

Evaluating In-house Work Integrated Learning Experiences Using the Business Model Canvas

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ABSTRACT

CONTEXT

The school of Professional Practice and Leadership at UTS set up Optik Consultancy to provide students unable to access internships, with engineering projects set up by industry partners in a simulated workplace. In 2021, in the midst of the COVID-19 crisis, 120 students (85 international and 35 domestic) completed Work Integrated Learning (WIL) in this manner. This was the 5th iteration of the project with the number of students increasing each year. This model can potentially be extended to other groups such as refugees needing qualifications validated, or engineers returning to the workplace after an extended absence. To do this successfully, the program must meet participants' requirements. This requires recognition of the complexity of the program and the development of a framework to ensure all elements that make a successful program are in place.

PURPOSE OR GOAL

This paper analyses the Optik Consultancy through the lens of the 'Business Model Canvas' (Osterwalder & Pigneur (2010)). As illustrated by Kline et al (2017), this framework can be adapted to design a template to meet the specific needs of educational projects. We aim to analyse the main activities and processes of the Optik Consultancy and redesign the Business Model Canvas for WIL engineering projects to identify the elements necessary for designing a similar project in other settings.

APPROACH

Firstly, we will investigate the Optik Consultancy through the lens of the 'Business Model Canvas'. This will enable us to identify key areas relevant to a simulated internship program in order to form an engineering WIL canvas. This canvas will explain what we do, how we do it and why. We will then apply our new canvas to the Optik Consultancy to see how far it conforms to our template. Finally, we will conceptualise a new canvas that can be replicated as a template for setting up similar programs in other disciplines.

ACTUAL OR ANTICIPATED OUTCOMES

By analysing the Optik Consultancy through the lens of an adapted Business Model Canvas, we will assess the key areas of our program from a different viewpoint. This will include justification of the program, the stakeholders involved, their needs and level of involvement, and the resources needed to make the program a success. Once this template has been established, we will have a conceptual tool that can be used to set up and analyse other WIL programs.

CONCLUSIONS

With some adaptations, the business model canvas can be applied to evaluate engineering WIL programs and provide a template to extend and review similar activities. To ensure that the model is applied accurately, further research will be necessary to evaluate the extent each area of the framework has been achieved.

KEYWORDS

University-based Work Experience, Work Integrated Learning (WIL) models, 'Business Model Canvas.'

Introduction

For many students, a major obstacle to successfully completing their degree and developing their engineering identity is difficulty in finding a meaningful work-integrated learning (WIL) experience. This is a particular issue for international students who frequently have no previous work experience. Gribble (2014) and Robertson et al (2011) state that international students do not have the same access to social networks or understanding of workplace culture. Instead of feeling excited about the opportunity to practice their skills, these students often become discouraged. This is particularly true as many employers stipulate that they are only willing to take local students.

There are several reasons why employers may be reluctant to take international students on internships. Often, they are concerned about encountering issues with visas. Up till 2021, International students were only allowed to work 40 hours a fortnight. This has been temporarily relaxed due to worker shortages (Department of Home Affairs, 2021). Although this does not directly affect Work Integrated Learning, employers are concerned about employing illegal workers as there are heavy penalties for illegal employment. Moreover, employers are aware that this is not a long-term recruitment strategy as it is assumed that students will return to their own country once they graduate. Finally, there is a perception that international students may have poor language skills or be a poor fit within the company. This assumption is usually unfounded. At UTS the difficulty in getting internships was reflected by 49% of international students returning to their own country to conduct their internship in 2018. (International Student Internship Data 2022). This number has dropped significantly with the introduction of the Optik Consultancy.

The Optik Consultancy began in 2017 to help postgraduate engineering students complete their WIL by gaining valuable and relevant work experience. As they had only been in the country a short time, it was recognised that this cohort of international students would be unable to source WIL themselves. Consequently, students were able to undertake consultancies at UTS where they were engaged on genuine engineering tasks provided by industry partners. These tasks were sourced from a range of disciplines and were managed by a Site Manager who would establish and oversee student teams. The teams were given support from an onsite engineer who would advise students on their work and on the conduct of professional engineers. The environment was designed to simulate an engineering workplace.

With the onset of Covid in 2020, the program was expanded to include assist students unable to find WIL. In 2021, there were a total of 120 students 85 of whom were international. Students came from a range of engineering disciplines including Civil, Mechatronic, Mechanical and Biomedical. Each team was expected to report to the Site Manager on their progress on a regular basis.

This paper investigates how we can analyse, expand, and ultimately replicate the XXXXX Consultancy by adapting the 'Business Model Canvas' theoretical framework by Osterwalder & Pigneur (2010).

The Business Model Canvas

The Business Model Canvas (BMC) is a concise (single page) conceptual representation of all aspects of a business's goals and operations (Wit & Dresler (2021). It allows for flexibility of thinking when analysing the what, why and how of an organisation's existence. Osterwalder and Pigneur (2014, p10) stated the purpose of the BMC as 'the rationale and infrastructure of how an organisation creates, delivers and captures value.' The original model consists of nine sections arranged to represent the key areas of a company's operations.

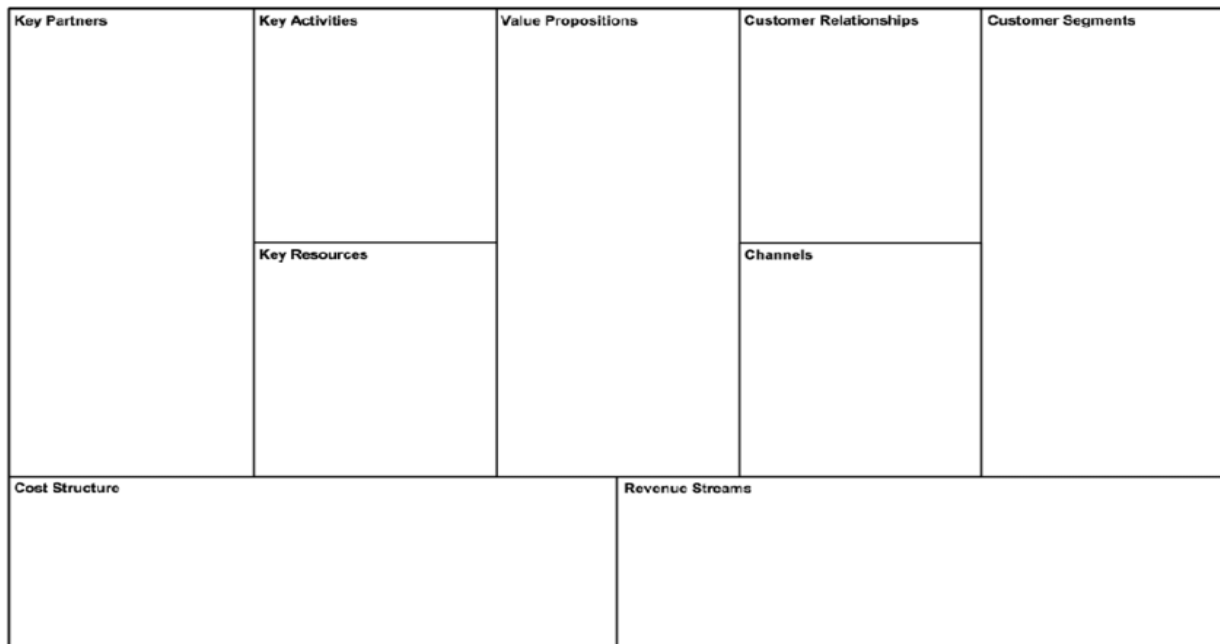


Figure 1: The Business Model Canvas (Osterwalder, Pigneur, 2010)

Since the model has been developed, companies have adopted the categories and the headings to meet their own needs. Further amendments have become necessary to adapt to changes in the economic and social climate since 2010 (Wit & Dresler (2021)). Other organisations have recognised that ‘value’ was not necessarily measured in financial terms. Sparviero (2019) states that Business Models help ‘articulate tacit knowledge’ to cut through the complexities of an organisation. This helps the creators to focus on essentials and understand the company’s overall direction. In addition, the BMC encourages the users to look at each of the nine factors individually as well as a whole. This gives a more complete understanding of the forces driving an organisation. Finally, by specifically naming each of the sectors, a common vocabulary is provided which allows all members of a team to have an equal understanding of what is being discussed (Sparviero, 2019). It is recognised that the ability to create direction is not just relevant to commercial ventures, but also to education and social enterprises. Consequently, the BMC has been adapted to meet other contexts.

A criticism of the BMC is that it is a static document in that it does not take into account changes in strategy or circumstances (Sparviero, 2019). If we are to replicate the BMC in other contexts, it is therefore necessary to consider the timeliness of the information included. In other words, BMC should be considered as a static snapshot of the activities at a particular point in time and adjusted over time as business priorities change.

While the original purpose of BMC was to enable its users to capture the key elements of a business model, either existing or a new one, BMC has been used beyond business setting. The most relevant for this research are previous examples of BMC use in education. For example, educational researchers have used BMC to structure their approach to teaching entrepreneurial finance (Jackson, Scott, & Schwagler, 2015) or for teaching engineering entrepreneurs (Hixson and Paretti, 2014; Jarrar & Anis, 2016; Haertel, Terkowski & May, 2016). Other researchers used BMC to design various innovations of education models, such as the use of blockchain in massive online open courses (Oganda, Lutfiani, Aini, et al. (2020) or study the effects of the Internet of Things (IoT) on smart education environments (Bagheri & Movahed, 2016).

Developing a canvas for a WIL educational setting

The development of a BMC for a particular setting is an iterative approach that can be altered as new information becomes available. (Kline, 2017). It also allows for identification and connections between major areas of consideration. In our development of a WIL canvas, there are several

areas that need adjusting from the original BMC model. For that purpose, we modified the original BMC to suit our needs. For example, we had to accommodate our understanding that we have multiple stakeholders all of which have different needs and that our conceptualisation of 'value proposition' needs to address all of these needs. We also realised that while our revenue stream can increase, the Optik consultancy is not focused on making a profit. Below we have analysed the Optik Consultancy through the lens of the nine sections of the BMC.

Key partners and customer segments

For the purposes of our WIL Canvas, our key partners and our customer segments are strongly connected. Students, industry partners and the wider university are all both partners and customers.

Observed through the lens of the BCM, students are customers in that they expect to have a realistic engineering experience in return for their student (HECS) fees. As participants in the Optik Consultancy, they are also partners in that they perform the work that meets the needs of the industry partners. The students who take part in the consultancy are ones who have not managed to find an internship themselves for a variety of reasons. Some lack networks to find and engage with employers in an interview process. Other students often have good technical skills but find communication a challenge. Some participants may not have worked before. Others may need to continue doing a part-time job to pay their fees. Regardless of the reasons that brought them to this WIL program, all participants require valuable work experience that will provide a realistic taster for the engineering industry with the support that will develop their confidence and identity as engineers.

Our industry partners provide participants with the projects that make the internship meaningful. They also provide feedback to participants on the progress of these projects. The market is segmented in that our students come from diverse engineering backgrounds. These backgrounds need to be represented in the projects that the industry provides and therefore segmentation occurs in the range of companies providing tasks for different engineering disciplines. It is therefore important that we have industry partners for each segment of our student body so they can gain experience in their preferred discipline.

Finally, the wider university is a partner in that it provides resources such as the space in which the Optik Consultancy operates, the time of the administration and marketing staff, students, and the contacts to approach companies to find projects. Most importantly, the university pays the staff who manage the project on a daily basis. In return for these resources, it expects increased contact with industry and a high-quality learning experience, which in turn enhances its reputation. Various layers of administration have different requirements and negotiations need to take place with different entities to get the resources we need. An example of this is working with timetabling to acquire space of the appropriate size and at the appropriate time.

The value proposition

We identified three sets of interconnected stakeholders who each need to be satisfied that their needs are met. Firstly, there are the students who need an internship to complete their degree. At a basic level, our value proposition is to provide students with the ability to progress towards graduation. Many of the students undertaking the Optik Consultancy are either international students or students who are not able to acquire an internship on their own. Initially, finding a way to complete their studies is Optik's main attraction.

To satisfy the university and to meet the expectations of external bodies such as Engineering Australia, Optik Consultancy needs to do more than this. It needs to give participants as genuine an experience of an engineering workplace as possible. This includes dealing with work issues, structuring, and coordinating work, working with others, meeting deadlines, and presenting and negotiating with clients. In short, we provide the transition from a university environment to a work environment. This includes the expectation that they will be provided with regular instructions but also actively seek them and an understanding that their work will be critiqued and they will be

asked to modify what they have done. To participants, our value proposition is that they will have experiences that will prepare them for work in an engineering workplace.

Our second group of stakeholders are our industry partners. Clients are recruited from a variety of industry disciplines to provide suitable projects that teams of qualified interns can complete. One selling point for engineering companies is they have teams of students focused on projects the company does not have the resources to complete. Moreover, they get a fresh viewpoint from participants not constrained by the company culture. Finally, they benefit from teams of workers who are managed externally and for whom they have no responsibility.

Our final stakeholder is the university itself. The university receives an improved reputation from the work that the students do for the industry partners. It provides positive publicity in the community. As many Optik participants are international students, a successful consultancy provides positive feedback to their home communities, which in turn may attract more international students to the university and the program itself.

Key activities

It is clear that key activities are not just performed by the students. Much takes place outside the consultancy. Currently, Optik runs outside scheduled classes during the summer semester. Each year a suitable space needs to be acquired and a budget obtained from the university. However, it is envisaged this will change when the consultancy becomes a recognised subject. Participants need to be selected, informed, and given administration support pre-consultancy, during the consultancy and post-consultancy. This includes management of students' grades. Moreover, contracts must be agreed and arranged for the two Site Managers and the former student brought in for IT support. An important ongoing task is to create and maintain relationships with industry partners. These relationships need to be constant to ensure a ready supply of industry projects in the future. There are also issues regarding intellectual property and the possible need for formal contracts.

It is important to recognise that the aim of the consultancy is to give participants a realistic workplace experience. This experience is likely to become diluted the more participants there are. If there are too many students, the site managers will have less time with each group and industry partners will not be able to build relationships with the groups. This has been partly remedied by each group having a designated leader who is expected to attend leaders' meetings and to share the information with the rest of their group. It may be that Optik needs to be run more than once a year or a cap needs to be put on the number of participants.

One of the important participant learnings directly related to the key activities is time management. There is a tendency for interns to complete their given tasks and wait for feedback. Like most workplaces, it is expected that students will be proactive in seeking tasks or moving on to the next steps of the project. This element of self-management is both vital for the functioning of the consultancy but also important as a workplace skill.

Key resources

We recognise that the key resource for the consultancy is the staff involved. The student-facing staff include two Site Manager's, one of whom has an engineering background. Their job is largely to facilitate. This includes dealing with group personality clashes, discussing ideas, and fostering professional workplace standards. Many students are not used to handling criticism and find it difficult to know how to react if the client rejects their ideas. Consequently, there is an element of counselling involved in the role. The consultancy is time intensive and requires a genuine interest in the participants and an ability to deal with issues as they arrive. An example of this was the consultancy moving online because of students falling sick with covid-19.

The role of an IT Manager, taken by a former student, was also critical. This role is to ensure that the groups have the necessary software to complete their task as well as to troubleshoot technical issues they may have. These issues also include IP issues and software licensing concerns.

Other key resources are the administration team who not only deal with the student journey (described in activities) but also take on an HR role as students need solutions to personal and professional issues. A key administration role is sourcing, maintaining, and tracking industry partners, which includes gathering of their feedback. This role is constant as new projects need to be found before each intake. The role also has a marketing component as it is important to gain publicity by reporting positive outcomes to the university, current industry partners and a wider industry community.

The site itself is also important. Ideally, we would prefer a site that resembles an engineering project management office as closely as possible. It needs to be able to be divided into several smaller groups so individual teams can function without interruption. It also needs to look professional. Ideally, the consultancy would be run off-campus so students were mentally and physically removed from their previous studies.

Customer relations and channels

The relationship component is different from the one in the standard BMC as in some ways our goal is for stakeholders to develop relationships with each other rather than to develop relationships with us. Participants and industry partners are reliant on each other for information on projects and progress check-ins. Feedback from participants always suggests that the more time spent with our partners the better. Contact with the partners is the participants' opportunity to engage with the industry and to make valuable connections for their future. Partners understand that the more information they can give the participants, the more likely they are to get the project results they desire. Usually, the channel for maintaining this relationship is the weekly catch-up session when the groups present their projects to their client and the client gives them feedback. As our partners have other responsibilities, there are times when these meetings are cancelled. This has been a major pressure point for our students.

The third stakeholder is the university itself. Clearly, as part of the university, Optik needs to represent the university positively. This is achieved through feedback from participants and industry. It is hoped that participants will leave Optik with a positive impression and will talk to other students and relevant stakeholders about their experiences. Positive testimonies can also be used for marketing materials and help to attract future students. However, there is a drawback to too much positive feedback, as it is preferable for students to source their own internship with industry. In other words, if Optik becomes too popular, students unable to find a paid internship will start to rely on Optik too much, rather than invest time and effort to source their own placement. It is important that information channels promote Optik's successes while ensuring that Optik is still seen as an internship of last resort for students who are often disadvantaged.

Through maintaining ongoing relationships with Optik's industry partners, the university may leverage these contacts to expand into new areas. The success of Optik may facilitate access to future research projects or other forms of partnership with industry.

As far as Optik is concerned much of the communication and customer relations takes place before and after the consultancy. Before the consultancy students need to be selected and informed of expectations. During the projects, there is an ongoing dialogue with participants to ensure that they are performing to an acceptable standard. Participants are given a pass/fail mark for the subject. This is because much of the work is in groups, so it is difficult to assess individual contributions. To give participants additional incentives, the Supervisor will provide a reference to those felt to have made a positive contribution. This provides students with genuine industry experience on their resume and by only giving references to the best participants helps promote the quality of engineering graduates.

Customer relations are maintained through continuous contact, both face to face and through email. Further promotion is conducted through promoting the successes and keeping all stakeholders informed as to what is happening. Partners are also invited to a showcase where groups present their solutions to staff and to industry. These presentations provide further understanding of the program and help to promote student successes.

Cost structure

The main cost for Optik is staffing. Each consultancy requires two supervisors and an IT specialist who makes sure that the necessary software is available for students to complete their projects. The consultancy is time intensive for those running it and this needs to be considered in the remuneration. It is difficult to keep Optik consultancy staff when they could make more money elsewhere as industry consultants. Not only does this make recruitment more difficult but it risks the loss of institutional knowledge.

A hidden cost is the administrative support necessary to run the program. Students need to be sourced, invited, enrolled, and orientated before the consultancy begins. Equally, relationships with industry partnerships need to be maintained. Projects need to be listed and matched with disciplines and participant numbers. This requires a significant investment of time on behalf of administration staff which subtracts from the time available for other projects. The more the consultancy expands, the more admin support will be an issue.

A further cost that will become more important if trying to attract a niche group is marketing. This is important for enhancing links with industry and showing the university as a whole the benefits of the program.

Variable costs include the software necessary to complete the tasks. Stationery to allow the groups to brainstorm ideas, and a small catering budget for events such as the end of project presentations.

Revenue stream

Financial resources are a major issue. Over the past few years, the consultancy has been funded by our faculty. Ideally, the Optik consultancy could be offered as an elective subject so it can be funded as a normal part of the students' learning experience. This would allow Optik to have a guaranteed budget and key areas such as marketing and recruitment to be developed. It would also allow decisions to be taken earlier so long-term planning could be developed.

One method of funding is sponsorship, this would involve industry partners contributing to the cost of having their problems solved. Although sponsorship would potentially make Optik self-sufficient, it would bring its own issues. If companies are paying to have their problems solved, the projects would need to become more results driven. There may be less time to try and fail and develop a different approach. Principles for recruitment may change. Selection would be on the basis of those most likely to succeed, rather than those who need the consultancy most. The transformation from a learning experience to a results driven business could be seen as positive in that it would simulate a future engineering career. It would also initiate a degree of professionalism into the programme. However, it would also alter the nature of the experience, changing it from a safe place where mistakes can be made to a high-pressure environment. A further issue with sponsorship is IP. Many of the partners require non-disclosure agreements to be signed before entry into contracts. Additional administration, including legal support, would be required to ensure that contracts are completed and fit for purpose.

In order to maintain Optik's original purpose, sponsorship may need to be on a voluntary basis with it being made clear that they are contributing to the program as a whole and not the resolution of their individual projects. This may be attractive to partners in that they will develop closer relations with the university and will have the option of employing participants after the program has finished. It also provides a no risk environment for them to have solutions developed by up-and-coming professionals with fresh ideas.

Validating our model

This paper is seen as the first stage in a larger project. Our WIL canvas will be validated by focus groups of stakeholders before being used to replicate the framework to create similar consultancies to assist other groups that may find difficulty accessing WIL. These include women re-entering the workplace after a long absence and overseas engineers unable to have their qualifications recognised. These frameworks will in turn be shared with other practitioners to open

a dialogue on how best to assist disadvantaged groups to access WIL. Below is our plan for future research into designing, replicating, and evaluating our WIL Canvas:

Phase 1

In the first phase, interviews will be held with industry partners, tutors, and past and present members of the Optik Consultancy to investigate the successes and failures of the program. From the research perspective, data gathered in Phase 1 will enable us to refine our initial conceptualisation of the WIL Canvas.

Each group will be asked about specific aspects of the program affecting them. These include how closely they felt the experiences replicated an engineering workplace. The authenticity of the engineering projects they undertook, how well Optik helped participants' development as engineers and how we can better prepare them for the workplace.

Industry partners will be interviewed to look at how useful our participants' work is to them, how well the program replicates an engineering workplace and how we can develop skills that are in demand. Finally, we will discuss ways of enhancing the relationship, so we have a better understanding of their needs, how our students can be supported and how the relationship might be developed into new directions such as research.

Tutors will be asked about their insights on the preparedness of the students, the logistics of the program and how students can be prepared for their work experience. We will also look at how Optik is scaffolded with the subjects preceding and following it.

Past participants will be interviewed to see how hindsight has altered their perceptions of the Optik Consultancy. We are interested in the effect Optik has had on their professional identity, self-confidence, and career prospects. We will gather information to evaluate how closely the program replicates their current workplace and how they felt the program prepared them for their future. This includes areas where they felt the consultancy needs further development.

Present participants will be asked to discuss their experience of the consultancy. How engaged they feel with the projects. The extent to which they feel the consultancy resembles an engineering workplace and the level of support that they have been given.

Phase 2

The results from the focus group will be used to validate, refine, and extend the key elements to our WIL Canvas. Some aspects of the Canvas will be changed or adapted to reflect the reality of the consultancy. The resulting model will be used to refine the Optik Consultancy before looking at it as a model for future consultancies. Finally, we will share our model with stakeholders for feedback.

Phase 3

We will use our WIL canvas as a template to analyse other WIL programs as well as to set up new consultancies to benefit other groups of disadvantaged WIL users. Finally, the template will be evaluated and refined based on our own and others' experiences. We intend to share the resulting WIL canvas with the wider community of engineering education researchers as well as others interested in applying an innovative research-based framework to analyse the existing and design new WIL experiences.

Conclusions

The Business Model Canvas provides a theoretical framework that can be adapted to educational projects such as the Optik Consultancy. Customers and partners are the same in that students, industry partners and the wider university all have input into how the consultancy is run as well as benefiting from the results. Moreover, they are mutually dependent on each other to achieve their goals. Therefore, our research contribution is in conceptualising how these three interdependent groups engage in an innovative on-site consultancy so that students have meaningful work

experience, industry partners get their projects completed and the university develops its relationship with local and international partners. The proposed WIL Canvas will enable this experience to be replicated in other educational settings.

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