



FEMALE PARTICIPATION IN BUSINESS INFORMATION SYSTEMS



A GENDER REPRESENTATION STUDY EXPLORING FEMALE ENROLMENTS IN THE BUSINESS INFORMATION SYSTEMS PROGRAMME IN MUNSTER TECHNOLOGICAL UNIVERSITY

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We are extremely grateful for this opportunity and believe the interventions proposed through this project will make a meaningful contribution to increasing awareness of the merits, suitability and breadth of career opportunities associated with the BIS programme in MTU to a wider female audience.



Executive Summary

This report presents the findings of phase 1 of the Cognizant supported research project examining female participation in the Business Information Systems (BIS) programme at Munster Technological University (MTU). The study responds to persistent gender imbalances in STEM disciplines and the growing demand for digitally skilled graduates across the Irish economy, focusing specifically on MTU's BIS programme. Drawing on a review of national and international literature, institutional enrolment and progression data (2019–2025), and primary survey data from both current BIS students and pre-tertiary learners, the research explores patterns of female enrolment, progression, perceptions, and confidence within the BIS context.

The findings indicate that while female progression rates within the programme are comparable to, and in some cases exceed, those of male students, female enrolment remains consistently low. Survey results highlight gender-based differences in confidence, career orientation, and perceptions of BIS, with female students demonstrating strong awareness of career opportunities but lower confidence in their ability to succeed. There is also evidence from the data gathered to indicate that male students lean towards technical career preferences, while females tend towards business and leadership roles. Pre-tertiary data further suggests that information gaps, limited role-model visibility, and perceptions of the programme as technical and male-dominated may act as barriers to female participation.

Based on these insights, the report proposes a set of targeted, evidence-based interventions focused on early-stage awareness, narrative reframing, role-model visibility, school outreach, and financial supports. These interventions will be piloted in phase 2, (semester 2, 2026), with the objective of increasing female enrolment and strengthening the future talent pipeline for BIS and related digital careers.

Key Findings

Strong female progression rates indicate underrepresentation is driven by enrolment, not attrition

Female students show lower confidence despite comparable awareness and performance.

Male students lean toward technical careers; females toward business and leadership roles.

Information gaps and lack of role models impact pre-tertiary female interest.

Introduction



"Cognizant is dedicated to empowering individuals and communities with the skills required to succeed in the digital age. Through Synapse, our commitment to skilling two million people by 2030, we are proud to support MTU's thought leadership in this area and to collaborate on research that helps build more inclusive and sustainable digital futures."

David Sheedy

Head of Cognizant Life Sciences Manufacturing Ireland

This research focuses specifically on gender representation within the BIS programme at Munster Technological University, Cork. The purpose of this research is to create thought leadership in the national context of female enrolments in the BIS discipline, to design interventions to attract more diversity to the programme, evaluate the results of the interventions and share results with BIS academic community nationally. The outputs of this research will be presented in two phases. The scope of this phase 1 report examines female enrolment trends in the BIS programme in MTU Cork over the period from September 2019 to September 2025. This research also investigates pre-tertiary student's perceptions of STEM careers by gender, focusing on the BIS discipline in particular, to identify perceived barriers that may limit female participation in the field. The interventions proposed are designed to overcome some of those barriers and increase awareness of the BIS discipline, the breath of career opportunities available to graduates and ultimately increase female participation in the programme over the coming years.

It has long been recognised that women are underrepresented in STEM disciplines (Science, Technology, Engineering and Maths) and this is further exaggerated for those coming from low socio-economic backgrounds (Boyle et. al, 2024). Even though women have made significant gains in recent years in terms of representation, equitable pay and recognition, differences persist, particularly when focusing on STEM disciplines. Digital transformation through AI adoption, automation and analytics is changing the operating environment for businesses across multiple sectors so the need for technology and digital literacy skills now spreads far beyond the technology sector itself. With the demand for these skills growing right across our economy, it is essential in order to remain competitive and lead the way as a knowledge economy, that Ireland's workforce can meet those increased demands. Many CEO's and senior leaders in organisations across a wide range of sectors are reporting skills gaps and labour market shortages in terms of key STEM skills which is exacerbated by lack of female talent in the discipline. This is not a new challenge however. Research looking at the US alone estimated in 2012 that approximately one million additional STEM graduates would be needed to meet skills demand in this discipline over the next decade, but due to the rate of technological advancement and technology adoption across almost every sector, this skills shortage persists today (Olson et. al, 2012). For sustained economic growth, it is critical that interventions are put in place to unlock the potential of female workers in these industries and increase the pipeline of female talent coming out of our universities with digital literacy and technology skills.

Looking beyond purely economic and labour market benefits, a wide body of research supports the range of benefits gender diversity brings to the workplace such as diversity of thought, innovation and more representative decision making, (Boyle et. al, 2024; Dwyer et. al, 2003; Ferrary et al, 2023). In general, addressing the gender balance can help to address skills gaps leading to job creation, improved organisational performance, culture and operating environment through workplaces characterised by balance and societal representation. In order to have more equitable gender representation in our workplaces, we must have this balance visible within the technical disciplines within our universities where this pipeline of talent is developed.

What the literature tells us

Gender diversity in STEM organisations is essential for fostering diversity of thought, which drives innovation and better decision-making (Boyle et. al, 2024). Research shows that gender diversity especially across middle management and operational staff levels in organisations positively impacts a firm's economic performance and contributes to its competitiveness (Ferrary et al, 2023). Furthermore, when people of different genders contribute their perspectives, experiences, and problem-solving approaches, teams are more likely to challenge assumptions, avoid groupthink, and develop creative solutions to complex technical challenges. Diverse teams also tend to design products and technologies that better reflect the needs of a broad and varied society stemming from a wider range of lived experiences, improving relevance and impact and reducing the potential for bias, all of which are becoming increasingly important as we move towards AI immersion in many aspects of business and society. By actively promoting gender diversity, STEM organisations not only create more inclusive workplaces but also strengthen their ability to adapt, compete, and lead in an increasingly complex and interconnected world. A study by Dwyer et al. (2003) looking at the influence of gender diversity in management on firm performance found that low levels of gender diversity can lead to dysfunctional group processes that negatively impact company performance.

As the speed of movement towards the digitisation of society continues to accelerate, having access to a robust STEM workforce will be more important than ever to support continual growth and enable organisations to compete and innovate. According to a report published by Skillnet Ireland (2025) which surveyed 500 business leaders across the country, sourcing employees with the right skills continues to present a challenge for Irish businesses. Business leaders reported technical and engineering (37%), digital technologies (29%), and regulatory (29%) as the employee skillsets that employers are finding difficulty in recruiting. As technology becomes more embedded in almost every aspect of life it is critical that organisations have a robust STEM workforce to support innovation and drive economic growth. A key step to narrowing this skills deficit is to address the availability of female talent in the discipline and to ensure the presence of a talent pipeline with greater gender balance by increasing the number of female students enrolling in STEM undergraduate and post graduate programmes.

Research suggests that female under-representation in STEM can be attributed to various interconnected factors such as, having fewer opportunities to engage with STEM activities, limited interactions with female role models or mentors who work in STEM roles and cultural or familial expectations (Boyle et al., 2024). According to the latest research from iWish, a volunteer led community established to showcase the power of STEM to female secondary school students, three in five girls in Ireland believe that gender inequality is the biggest barrier preventing them from pursuing careers in the sector (iWish, 2025). Furthermore, the research shows a significant difference between co-educational and single sex schools when looking at the availability of STEM subjects. Student insights gathered as part of this research shows that girls would like a greater offering of STEM subjects in their schools with 55% of girls in single sex schools noting that limited subject choice in their schools is a barrier to STEM compared to just 37% in mixed schools. Figures published by the Department of Education in 2024 showed that 42.4% of female 6th year students took one or more STEM subjects (excluding Maths and Biology) to Leaving Certificate. While this figure has grown from 39.5% in 2018 for females, it is still substantially lower than the 70.9% figure observed for male students in the same category (Department of Education, 2024). The report also found that lack of information, confidence and the absence of female role models all contributed to preventing more girls from choosing STEM careers or pursuing third level STEM programmes.

Anecdotal evidence gathered from pre-tertiary students who visited the MTU Open Day in October 2025 and expressed a curiosity for the BIS programme supports the findings of the research on the importance of female role models, with many of those girls mentioning mothers or other female family members working in the Information Systems discipline or studying BIS programmes at university level as a reason that they would consider the programme. Figures published by the Higher Education Authority of Ireland (HEA, 2025) in their key facts and figures report for the 24/25 academic year show that despite an overall increase in the number of female enrolments in Information and Communication Technology (ICT) courses since 2014, there continues to be a much greater percentage of males enrolling in courses across this discipline and other STEM programmes such as Engineering. Broadly however, both disciplines have seen an increasing percentage of female participants since the 2018/2019 academic years. The percentage of male enrolments over the same time period has not changed. Interestingly, while the upward trend of female enrolments over the 10-year period to 2024 is evident, the number of female enrolments in the broad category of ICT courses across MTU in general saw a decline of 30% for the academic year 2024/2025. This is consistent with the figures experienced within the BIS programme specifically for the same time period which indicates the BIS programme enrolments were consistent with wider societal trends. Studies carried out by the National Centre for Education Statistics in the US in the late 1990's found that maths and science proficiencies of boys and girls were comparable to the age of nine but by age thirteen, a gap starts to appear. By age 17, the gender gap appeared to narrow slightly but never bridged. The report attributed this gap to many factors including socio-economic background, location and the type of educational offerings available to each gender.

A similar and comparative study was carried out almost twenty years later in 2013 by the Australian Bureau of Statistics and found that little had changed in terms of the gender gap in the intervening period. The findings of these studies in terms of the barriers to female enrolments are broadly similar to the findings of the latest iWish report, indicating that these barriers continue to persist today. When looking at retention rates in Engineering programmes, the Australian study concluded that there was little or no difference between men and women and that the proportion of men and women who began working as engineers after graduation was almost equal, indicating that female underrepresentation in the field is due to low enrolment rates rather than drop-out rates (Christie et al., 2017). In fact, research tells us that girls are more likely to achieve higher academic grades in these disciplines (Deza & Zhu, 2025) yet are continuing to opt out of STEM subjects at an early age.

To address the issue of inequality, one measure universities worldwide are attempting to institute involves scholarships targeted specifically at female students (Christie et al., 2017). Increasing the visibility of female role models in engineering and other STEM subjects is another way to highlight the presence, excellence and outstanding contributions of women in STEM fields. Many universities have introduced mentoring schemes to partner young female students with mentors in their field to provide guidance, encouragement and support as they pursue their studies (Christie et al., 2017).



Methodology

Stage one of this research, from September to December 2025, focused on understanding the landscape and existing research nationally in the BIS and broader STEM context. This study adopted a mixed-methods approach, combining a review of existing literature with primary data collection to explore perceptions of and barriers to gender diversity within the Business Information Systems programme at MTU. Initially, a substantial body of existing research relating to gender diversity in STEM and business-technology disciplines was systematically reviewed and evaluated for its relevance within the BIS context specifically. This process enabled the identification of key themes, trends and evidence-based strategies that informed what will be undertaken in the subsequent stages of the research. As part of a related piece of research looking at professional identity within the BIS programme, primary quantitative data was collected through a career preference survey of 115 first-year BIS students during semester one of the 2025-2026 academic year.

This survey captured students' motivations, career interests and perceptions of the programme. The resulting data was analysed through a gender-specific lens for the purposes of this research to identify patterns and trends, which were then triangulated with insights from the literature. To broaden the scope of this study, an additional survey was conducted with pre-tertiary students to examine gender-based perceptions and attitudes towards the BIS programme in MTU. Application data and enrolment statistics for the BIS programme for the period from 2019-2025 was also analysed to identify trends in enrolment statistics by gender. Furthermore, qualitative insights were gathered through anecdotal evidence from female second-level students who expressed an interest in the programme during the MTU Open Day. Collectively, these findings were synthesised to inform the development of a set of targeted interventions designed to promote awareness of the BIS programme and its benefits to a wider female student audience and consequently to improve female enrolments on the programme. These interventions will be piloted and analysed in semester two of the 2025-2026 academic year where appropriate.



The current MTU BIS Landscape

The BIS programme in MTU is a four-year level 8 undergraduate Bachelor of Business (Honours) degree programme. It is a hybrid programme comprising 50% business and 50% technical content. The programme consistently attracts student enrolment numbers in excess of 100. For the period of focus of this study (2019-2025), first year student enrolments show a steady but overall increasing upward trend as shown in figure one below.

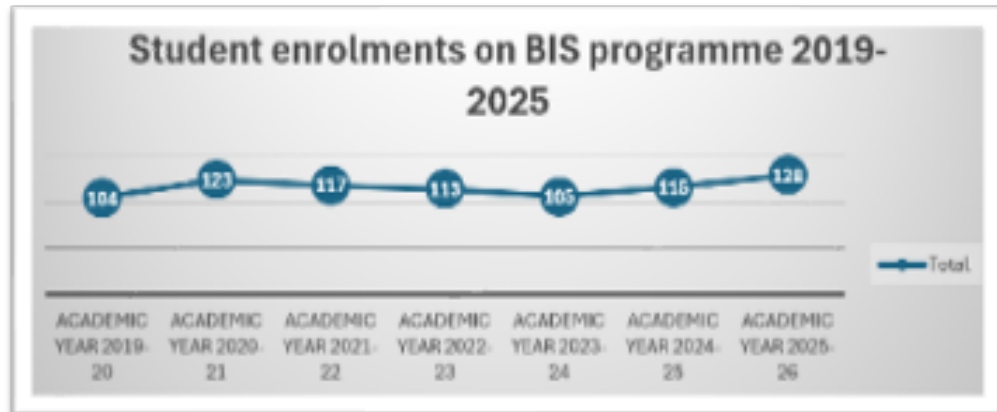


Figure 1: Student enrolment numbers, BIS programme MTU 2019-2025

Figure 2 below shows the gender breakdown within these numbers year on year over the same period. Female participation ranges from 13% to almost 39% with an average of 25%. While overall, looking at both genders, a slightly upward trend is evident over the period as a whole, female enrolments remain consistently far below their male counterparts at an average of almost 75% over the same period. Female numbers fell to an uncharacteristically low 13% in the 2024-2025 academic year. However, figures release by the Higher Education Authority in their key fact and figures report, (2025), showed that this followed the trend across the wider university for that year so the general fall in female enrolments for that particular year was not confined to the BIS programme alone.

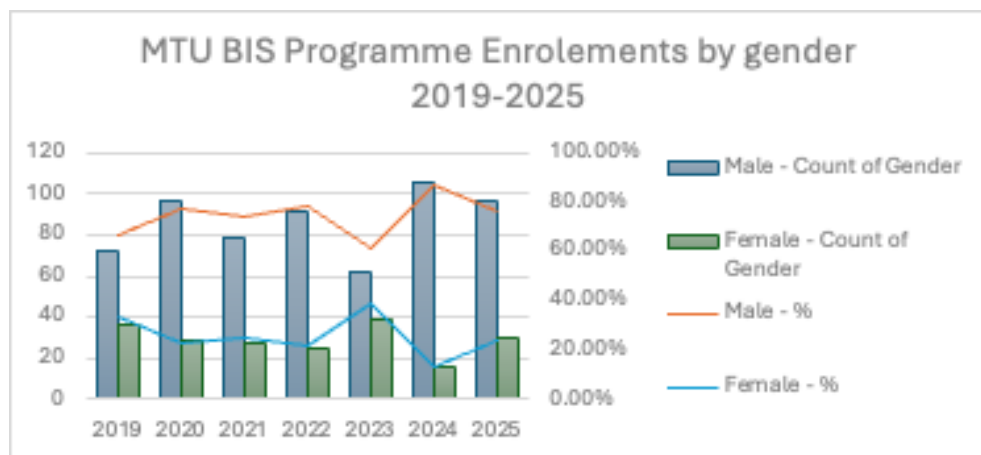


Figure 2: BIS student enrolments by gender, 2019-2025

Figure 3 below illustrates the trend in female enrolments on the programme over the same period, indicating an overall decline despite increases observed in certain years.

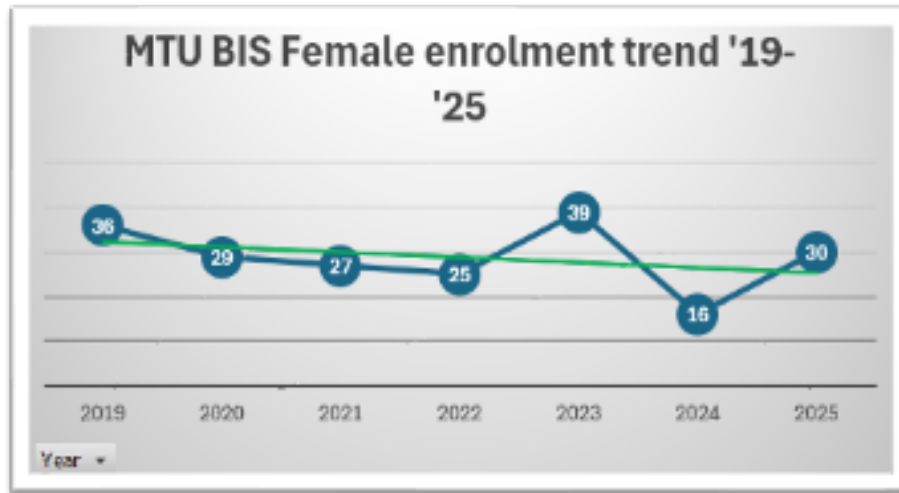


Figure 3: Female enrolment trend (%), BIS programme MTU, 2019-2025

Looking at progression rates through the first two years of the programme, female student's progression from year one to year two was higher than males (91% vs 81%). These figures align with the findings of existing research by Christie et al. (2017) which found that female underrepresentation in the STEM field is due to low enrolment rates rather than drop-out rates.

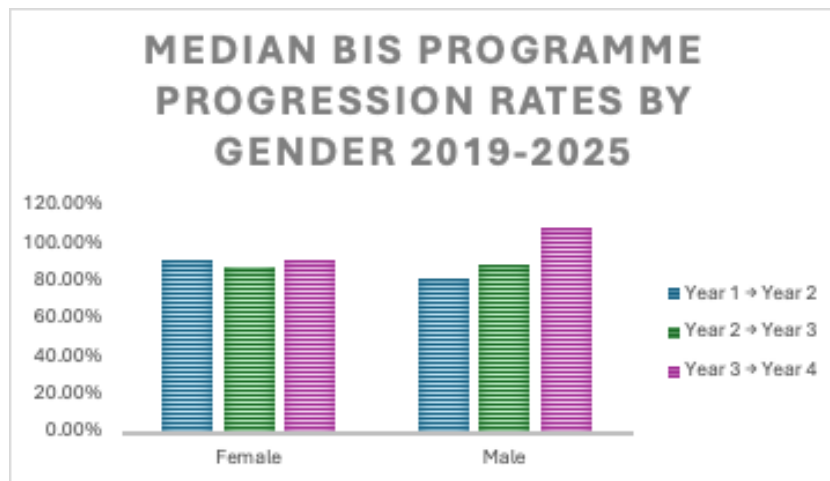


Figure 4: Female progression rates, BIS programme MTU, 2019-2025

Female progression however tends to be stronger in earlier years, while male progression shows higher rates into later stages, particularly from third to fourth year but as these are cross-sectional figures and not following individual cohorts longitudinally, this could be as a result of repeat students or deferred completions.

Data Collection, Analysis & Results

At the beginning of semester 1, in September 2025, as part of a complimentary research project looking at professional identity among BIS students, 1st year students were invited to participate in a career preference study which looked at student's perception of the BIS programme, their understanding of the future career paths that might be open to them on graduation and the extent to which they would consider a number of distinct career tracks on graduation, ranging from a range of highly technical to non-technical business and finance roles and their preferences for business versus technical modules. Additionally, it assessed interest levels across 14 distinct career tracks, ranging from technical roles like Software Developer and Data Science to business-oriented paths such as Marketing and Project Management. The study collected responses from 113 first year students. The primary aim was to understand career aspirations, module preferences and attitudes towards postgraduate education.

As part of this research, data collected from the career preference survey was analysed with a refined focus on gender to determine whether there is disparity of responses between male and female students. Among the 113 students, 84 were male and 29 were women, highlighting the existing gender imbalance on the programme. This demographic context is important for interpreting the findings, as gender-based differences often shape educational and career choices.

The data was analysed across a number of response areas to determine if any significant differences were visible between male and female responses and perceptions. Looking at the tendencies to favour the business or technical aspects of the programme, both genders showed a strong tendency toward neutrality, suggesting appreciation of the programme's hybrid nature. Female students were more likely to slightly prefer business modules (~38%) compared to males (~25%). Male students were somewhat more likely to lean toward technical modules overall. In general, female students showed a marginally stronger orientation towards business-oriented modules whereas male students showed a slightly stronger technical inclination. When asked, "To what extent would you prefer a technical or non-technical career after completing BIS", female students were more likely to prefer a business-oriented career path (~41% slightly prefer business vs ~30% of males) and male students were more likely to prefer a technical career path (~21% vs ~10% of females). Female students leaned toward leadership and people-oriented roles like Project/People Management, whereas male students demonstrated higher interest in technical roles such as Software Development and Data Science. This indicates a gender-based divergence in career orientation. Looking at the alignment of perceptions of the programme's modules with these findings, as module preference is a critical indicator of students' academic interests and potential career trajectories, the study revealed nuanced gender differences in preferences for business versus technical modules.

Appendix 1 shows a summary of gender-based differences out of this survey. In general, this data showed that while female students may have a clearer understanding of BIS and its career, they possess a lower confidence in their ability to succeed. This perception from female students may be a contributing factor to lower female enrolment rates in the programme.

To ensure any future interventions are appropriately targeted, CAO application secondary school data was analysed from BIS student enrolments over the last four years to understand the demographic of traditional 'feeder schools' to the BIS programme in MTU. The data shows that 54% of students who enrolled in the BIS programme in MTU over that period came from co-educational schools with 46% coming from single sex schools. Only 10% of BIS students over the last four years came from all girls' secondary schools in the region. Furthermore, no single sex all girls' school featured within the top 10 'feeder' schools over that time. The iWish 2025 survey discussed earlier in this report found that 55% of girls in single sex schools noted that limited subject choice in their schools is a barrier to STEM compared to just 37% in mixed schools. This highlights the importance of specifically targeting single sex all girls' schools in the region as a starting point for school visits and invitations to on-campus information events to help bridge information gaps and increase awareness of the BIS programme within students in these schools.

When the results were expanded to examine the top 20 feeder schools, only two all girls' schools made the list with a total of 16 students enrolling in the programme over the four-year period. The interventions proposed below will focus on building relationships with local girls' schools with the aim of raising awareness of the BIS programme within these schools.



Recommendations

In the general STEM context, research tells us that the key to successfully increasing female enrolment in STEM programmes depends on the type of pathways and support offered to girls throughout their schooling and transition to university (Christie et al., 2017). These supports will take a number of forms and be designed to address a some of the challenges and barriers outlined above in this report such as, increasing knowledge and awareness of the Business Information Systems discipline to 2nd level female students, particularly to all-girls schools, to ensure they fully understand the diversity of the programme and the breath of career paths available to them on graduation, financial supports for students experiencing socio-economic disadvantages and increased visibility of female role models in the discipline. With those objectives in mind, the following interventions are proposed.

1. Early-Stage Awareness & Pipeline Building through targeted outreach to schools

Research tells us that many girls self-select out before understanding what BIS actually involves. A number of school visits will be planned over the course of semester 2 2026. These visits will target transition year students in all-girls schools in the region which historically have little or no students enrolled in the BIS programme as the research shows that these types of schools show the largest differences in terms of the availability of subjects and exposure to STEM career information. Research suggests that the differences in male and female numbers choosing STEM subjects for Leaving Certificate are not always down to student choices alone. The Department of Education “Education Indicators for Ireland” report, (2024) showed that 86.8% of co-educational schools and 95.8% of all-boys schools offer a STEM subject (other than maths and science). However, only 68.3% of all-girls schools in Ireland offer any STEM subject aside from Maths, Biology, Chemistry or Physics further reducing young women’s access to STEM opportunities or education (Boyle et al., 2024).

During these visits, the true diversity of the BIS programme will be presented with a focus on people, problem-solving, leadership, and societal impact rather than coding alone. The supportive nature of the learning environment and a number of female student and graduate stories will be presented.



2. Reframing the Degree Narrative – challenge female perceptions of BIS

The goal of this intervention is to change perceptions of BIS as technical and male dominated. This can be achieved through greater promotion of female student and graduate success stories on our BIS specific social media channels and will focus specifically on gender-inclusive messaging to:

- ✓ Feature women in leadership and analytical roles.
- ✓ Highlight teamwork, communication, and strategic thinking.
- ✓ Showcase a cross-section of female students and graduates involved in a diverse range of projects or whose careers have not followed the traditional technology focused path after graduation.
- ✓ Highlighting the link between programme choice, career options and the student's personal values.
- ✓ Avoid overemphasis on programming in promotional content.

This is likely to have a positive impact and attract greater female attention as women are more likely to choose fields aligned with collaboration and real-world impact.

3. On campus events targeting females in BIS as part of TY experience week and MTU Open Day

Firstly, a female-focused BIS workshop could be run on campus, for example a "Business and Tech in Action" day where students could be given insights into 'taster' sessions to showcase elements of the programme content reframed for a secondary school audience and the opportunity see how BIS brings business and technology together by working on real life cases on digital transformation, sustainability, fintech, medtech and more. Existing students and BIS alumnae could be used as ambassadors for this event. A second hour long workshop could be run for girls attending the MTU Open Day later in the year following the BIS talks that run each year.

Secondly, MTU host school's quizzes such as the 'Big Schools Quiz' for senior second level students each year but has predominantly focused on Business and Accounting programmes. This research proposes to extend these quizzes to include the BIS programme specifically with the aim of enhancing knowledge of the BIS discipline among 2nd level students. Exposure to the programme and course content in this way would reduce uncertainty and build academic confidence.

4. Increase female role model visibility - *If you can see it, you can be it!*



Through the schools' visits, enhanced female-focused social media campaigns and an on-campus event, female second level students will gain exposure to a greater number of female role models from a diverse range of schools and backgrounds.

Pilot a **"Women in BIS"** profile series (videos, website or social media features) on social media to showcase diverse career outcomes such as consulting, product management, entrepreneurship, analytics, teaching.

Based on data gathered from 115 first year students in September 2025, 7 in 10 students rely on family and friends as a source of information when making decisions about future career options. This highlights the critical role visible and accessible role models within the community can play in supporting belief and encouraging more females into STEM based disciplines.

5. Financial Incentives

The research presented above shows us that financial disadvantage can often present a barrier to accessing STEM education at third level with females from socio economic backgrounds often underrepresented in STEM programmes. Developing a programme of financial support endorsed and sponsored by key employers and global organisations across the region could help to reduce the impact of those challenges and reduce some of those practical barriers through female targeted scholarship programmes or bursaries.

-  Offer entry scholarships for women in BIS.
-  Combine funding with mentoring or leadership opportunities.

Cognizant have led the way in this regard offering bursaries for three first-year females in the 2025-2026 academic year across a number of groups from disadvantaged socio-economic backgrounds, academic excellence and neurodivergence, signalling institutional commitment to diversity and further reducing perceived barriers to enrolment. The success of this programme should be used to signal that females are valued in the BIS discipline and attract further sponsorship and investment from the local business community so this programme of financial support can be extended into the future.

6. Work with iWish to progress the inclusion of MTU's BIS programme in their target programmes.

MTU is a strategic partner of iWish and facilitates on campus female-targeted events on an annual basis to give young girls exposure to STEM courses in the university via applied and practical interactive workshops and demonstrations. Currently however, this event focuses on science, computer science, engineering and maths programmes but does not include the BIS programme. As part of this research project, work will be undertaken to bridge that gap and extend the scope of the iWish campus week to include the BIS programme.

Conclusion

Workforces characterised by gender balance and greater female representation provide many benefits for organisations including:

- ✓ contributes to reducing skills gaps and ensures pipeline of appropriately skilled workers is sufficient to meet ever growing industry demands.
- ✓ supports economic growth.
- ✓ brings cultural and organisational benefits which contribute to a more positive and inclusive working environment.
- ✓ diverse teams bring balance, diversity of thought and more representative decision making which in turn drives superior organisational performance.

Despite similar academic aptitude however, enrolment rates in STEM programmes is far lower for females than males. The first step towards improving female representation in STEM careers is to increase the number of female students enrolling in STEM related programmes and undergraduate and postgraduate level. In the MTU BIS context the interventions outlined above designed to overcome some of the barriers limiting female interest in the programme will be planned and piloted in semester 2 of the 2025-2026 academic year with the aim on encouraging higher female enrolments on the programme over the coming years.



Appendix

Summary of Gender Based Differences across Pre-tertiary students

Theme	Female Trend	Male Trend
Understanding of BIS	Slightly higher	Slightly lower
Perception of BIS	More tech-oriented	More balanced
Confidence in success	Lower	Higher
External encouragement	Slightly lower	Slightly higher

Table 1: Summary of gender-based differences: Pre-tertiary student study - October 2025

Tables 2-4 show extracts of response data from the career preference study

To what extent would you prefer a technical or non-technical career after completing BIS?		
	Man	Woman
Much prefer business role	5.95%	3.45%
Much prefer technical role	3.57%	6.90%
Neutral	39.29%	37.93%
Slightly prefer business role	29.76%	41.38%
Slightly prefer technical role	21.43%	10.34%

Table 2: Student responses by gender in relation to technical or non-technical career preference.

To what extent do you prefer the business or technical modules offered by BIS?		
	Man	Woman
Much prefer business	11.90%	10.34%
Much prefer technical	3.57%	6.90%
Neutral	41.67%	31.03%
Slightly prefer business	25.00%	37.93%
Slightly prefer technical	17.86%	13.79%

Table 3: Student responses by gender with regards to module preference

To what extent do you understand career opportunities after completing BIS		
	Man	Woman
Low understanding	11.90%	10.34%
Neutral	23.81%	13.79%
Some understanding	59.52%	72.41%
Very strong understanding	4.76%	3.45%

Table 4: Student 's understanding of their career opportunities by gender

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