation phase were refined and evaluated to ensure their internal consistency and feasibility within MART. Tests were conducted to assess how the different value propositions aligned with the team's overall strategy and how they could be effectively implemented within the existing structure.

The primary objective of this phase was to align the new ideas with MART's resources, capabilities, and strategic objectives. Discussions were held with current sponsors to explore the implications of implementing the new proposals, allowing for direct feedback and adjustments based on sponsor needs. Additionally, the feasibility of these ideas was evaluated in terms of the technical and human resources available within the team to ensure that the proposed innovations were realistic and sustainable.

This integration process also included an assessment of the economic and operational impacts of the new ideas, ensuring that any changes to the business model not only enhanced revenue generation but were also viable in terms of implementation within the team. No new patterns were introduced during this phase; instead, the ideas generated earlier were refined and combined to maximize their impact.

Implementation

In the implementation phase, the validated ideas and patterns from the previous stages were executed iteratively, allowing MART to adopt new strategies for sponsor engagement and revenue generation. The application of these patterns was carefully monitored to ensure that they were aligned with the team's broader objectives, technical capacities, and organisational resources.

The implementation of Crowdfunding was one of the first strategies applied. MART launched a series of crowdfunding campaigns aimed at funding specific areas of vehicle development and participation in key FS competitions. These campaigns were promoted through social media, university networks, and collaborations with community influencers. The early success of these initiatives demonstrated the viability of crowdfunding as a complementary source of funding. As the campaigns gained traction, MART was able to gather not only financial support but also increased visibility within the community, which fostered deeper engagement and support from the university and local partners.

Simultaneously, Experience Selling was rolled out, focusing on offering unique sponsorship opportunities to key partners. Sponsors were invited to participate in behind-the-scenes experiences, such as exclusive visits to the workshop, participation in vehicle test runs, and VIP access to Formula Student competitions. This approach significantly increased sponsor satisfaction, as it offered them a more immersive and memorable experience that went beyond brand visibility.

To ensure a scalable sponsorship model, the Add-On strategy was also applied. This allowed MART to offer tiered sponsorship packages that catered to different levels of financial commitment. Smaller sponsors were able to gain basic visibility, while larger sponsors could access premium branding opportunities, such as prominent placement on the vehicle, at events, and in media coverage. This strategy provided MART with a flexible yet robust framework for sponsorship, accommodating both large corporate partners and smaller community-based sponsors.

The Pay-Per-Use pattern was used selectively, particularly for sponsors who sought a more performance-based model. Sponsors were charged based on the exposure they received during high-profile events, which allowed MART to offer more dynamic sponsorship agreements. This approach was especially appealing to sponsors who wanted to measure the return on their investment more precisely, leading to stronger long-term partnerships.

Throughout the implementation process, MART maintained close communication with its sponsors, providing regular updates on the results of their contributions and seeking feedback to further refine the sponsor experience. The iterative nature of the implementation allowed MART to adjust its strategies in real time, ensuring that both sponsors and the team benefited from the partnership.

RESULTS AND DISCUSSION

The implementation of the BMN at MART resulted in several key outcomes that enhanced the team's financial sustainability, sponsor engagement, and organisational structure. The application of patterns such as Crowdfunding, Experience Selling, Add-On, and Pay-Per-Use demonstrated significant potential for optimizing MART's business model, providing both immediate benefits and long-term strategic insights.

Diversification of revenue streams

One of the most immediate results of applying crowdfunding campaigns was the diversification of revenue sources. This approach reduced MART's reliance on traditional corporate sponsorships, which previously comprised the majority of its funding. The crowdfunding campaigns, promoted primarily through social media and university networks, successfully raised funds for specific aspects of vehicle development and competition participation. Notably, community involvement in these campaigns not only increased financial support but also strengthened the relationship between mart and its local supporters, fostering greater visibility and engagement.

However, while crowdfunding proved effective as a complementary funding source, it may not be sustainable long-term without significant ongoing marketing efforts. Regular campaigns would require continuous outreach and communication, potentially straining the team's resources. Despite this, the crowdfunding strategy serves as a valuable tool to engage the community and diversify funding in the short term.

Increased sponsor engagement and value proposition

The introduction of experience selling created a more immersive value proposition for sponsors, offering them opportunities to engage directly with the team through behind-the-scenes access, vehicle test participation, and vip attendance at FS competitions. These experiences provided sponsors with an emotional connection to the project, beyond traditional brand exposure. This deeper engagement led to stronger relationships between mart and its sponsors, enhancing sponsor satisfaction.

However, creating and managing these immersive experiences presented logistical challenges for the team. Organising events and personalized experiences required additional resources and coordination, which, if not properly managed, could detract from the team's core technical and educational focus. Ensuring that these sponsor experiences do not overburden the team will be key to maintaining this sponsorship model in the future.

Scalability and flexibility in sponsorship agreements

The application of the Add-On pattern enabled MART to create a scalable sponsorship model, offering tiered sponsorship packages that catered to different levels of financial commitment. Smaller sponsors were offered basic visibility packages, while larger sponsors received premium benefits, such as prominent placement on the vehicle, at events, and in media coverage. This flexible approach expanded the team's sponsor network, allowing them to engage both local businesses and large corporations.

This model effectively diversified the team's funding sources and reduced reliance on major sponsors. However, as the number of sponsors increased, MART faced the challenge of ensuring that all sponsors received adequate attention and value. Managing a growing sponsor portfolio will require efficient communication and organisation to maintain sponsor satisfaction and maximize the benefits of each sponsorship tier.

Performance-based sponsorship and sponsor retention

The Pay-Per-Use pattern offered a more dynamic, performance-based sponsorship model, allowing sponsors to pay based on the visibility they received at key events. This model appealed to sponsors seeking clearer returns on investment, as it provided transparency and a direct link between sponsorship costs and benefits.

While this approach was successful in attracting sponsors who prioritized measurable outcomes, it also introduced complexities in tracking and reporting sponsor visibility. MART will need to develop accurate mechanisms for measuring exposure and providing data to sponsors, ensuring trust and transparency in future sponsorship agreements.

Enhanced organisational structure and communication

Throughout the implementation process, **MART** demonstrated improved internal communication and organisational structure. The team's ability to integrate new business model innovations while maintaining its technical and operational workflows was a key factor in its success. Regular feedback from sponsors and internal stakeholders allowed **MART** to continuously refine its strategies, ensuring that both sponsors and the team benefitted from the new business model.

However, as the team adopts more sophisticated business strategies and sponsorship models, there is a growing risk of increasing organisational complexity. Balancing the professionalization of the team with its educational mission remains a critical challenge. As the team grows, ensuring that members are not overburdened with responsibilities beyond their academic focus will be crucial. Developing clear roles, streamlining communication, and optimizing resource allocation will help maintain the team's educational objectives while supporting its business growth.

The results of the BMN implementation indicate that MART successfully diversified its revenue streams, enhanced sponsor engagement, and improved its organisational structure. However, several challenges remain, including managing the complexity of sponsor relations, ensuring the long-term sustainability of Crowdfunding, and maintaining the balance between professionalization and education. By addressing these challenges and continuing to refine its business model, MART is well-positioned to achieve long-term financial and operational success in the FS competition.

CONCLUSION

The application of the BMN to MART has proven to be an effective strategy for optimizing the team's business model, improving financial sustainability, and enhancing sponsor relations. The adoption of patterns such as Crowdfunding, Experience Selling, Add-On, and Pay-Per-Use has allowed MART to diversify its revenue streams, strengthen its value proposition to sponsors, and enhance its internal organisational structure. However, this implementation has also revealed several challenges and opportunities for further improvement.

Practical implications

The findings of this study have practical implications for other student-led projects and organisations participating in competitive environments such as FS. By applying structured methodologies like the BMN, teams can develop more robust business models that align with their long-term goals. Furthermore, the approach taken by MART in leveraging community engagement and offering experiential value to sponsors highlights the importance of creating deeper relationships with stakeholders, going beyond traditional sponsorship models.

The adoption of performance-based sponsorship agreements, such as the Pay-Per-Use model, demonstrates that transparency and measurable outcomes can strengthen sponsor retention and attract new partnerships. The flexibility in creating tiered sponsorship packages through the Add-On strategy also presents an adaptable model that other teams could implement to cater to sponsors of varying financial capacities.

Limitations

Despite its successes, this study is not without limitations. First, the scope of the analysis is limited to the specific context of MART, a multidisciplinary team competing in the FS competition. The unique nature of this project may limit the generalisability of the findings to other contexts or organisations, particularly those that do not operate in a competitive, educational setting.

Additionally, the reliance on Crowdfunding as a significant revenue stream poses sustainability concerns. While this approach has proven effective in the short term, maintaining consistent engagement from the community and ensuring continued financial support may require substantial marketing efforts and resources. Future research should explore more sustainable methods of diversifying income streams for student teams.

Future research directions

Based on the findings and limitations of this study, several lines of future research are recommended. First, further studies could investigate the application of the BMN in other student-led or non-profit organisations that operate in different sectors or contexts. This would help determine whether the strategies implemented by MART are replicable and effective beyond the specific case of FS.

Future research could also explore the long-term impacts of the Crowdfunding and Experience Selling models on team dynamics and resource allocation. As these strategies require significant coordination and investment, understanding their effects on the team's academic and technical performance would provide valuable insights for ensuring that business model innovations do not compromise educational objectives.

Lastly, there is an opportunity to further refine the Pay-Per-Use model by developing more advanced tools for tracking and reporting sponsor visibility at events. The creation of standardized metrics for measuring the return on investment for sponsors in educational projects like MART could enhance sponsor satisfaction and lead to the creation of more data-driven sponsorship agreements.

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