FACILITATING A CAMPUS COMPANY FOR WOMEN PRINT ENTREPRENEURS – CHALLENGES AND WORKAROUND

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ABSTRACT
Successful entrepreneurs are vital to the progress of a nation’s economy. In India, entrepreneurship has been the family profession for several communities. Increase in establishment of industries have affected the growth small and medium scale entrepreneurs. Modern business approaches are complex and requires multidisciplinary knowledge for a sustained and successful venture. Presently Indian government is taking several initiatives towards encouraging start-ups and supporting educations institutions to establish incubation centers. In this paper, a model for a campus company is presented which can be adopted by academic institutions to nurture business skills in students. The model has provisions for supporting students with varying levels of entrepreneurial aptitude, starting from a novice and upwards. An attempt was made to implement this model for a group of women engineering students specializing in printing technology. The attempt did not take off due to certain challenges in student’s perception of entrepreneurship. To overcome these challenges specific teaching-learning strategies were devised and adopted. By the end of two years, significant improvement in the students entrepreneurial preparedness. The experiences gained during this case study are also presented here.

Keyword: Print entrepreneurship, campus company, entrepreneurship model, case study

1. INTRODUCTION
Economic history of India dates back to the Indus Valley Civilization around 3000BC. Family-run businesses and other business organisations of craftsmen and artisans flourished. Entrepreneurship in India was traditionally less organized and was based on caste and economic systems, unique to India. However, due to the British rule and industrialization, the ancient system collapsed. After the Indian Independence, a systematic approach to developing entrepreneurs was adopted through five-year plans and subsequent annual plans of the Union and State governments [1 and 2]. Both the Central Government and various State Governments are taking increased interest in promoting the growth of entrepreneurship. Make in India initiative is one such scheme. Individuals are being encouraged to form new businesses and are being provided such government support as tax incentives, buildings, roads, and a

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communication system to facilitate this creation process. Developing entrepreneurial skills should become major concerns of higher education, in order to facilitate employability of graduates who will increasingly be called upon to be not only job seekers but also and above all to become job creators [3].

2. BACKGROUND

Although entrepreneurship is being supported and facilitated by the Indian government and other organisations in India, several studies indicate that the education system does not provide sufficient space for grooming business skills. Majority of the students are hesitant to begin a business after graduation. Some of the notable lacuna are (i) incomplete entrepreneurship education and (ii) lack of a standard framework for entrepreneurial education [4 - 7].

Studies indicate that other countries including Namibia and China have taken a step forward in providing a structured education to encourage entrepreneurship [8 and 9]. It is well-known that China is far ahead in promoting small business and this is evident from Chinese products being marketed globally.

In India small steps are being taken to impart effective and structured education that hones the entrepreneurial skills of the younger generation [10]. However, there is a noticeable lacuna in hand-holding students to become successful entrepreneurs. Each institution must understand the characteristics of their student groups and device a methodology to mold a fraction of the group for a business venture. Once the foundation is set, the financial and incubation facilities offered by the government and other agencies for business ventures can be utilized effectively.

Along these lines, this paper makes two contributions and is an extension of our earlier work [11]. The first one is a model for a campus company, which facilitates setting up business during student’s tenure in the academic institution and the second contribution deals with identifying the capabilities and limitations of women engineering students in the department of Printing Technology and modifying the teaching-learning process to inculcate the entrepreneurial skills in them.

3. MULTILEVEL CAMPUS COMPANY MODEL

This section elaborates the formulation of TotPress, a Print Media Campus Company Model that offers total print and allied services. The Model is described by a five-tuple

\[ T = (P,F,M,W,B) \]

where

T is the campus company, named as TotPress,

P is the set of products & services offered by the business,

F is the set of Factors of Production which are the essential resources of a business,

M is the characteristics of the multilevel feature of the model,
W is the operations in the working capital cycle and B is the set of benefits of the model.

T represents a campus company which offers Print Media services. A campus company is one that is run by students while they are undergoing a degree programme in an academic institute. Print Media services are those offered by the print sector which includes printing, packaging, printing machine manufacture and allied products and services. The model and its parameters as illustrated in Figure 1 are described in the following sub-sections.

**Figure 1:** Formulation of Multilevel Campus Company.

### 3.1 Print Products and Services offered (P)

Print products and services can be categorized as prepress, in-press and post-press operations. A subset of the probable operations in the Print sector that the students can adopt in the Campus Company are shown in Figure 2. These operations cover a wide spectrum of the Print-Pack sector including stationery, advertising and paper-making. There is wider scope of opportunities for the young creative minds to start up their own business in print sector with minimal level of training initially. Any business $T_i$ under the TotPress model $T$ can offer products and services $P_i$ which is a subset of $P$.

**Figure 2.** Print products and services $P_i$
3.2 Factors of Production (F)

The resources vital to a production/services based business are identified as the *Factors of Production*. This is an economic term and is used to describe the inputs used for the business. The model defines the specifications the five factors of production as management (Mg), machines (Mc), materials (Mt), labor (L) and knowledge (K). The specifications are classified as mandatory and customizable. Being a student centric business, TotPress facilitates students and research scholars to join as *partners and workers* with low seed money as the *capital*, own-investment on *resources*, limited *customer base* that can be mobilized within the campus. These factors in TotPress production process are shown in Figure 3. Any business \( T_i \) under the TotPress model \( T \), requires the production factors \( F_i \) which follow the mandatory specifications given by F.

![Figure 3. TotPress Production Factors (F)](image)

3.3 Multilevel feature (M)

The multi-level feature of the TotPress model is defined as \( M(T) = \{L_i\} \ 1 \leq i \leq 3 \), i.e., \( L_1 \), \( L_2 \), and \( L_3 \) are the three levels of TotPress. These three levels represent the degree of support from the institution towards building the entrepreneurship skills in students, in terms of the factors of production. The specifications of each level are summarized in Table 1.

**Level 1: (kick-start, Max. Institutional support):** The institution offers maximum support to help in kick-starting the business. Here, the partners may be a mix of students and teachers, workers may be lab assistants, capital may be partly provided by the institute, the institute may be the sole market and the equipment may be the existing lab resources. The nascent entrepreneurs are hand-held along their business journey.

**Level 2: (Recognition, External support through the institution):** In this case, the student’s business contributions are approved and supported by external agencies. They contribute to the factors of production of the campus company through the institution. The entrepreneurs are now confident enough to run their business within a safe realm, the institution.

**Level 3: (Successful, total student contribution):** When the business becomes successful, the student partners are able to run the business with their fullest contributions and do not depend on any institutional or external support. Most of the factors of production are mobilized by the students.
<table>
<thead>
<tr>
<th>Factors</th>
<th>Level 1 – Kick-start (Institutional support)</th>
<th>Level 2 – Recognition (External support through the institution)</th>
<th>Level 3 - Successful (Total student contribution)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Partners and Workers</strong></td>
<td>Lab assistants are sponsored by the institutions for the production, after working hours, paid by the entrepreneurs</td>
<td>External sponsorship (for paying labor) given to the students through the institutions by funding agencies. Worker is an external worker</td>
<td>Students themselves work after their working hours. They also may use labors and pay them</td>
</tr>
<tr>
<td><strong>Capital</strong></td>
<td>Financial Support from the Institution (loan with minimum interest)</td>
<td>Angel Investors</td>
<td>Students own capital investment</td>
</tr>
<tr>
<td><strong>Market</strong></td>
<td>Students can sell their products in the institution stationery with minimal payment, utilizing the sales person in the stationery</td>
<td>Students sell their products in the institution stationery without payment at the early stage (limited period)</td>
<td>Students pay rent for their retail outlet in the institution</td>
</tr>
<tr>
<td><strong>Plant and Machinery</strong></td>
<td>Students can use the plant and machinery of the institutions without interrupting, at the early stage (limited period)</td>
<td>Students pay for the utilization of the resources after hours. External Sponsored resources attached to university/MOU with other Industries</td>
<td>Students do not depend on institution, they only depend on institution for retail selling</td>
</tr>
<tr>
<td><strong>Idea Generation</strong></td>
<td>Students are helped to generate innovative ideas by the faculty members They are provided opportunities to generate ideas through brainstorming session</td>
<td>Student entrepreneurs generate ideas by attending various conferences, workshops and interacting with the experts</td>
<td>Innovative Students generate their own creative ideas</td>
</tr>
<tr>
<td><strong>Nature of Support</strong></td>
<td>Total hand-holding One mentor per business Fully supervised business operations frequent reviews – an experiential teaching-learning approach</td>
<td>Support provided upon request or when found necessary Reviews on regular basis, evaluation of reports One internal mentor and one external mentor, per business</td>
<td>Business is allowed within campus on contractual basis Reports formally to Estate Officer of the Institution and treated as an entrepreneur Not mentored</td>
</tr>
</tbody>
</table>
3.4 Working Capital Cycle (W)

Any business that follows the TotPress model can begin at any of the levels indicated in Table 1, depending on the effectiveness of the business idea brought by the student. The first stage after the onset of the business is the cash investment, followed by raw material procurement, production, quality checking and marketing. Cash obtained from the debtors are returned and the cycle continues as shown in Figure 4. W(T) is defined as a set of specifications of each stage in the working capital cycle.

![Working Capital Cycle Diagram]

**Figure 4. Working Capital Cycle**

Some of the issues that detail the working capital cycle are mentioned below.

**Choice of a partner:** Any aspiring entrepreneur is a good target for a campus company program, and preferably students who are willingly work for it without getting their academics disturbed.

**E-club and campus company:** The entrepreneur club (e-club) of the institute (if any), may operate in collaboration with the campus company.

**Idea sharing:** learning in the campus business can be shared by the student partners, with the others and discuss the problems faced and solutions.

**New partners:** The present students will carry out the business till they finish their course. They may then sell their share to their juniors who are interested.

**Dynamic operation:** When the current partners are not interested in the business it can be closed either permanently or temporarily. It may be revived later upon the arrival of another batch of interested students.

**Minimum duration:** business duration of 4-5 months is mandated so that it falls within the semester period. Business must close down at the end of the agreed period and
may be restarted in the next semester, with minimum procedures for re-starting. 

**Role of Faculty:** Faculty members will guide the program and are designated as mentors, one per business. They conduct business reviews and evaluate the business reports and oversee the financials.

### 3.5 Benefits of TotPress Model (B)

The multiple benefits of the TotPress model are presented in five categories: idea generation, market dynamics, skill development, production and miscellaneous benefits (Figure 5). B(T) is defined as a five tuple of benefits.

**Figure 5: Benefits of the TotPress Model**

*Ideas generation:* The model accommodates students having different levels of business aptitude. A novice can learn the art of generating business ideas on real-time at level 1 and gradually level upwards, while a student rich in ideas can enter into any of the higher levels.

*Market Dynamics:* Understanding market dynamics and responding to the demands is quite complex in the real world. In our model, students initially operate in a protected market place, within the institutions campus. This environment is flexible and can tolerate fluctuations. Students experience the mechanisms of customer behavior, marketing strategies, retention of customers, managing sales and inventory.

*Skill Development:* The model has room for experiencing an entire business cycle under expert guidance in real-time. The experiences gained during this process are made to share among other students as brain-storming sessions during the reviews. Hence it gives them an opportunity to learn and implement to ideate, share, face success & failure, interact with heterogeneous groups (faculty, peers, industry, vendors, customers and labourers), communicate effectively, and juggle multiple business tasks simultaneously apart from being a student.

*Production:* The model allows student entrepreneurs to begin by exploring new ideas freely. This freedom is due to the availability of resources, freedom to fail, unrestricted working...
hours and lack of concern towards certain financial issues; all under the safe umbrella of a constantly hand-holding mentor. Thus the model paves way for new product ideas.

Others: The other benefits of the model are low investment on the student end, less liability, almost nil legal formalities, ability to do a business during student tenure. The students earn while they learn. The student entrepreneurs may utilize the resources available within the department and hence have the benefit of access to high end and research specific resources with minimal investment. A major advantage is that this learning environment gives them the freedom to make mistakes and learn.

4. IMPLEMENTATION CHALLENGES AND WORKAROUND

Prior to implementing the model in the department of printing technology, the Entrepreneurial Preparedness (EP) of the students was determined in 2014. It was found that although they were interested, their confidence level to take-up a business during the student tenure was very low. Therefore, during the subsequent years students were give pre-planned, well-devised, curriculum integrated startup-like activities to increase their confidence. Some of our initiative along these lines have been published as a paper under the Entrepreneurship theme [13, 14]. The results and observations in 2016-17 and 2017-18 academic years, were found to be encouraging. This Section describes (i) the Entrepreneurial Preparedness of our students in 2014 and the challenges and (ii) the activities done towards inculcating an Entrepreneurial Preparedness and its outcome in 2016-17 and 2017-18.

4.1 Entrepreneurial Preparedness in 2014

Total Early-stage Entrepreneurial Activity (TEA) Rate is the prevalence rate of individuals in the working age population who are actively involved in business start-ups, either in the phase of starting a new firm (nascent entrepreneurs), or in the phase spanning 42 months after the birth of the firm (owner-manager of new firms) [12]. For this work, TEA rate was chosen as the indicator for Entrepreneurial Preparedness among the students in our department of Printing Technology. The factors chosen for TEA rating are (i) Growth Expectation, (ii) Entrepreneurial Attitudes namely intention & fear of failure rate and (iii) Entrepreneurial Perceptions namely perceived capabilities & perceived opportunities.

A questionnaire was prepared with questions regarding the students views on (i) industry growth, the type of print jobs, their value-addition, etc., (ii) regarding their option of starting a business, its market scope, success/failure options, financial aspects, etc., and (iii) regarding their views about their business skills, confidence, administrative skills, etc. and the opportunities available for them to start a business, family support, training, etc.

Forty-Six women students from the department of Printing Technology belonging to the four years of under graduation in Engineering have been chosen for the questionnaire-based survey. The analyzed results of their responses are presented below.

i. Growth expectation: 65% of the students feel that the scope for growth in the Print Services business is High while no one foresee any zero or negative growth. More than 60% of the students find growth in terms of bulk orders, international orders and in expanding the business within their locality.
ii. **Entrepreneurial attitudes:** The attitude of these prospective entrepreneurs in terms of intention and fear of failure were enquired in the questionnaire and the responses were.

- **Intention:** 22% had a high intention to start their own business in Print Services immediately after graduation. Of the remaining 78%, 67% preferred to gain more experience before starting, 5% were apprehensive about capital for the business, 4% wished to partner with a talented person and 4% were uninterested as indicated in Figure 6.

- **Fear of failure:** 68% did not fear business failure.

![Intention to start a business](image)

**Figure 6.** Students' intention to start a business

iii. **Entrepreneurial Perceptions:** Questions were provided on how the candidates perceive their entrepreneurial capabilities and what sort of opportunities are open to them. The results of analyzing their responses are given below.

- **Perceived Capabilities:** More than 70% of the students are proud to be looked at as prospective entrepreneurs and would like to become lifetime entrepreneurs. The remaining 30% feel that they have to either support their family, or they may not get sufficient support or feel the start-up experience is enough. With respect to possession of specific skill sets, we find that 30% feel that they have insufficient market-awareness or the capacity to bring success during the start-up. The remaining 70% are confident about their technical skills or administrative skills or man management skills.

- **Perceived Opportunities:** Although 70% of the students vouch for entrepreneurship and 65% feel there is high scope for successful business in Print sector, less than 10% opt for opportunities such as opening a chain of business centers, or moving away from their base locality.

**Inferences:** From our statistics we infer the following facts, and these are applicable to our sample set which consists of women students.

- Business in Print services is a good choice for women
- Candidates in the sample set do wish to become entrepreneurs.
- Women entrepreneurs prefer to work close to home
- The confidence level of the students is low with respect to starting a business all alone and hence requires more training on entrepreneurship.
Women are reluctant to pursue business for lifetime

Although they are confident about their entrepreneurial skills, they prefer to be supported by a business guide/mentor for a longer period of time (after graduation, while starting a business, etc.).

Scope for a business in Print Services is tremendous.

Hence, we find that the idea of a campus company in Print services, which is a mentored business model, would best suit our institution’s environment. The only challenge is that a significant size of the sample set depend upon a support to start a business. This is indicated by 76% in Figure 6 consisting of (i) need sufficient experience prior to starting a business – 67%, (ii) fears investing in business – 5% and (iii) requires a supporting partner – 4%. The group that needs to be focused on is the 67%-need experience group. If their confidence is raised, then these are the potential candidates for future start-ups.

4.2 Entrepreneurship Preparedness in 2016-17 and 2017-18

In order to inculcate business confidence among the students the teaching-learning process was modified to include the following activities related to business skills and business cycle, during the entire semester (i) Exposure to commercial world, (ii) Business idea generation, (iii) Product making cycle (iv) Marketing skills and (v) Evaluation.

i. **Exposure to commercial world:** Students were given exposure to the commercial world by encouraging them to participate in industry-based seminars, exhibitions and other technical events. Every semester students were allowed to participate in technical seminars and training programmes organized by the industry. Usually such seminars also include exhibitions and networking with industry persons. Students found this an opportunity to meet various industries, types of products, their features and advantages.

ii. **Business idea generation:** Laboratory experiments were modified to include design concepts. The experiments were framed such that given a concept the students need to identify an appropriate commercial product and implement the concept. Each Lab experiment was framed as a concept or a broad category, for which students have to choose a product and implement the concept for the product. For example, an experiment in the design and editing lab would be design a calendar, the student has to refer to samples and identify the content, design the layout, choose the font, effects, theme, etc. and complete the calendar design. Similarly, in the packaging lab, for the experiment on aerosol packaging, the students may chose pesticide package. This allowed the students to generate business ideas for a design under natural circumstances and on regular basis.

iii. **Product making cycle:** All laboratory experiments were reframed to culminate in a finished product. This approach facilitates an environment for making products prior to entry into the campus company. For example, the design and editing lab experiment completes when the student takes a print of the calendar design in an appropriate substrate. Similarly, in the packaging lab, the experiment is complete when the student brings the primary, secondary and tertiary packages with appropriate labels. The labels must include graphic design with genuine barcodes as per the standards for pesticides. Our students have also included **Augmented Reality** feature on packages.

iv. **Marketing skills:** We conduct Print Carnival, conferences, and entrepreneurship mela (carnival) regularly. These are forums for students to exhibit their products and market
their work in stalls. Industry-sponsored stalls during mega exhibitions by the industries are another forum where our student exhibit their products. These exhibitions are real-time opportunities for testing their marketing skills.

v. Evaluation: As an evaluation of their creativity and business ideas, students are guided to present their work in technical contests. Our students have presented their work at conferences, at the innovation contests by Confederation of Indian Industries (CII), and Shanthi ashram, technical contests in academic institutions.

Outcome: The 2015-16, 2016-17 and 2017-18 batches of students developed a flavor for innovative ideas for product making, and exhibited several traits of entrepreneurship attitude.

i. Choice of Final Year Projects: Most of the final year projects were based on prototype/product making, namely, fabrication of machines with a special feature, preparation of coffee-table kind of books, products using recycled paper with special ingredients and innovative package designs for specific products and an interactive display using Printed Electronics.

ii. Mementoes for guests: The mementoes for the guests to the department are usually products designed and made by the students. Mementoes range from bookmarks, ceramic mug with dye sublimation printing, screen printed cards, and recycled paper products.

iii. Awards & prizes: One batch of students has won prizes at innovative idea contest for their product using recycled paper. Another batch has won II place for their die-cutting machine in a technical conference. A couple of batches have displayed their machine in exhibitions.

iv. Job orders: Another batch has successfully taken up orders for their product (water-hyacinth and paper pulp based idols), which was used as gifts for guests for a conference organized in the department. The interactive Poster using Printed Electronics fetched orders for a working demo poster from a small equipment manufacturer. The project on 3D printed floor map for visually impaired attracted attention of the local administrative body to put up such maps for their Section for the Differently-abled.

v. Patent: Patents filed for three of the innovative projects.

iv. Business takeover: One of our alumni graduated in 2017 has officially taken over the pre-press section of the Print business of her father since January 2018.

Some of photos showing the achievements of the students are given in Figure 7 below.
5. CONCLUSION

This paper describes a model for a hand-held entrepreneurial training for engineering students during their tenure in the institution. The model is a multi-level one, starting from supporting students with very low entrepreneurial skill up to students who require very little support. An attempt to implement this campus company was made in our department where all students are girls and most of them are from a conservative background. Hence a pilot study in 2014 was made to identify the preparedness of the students to take up a business during the student tenure. The results of the study indicated that the students possessed the skills, but the lacuna was in the need to inculcate entrepreneurial awareness in the students thereby making them confident. Steps were taken towards this direction by incorporating certain approaches in the teach-learning methods and the outcome was favorable. By 2017-18, collectively the students were able to demonstrate the complete business cycle in a protected environment.

6. BIBLIOGRAPHY


