Demand Collaboration strategy of supply chain management improves the education quality of a business school

Asher Ramish (Author)

MS Production Management, TUHH, Germany

Asstt. Professor, Supply Chain Management
Director MBA Program
University of Management & Technology
C II, Johar Town, 54770,
Lahore, Pakistan
Cell # +92-300-4305625
Email: asherramish@gmail.com

Ijaz Yusuf

M.Eng. Ind. Engg. & Management, AIT

Assistant Professor
Director SAQS
University of Management & Technology
CII, Johar Town, 54770
Lahore, Pakistan
Cell # +92-333-4302970
Email: ijaz_y@hotmail.com

Abstract:

Collaborating demand in an industrial sector means *moving* downstream of the supply chain, *coming* closer to the customer or end user virtually, *utilizing* means to know the exact demand in real time and *sharing* the true demand as far as upstream of the supply chain, so that optimized supply chain output can be achieved in an end to end enterprise. All stakeholders of the supply chain should get enhanced benefits in terms of cost decrease, time and quality improvements etc., resulting in a win-win for everyone.

In case of service industries though, it is tricky and complex to decode the high up aforementioned strategy, in particular when it comes to an education institution, like a business school, offering business administration degrees in the town. Who would be the customer or an end user? What would be the demand? Where lies the upstream of the supply chain of a business school? Who is going to formulate the upstream part of the supply chain? All of these are queries that are answered in this formal research paper.

The paper concludes that the interpretation of demand in a business school would be its education quality and total package skill set that a business school visions to inject in a student. Students would then become the direct customers of the business school. This is not as simple as it looks like. Here some of the stakeholders would add into the supply chain of a business school and would then determine the true demand of the service that is required. These stakeholders would be parents, industry employers and society in addition to students. All of the four stakeholders have to get the advantage from the knowledge, learning and a complete skill set infused to the students. Approaching closer to the aforesaid stakeholders and sharing the outcomes with the faculty and top management, can best balance the supply with demand in case of a business school.

Keywords: supply chain management, demand collaboration, business school, skill set, true demand, quality of curriculum, service supply chain

1.0 Literature review

1.1 Bullwhip effect

Bullwhip effect is basically the source of the problem for which the demand collaboration strategy was originated. Bullwhip effect is normally created at the most downstream part of the supply chain. What happens is that distorted information from one end of a supply chain to the other causes huge problems mentioned below by Hau L. Lee, V. Padmanabhan, Seungjin Whang. (1997)

- Inefficiencies throughout the supply chain regarding time, cost and quality
- For the reason of too much uncertainty in the supply chain, excessive inventory has to be used as a cushion that leads to huge investments and delays
- Although inventories tend to increase the customer service levels but due to the lack of integration it does not happen here.
- Due to instability in demand, capacity might not be planned as efficient as in case of stable demand scenario.
- Transportation faces huge inefficiencies, due to which production orders are finally missed

The prime reason for the creation of such a bullwhip effect is wrong or exaggerated assumption regarding the demand intensity. This is referred to as change of demand perception from true demand to a derived demand.

1.2 Demand collaboration model for manufacturing supply chains

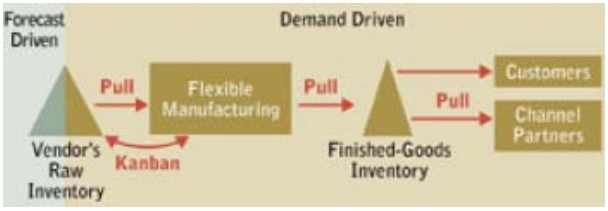
There are basically two levels in collaborating demand for a manufacturing supply chain. The first level explains the technical part i.e. what would be the level of information that is to be shared from the downstream part of the supply chain to the upstream part of the supply chain. It may be less dependant on the information

technology or more dependant e.g. application of an enterprise resource planning software.

The second level explains the part that is more soft skills oriented. It explains the intensity of relations between the business partners. It might be less or even more depending upon the nature of complexity.

For this reason, the model shown below in (Fig. 1) by Bruce C. Arntzen and Herbert M. Shumway (2002) is a manufacturing supply chain model that explains the level of intensity of collaboration or relationships from the customers towards the suppliers of the suppliers.

Figure 1: Demand driven supply chain



Source: [Bruce C. Arntzen and Herbert M. Shumway (2002), SCMR Magazine.]

The model explains that true demand is being shared from the downstream side of the supply chain to the most upstream part of the supply chain i.e. suppliers. Suppliers are keeping inventories and are planning to provide the material to the flexible manufacturing based on the pull principle. Forecasts are only taken for the purposes of capacity planning and long term corporate planning.

1.3 A Service supply chain

Services now account for two-third of the output of the advanced economies of the world (Kelly, 1997). Not only most of the people are employed in service sectors rather huge revenue, amount of information and complexities are present in it.

According to Fitzsimmons, J.A. and Fitzsimmons, M.J. (1998), “services are markedly different from manufacturing, with different managerial emphases”. This concludes that the rules defined for product type or manufacturing supply chains should not be compared blindly with the services supply chains.

Although many researchers have attempted to define “*services*”, but the way Scott E. Sampson (2000) has critically analyzed these definitions is appraisable. His thoughts focused primarily on ambiguities in managerial implications of various definitions. According to Sampson;

- Services are intangible products that may be difficult to store
- Services are produced and consumed simultaneously at the time of demand arises and not before, *this*, he refers to as “*JIT delivery*” that in actual is a requirement in most of the cases and not an option.
- This further explains that if at the time of customer demand, the service provider is not able to produce the service then he might lose the order.
- Unlike tangible products, most intangibles are continually available for sale and would not be depleted on getting sold.
- If we analyze the upstream part of a service supply chain i.e. suppliers of service, then we come to the conclusion that detailed identification of the upstream side of the service supply chain is theoretically and practically almost impossible.
- Services are basically labor intensive activities and highly dependant on managing the workforce and knowledge efficiently. It focuses on customer involvement in the process of producing the service.
- All services act on something which is provided by the customer, meaning all services have customers as primary suppliers of inputs.

1.4 Bi-directional supply chains

Sampson S.E. (2000) originated this new concept that actually means, customers do not only sit at the downstream part of the service supply chain but also control many of the inputs at the upstream part of the supply chain. These inputs are their bodies, minds, belongings or information that they bring along with them when the order is created by them. This simply means that in context of a business school supply chain, students are not only the customers but also the suppliers. This concept has can be further scanned through the (Fig. 2) mentioned.

Main features of a bi-directional service supply chain described by Sampson, S.E. (2000) are as follows:

- Material (that in this case would be bodies, minds, belongings or information from the suppliers) flows from suppliers to customers and vice versa from customers to suppliers.
- Bi-directional supply chains are generally short.
- The input of a service supply chain is not purchased by the service provider i.e. they do not pay for the inputs coming from either customers or suppliers.
- Bi-directional supply chains are inherently based on the concept of Just in time.
- Contrary to the manufacturing supply chains, service supply chain customers can easily assess the value added by the service provider as they have more knowledge not only about the downstream part but the upstream part of the supply chain too.

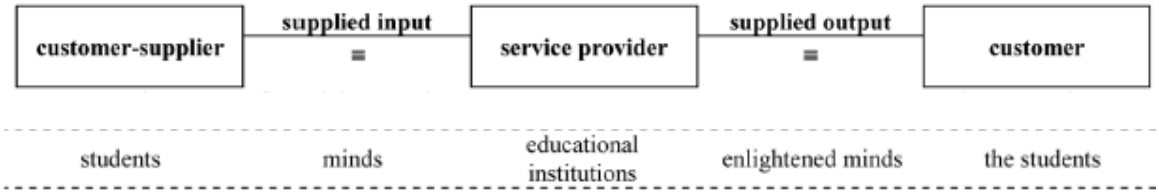
Figure 2: Examples of bi-directional supply chains

customer-supplier	supplied input =	service provider	supplied output =	customer
companies or individuals	financial transaction records	tax accountant	tax statements	the companies or individuals
passengers	selves and baggage	airlines	transported passengers and baggage	the passengers
home builders	design preferences	architects	blueprints	the home builders
car owners	broken cars	auto repair shops	fixed cars	the car owners
individuals	money	banks	money with interest	the individuals
companies	business problems	consulting firms	analysis and reports	the companies
individuals	blueprints and preferences	custom home builders	a custom home	the individuals
patients	teeth	dentists	drilled teeth	the patients
students	minds	educational institutions	enlightened minds	the students
spectators	attention	sports teams	excitement	the spectators
constituents	community issues	governments	community action	the constituents
clients	legal problems	law firms	legal answers	the defendants
homeowners	burning house	fire departments	drenched house	the homeowners
land owners	property to sell	real estate agents	sold property	the land owners
patrons	empty stomach	restaurants	full stomach	the patrons
customers	questions about products	retailers	answers	the customers

Source: [Sampson, S.E. (2000) International Journal of Service Industry Management.]

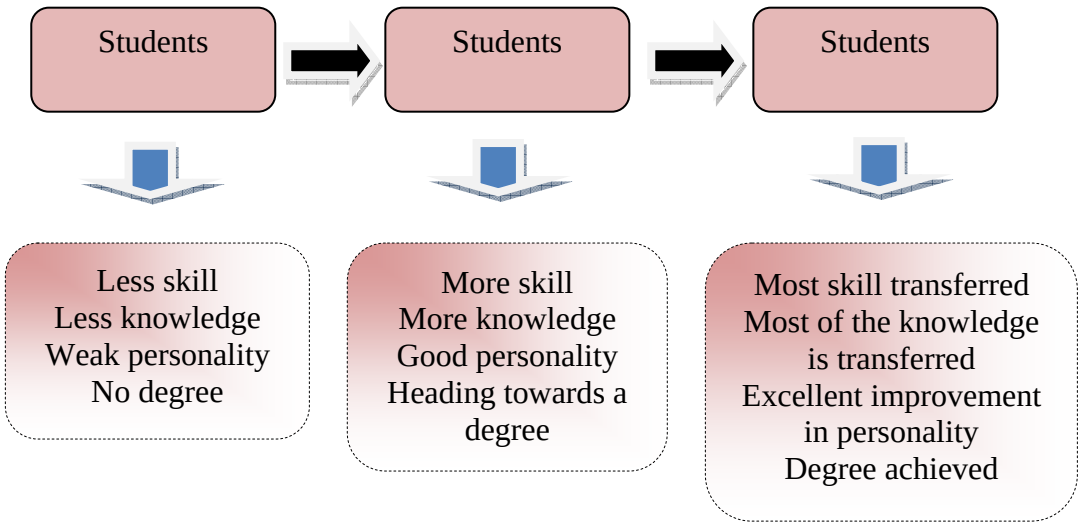
This further clarifies that in case of an educational institution like a business school for example, the customers i.e. the students bring their less enlightened minds, skills and information as a supplied input and after the business school has provided the service to them, the minds, skills and information of the students get enriched and enhanced to become a supplied output to the students themselves. This concept is further extracted in the (Fig. 3 & 4)

Figure 3: Examples of an educational institution supply chain.



Source: [Sampson, S.E. (2000) International Journal of Service Industry Management.]

Figure 4: Explanation of supplied inputs and outputs.



2.0 Supply chain model of a business school

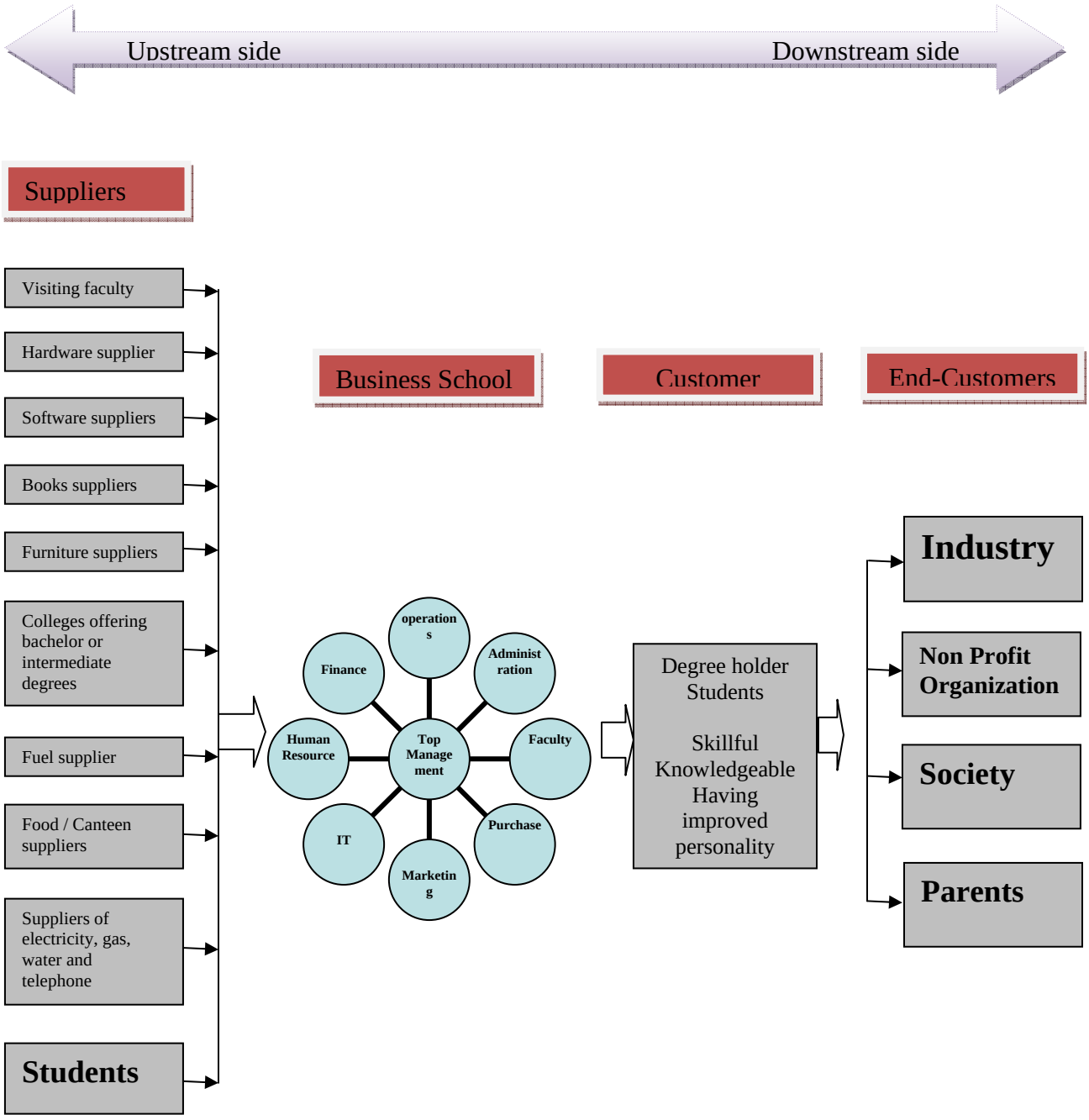
A business school is an educational institution that offers business degrees at undergraduate and graduate levels, mainly BBA and MBA programs. The students who normally apply for these programs have done FA/FSc./BA/BSc. i.e. they hold one of these degrees.

Hence, according to the model presented by Sampson, students are also suppliers of the focal firm which is the business school in this case. Students bring their less enlightened, less knowledgeable and less skillful minds to act as the input for the business school. Students are not the only suppliers at the upstream side; in fact there is a huge diversity of suppliers who provide other support materials to the business school. They are suppliers of books, computers, hardware or software, furniture, fuel, electricity and other utilities and food. In addition to this, the visiting faculty also plays an important role as one of the supplying party. The visiting faculty brings their expertise and sells it to the business school in order to fill in the gap of teaching all the subjects. As we know, permanent faculty may not be able to teach all courses being offered at bachelor or masters level. All colleges from where the students are coming would come under the category of tier 2 suppliers.

All set of suppliers cover mainly the upstream part of the supply chain for a business school as they supply material, tangible or intangible to the business school. When business school performs its role with the help of all support departments the outcome at the end of the degree is more enlightened, more knowledgeable and more skillful students. They are direct customers of the business school but *more likely* not the end consumers. More interestingly, the final customers of the business school are parents of the respective students, the corporate sector where the students would get jobs and utilize their skills and knowledge that they learnt in the business school, the society where the ultimate value would be added into and the non-profit organizations also.

This integration and inter-dependency between various tiers is shown in the form of a supply chain model in the (Fig. 5) below

Figure 5: A Service supply chain model for an end-to-end educational institution.



Here we may also consider the degree holder students, who are more skillful, knowledgeable and have improved personality and enlightened minds as the direct customers of the business school. But in actual the end consumers would be the parents, society, non-profit organization

and profit making organizations in the industrial sector which are ultimately benefitted. The true demand doesn't come from the student but it is actually coming from these ultimate consumers. The desires and satisfaction level of the students should not be the ultimate criteria. It should be the industry, society and the parents that must define the independent demand.

3.0 Interdependency within processes and impact on decision making

If we analyze carefully then it is this derived demand i.e. coming from the students and the downstream side of the business school supply chain that has created a forecast driven supply chain. Impacts on decision making in such a forecast driven supply chains are as follows:

a) Curriculums and skill sets are not designed according to the needs of the end consumers. For example, various management styles are being taught in the business schools and emphasis is made on what these styles are and what are their significant features. Rarely the emphasis is made on how to implement these styles and in which situations these styles are applicable. Another example would be the presentation and communication skills that are the first priorities of every second employer but are not at all the part of the curriculum designed.

b) It takes more time to deliver good quality because the student gains that knowledge which has not been given to him/her in the business school through other sources i.e. certificates or diplomas. Therefore the student is spending quite large amount of time in learning those skills or knowledge that is not the primary requirement of the industry and would rarely be used.

c) An admission criterion is not properly designed according to the needs of end consumers. Selection of students is based on the marks obtained and not on the quality of the student's knowledge

absorption, analytical skills or quantitative and verbal skills.

d) Faculty is also being affected in their teaching as they can only teach the course outlines that are being given to them by the management school. They, at the end of the day, pay less attention to what should actually be taught in the business school.

e) Late admission date in order to enroll more students. Shifting focus from quality education to the revenue being generated by the admission process. More and more students are being given admissions.

   i. Attendance lists are uncertain during the start of the semesters due to incomplete admission process.
   ii. Problems occur during first and second weeks of the new semesters regarding clashes of various classes etc.
   iii. Resource persons teach unbalanced classes i.e. either too many students in the class or too less students in the class. The reason behind this is no maximum limit defined for all the courses.
   iv. Faculty allocation problems also persist due to abrupt changes in the schedule. Either some of the faculty members are requested to take more than one sections or some of them are being told to quit the subject as low registrations are being done.

All of the problems mentioned above seriously damage the quality of education i.e. the service level that has been given to the students.

4.0 Dimensions of true demand for an educational institution

We may now narrow down the discussion by throwing light on the dimensions of the true

demand for a service supply chain of educational institution. There are two main parameters of true demand, one is the exact number of students who are given admission and are registered in semester and secondly the overall quality of the curriculum desired by the end consumers.

4.1 Determining true demand relating to number of students

To know the number of students getting admission is not a difficult task at all. The only thing that causes problem and creates a bullwhip effect in the service supply chain of an educational institution is that the number of students getting admission keep on changing within a passage of three weeks.

Let us understand this with the help of an example.

Interviews for MBA students are conducted in a university three weeks before the semester start. A number of students are interviewed and some of them get selected. After analyzing the 1st merit list, it is noted that 90 students get admission and 78 out of 90 confirm the admission office about their interest. Semester time tables are then adjusted as the number of classes would increase. Different sections are made and based on this calculation all planning activities concerning the faculty allocation, class room allocation, course file management, attendance lists, registration slips, multimedia arrangements and course outline preparations are done. Students are then informed of their required plan to be followed throughout the semester.

The situation changes right after the update of the second and third merit lists and an uncertain number of students are added. This changes the whole situation as the demand has changed, and it is changed right at the time when the semester is about to get started. In some subjects, new sections are to be made that will compel the departments to allocate further faculty at urgent basis. Further more classrooms would be needed and hence supply has to be increased by all means in order to cater the change in demand.

Contrary to the above discussion, if less number of students submits their fee right before the start of the semester then some of the courses would

be dropped, implying the directors and chairmen of the departments to request the concerned faculty members to quit the subjects. Overall planning ends up in a crisis based planning instead of proactive one.

The key to determine the true demand regarding the number of the students would be to know exact and confirmed registrations before the start of the semester.

4.2 Determining end consumer true demand (the curriculum aspect)

As far as the other aspect of the true demand is concerned that is improving the overall quality of the curriculums being prepared in the business schools / educational institutions. After inquiring about the requirements of industry, society, parents and non-profit organizations, the outcome should be;

a) Fine tuned roadmaps
b) Enhanced and desired skill sets passed on to the students
c) Enhanced and directed knowledge
d) Improved personality and vision
e) In short, revamping of degrees

4.2.1 Industry as an end consumer

To get the information regarding true demand of what is desired by the industry from a BBA/MBA graduate, it is suggested that different questionnaires should be made and surveys should be conducted by cross functional teams in various sectors of the profit making industries. The nature of the comprehensive surveys would be to know from industrial managers their exact requirements regarding job responsibilities of a fresh BBA/MBA graduate. Industrial managers selected from all the important areas, namely, marketing, supply chain, finance, procurement, information systems, economics, general management, human resource management and entrepreneurship. Together in collaboration with academicians, the industry persons would be able to find out an ideal list of tools, techniques, skill sets and knowledge that constitutes the true demand from the industry perspective.

4.2.2 Parents as end consumers

Every parent want his son or daughter to not only take higher education degrees but also learn that unique skill set, tools and techniques which help the son or daughter to either get good jobs or make a memorable start in any kind of a business. Parents usually desire that the son/daughter should be able to finance themselves sufficiently and also able to run their immediate or future families on their own. They also desire guaranteed job placements through the universities. It is suggested therefore to survey a large number of parents through the use of questionnaires, which would help the academicians to know the exact level of true demand coming from the parents.

4.2.3 Society as end or ultimate consumer

Societies play a pivotal role in the progress of an educational institution. Every bit of value whether it is from the profit making industries or from the non-profit making industries, manufacturing or service industries, goes into the society. It is in actual the society that is the ultimate consumer. The society includes all people living in a locality, city or country. Although, they don't have any direct relations with the industry or academia but still the need is there to go ask them their actual and true demand. What are their expectations from an industry or a business man running any organization? Which values the society as a whole is looking for? What is the pace of value addition in a society? These are some of the questions that are important to answer in order to exactly know the true demand.

4.2.4 Non-profit organizations as end consumers

These are the organizations which have unique desires and requirements. Their goals are not profits so the skill sets, tools and techniques they would be looking for, would be somewhat different from the profit making industries. A specially designed survey conducted by a cross functional team is required to know their special needs. The outcome from this survey would then

be used in developing the curriculums and road maps etc.

5.0 Ideal team building in order to determine true demand

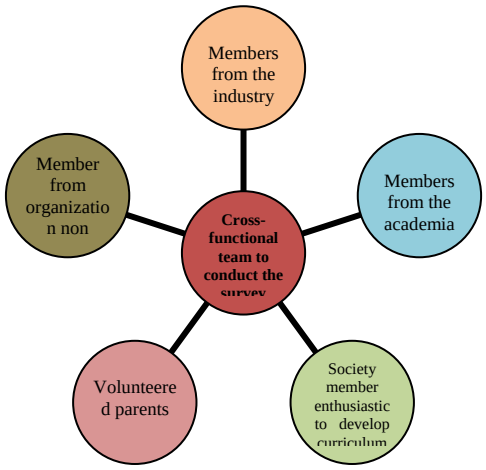
As a matter of fact, knowing the true demand is extremely important for all stake holders. Especially, the curriculum part of the true demand is directly associated with the benefits of all supply chain partners. Therefore, it is suggested that the team should not only consist of academicians but 2-3 members should be from the industry in order to put right questions in the questionnaire. At least one member should also be from the non-profit organizations and from the society. The team member from society may be an old academician who might be retired after spending a lot of time in education sector. One or two parents might also be selected on voluntary basis.

This team should sit together first of all under the guidance of academicians and set the alignment of goals i.e. improvement in the overall quality of a business school curriculum. Lots of brainstorming session would have to be performed so that all valuable inputs are being taken from the respective member of the team. A questionnaire is then made that is portraying all important dimensions that need to be touched while improving the overall quality of the curriculum.

After the survey is being made, the team should start doing surveys formally in various industrial sectors, non-profit organizations, towards society and various parents. When the survey is completed, the data needs to be compiled and analyzed in order to see where the emphasis has been laid upon.

The concept of a cross functional team is shown in the (Fig. 6)

Figure 6: A cross-functional team members for the development of questionnaire and survey.



6.0 Sharing the true demand upstream of the supply chain

After the survey is being performed thoroughly, the information regarding the true demand is to be shared with the business school. All aspects of the true demand need to be injected in the curriculums of business school. Courses need to be reengineered, roadmaps to be fine tuned, degrees would then be revamped as most of the emphasis is being made on improving the overall quality of the curriculum.

This level of quality is actually desired in the curriculums and the students who are the direct customers of the business school, if given such kind of the output would be able to add immense value not only into the industries but also to the society ultimately. Their minds become more enlightened to what is actually required in the job or businesses. They become the real desired supplied output that the service supply chain of an educational institution has produced.

7.0 Conclusion

Bullwhip effect existing in the manufacturing supply chains has immensely affected the service

supply chains too. In case of service supply chains of a business school, what exactly is being required to teach the student is not produced in most of the business schools. The curriculums are based on the derived demands of students and academicians. The true demand is less likely to be known to the academicians. Therefore, the curriculums made in BBA/MBA in business schools are not up to the mark.

The negative impacts of the bullwhip effect i.e. the derived demand on the decision making have been explicitly mentioned. It is highlighted that the effects have not only lowered the overall quality of the curriculum but it has adversely affected the semester plan in terms of wrong capacity planning, wrong time tables and wrong course file management etc.

Collaborating demand in an industrial sector means *moving* downstream of the supply chain, *coming* closer to the customer or end user virtually, *utilizing* means to know the exact demand in real time and *sharing* the true demand as far as upstream of the supply chain, so that optimized supply chain output can be achieved in an end to end enterprise. All stakeholders of the supply chain should get enhanced benefits in terms of cost decrease, time and quality improvements, gaining flexibility or reliability etc., resulting in a win-win for everyone. True demand can be determined by involving all important stakeholders, namely, industrial managers, non-profit organizations members, parents, people who are part of the society and academicians.

Demand collaboration strategy in supply chain management suggests that curriculums need to be revamped by taking inputs from above mentioned stakeholders. Moreover, it suggests that the registration status of the students should not only be known to the business school administration but it should also remain stable, so that semester plan regarding course file management, permanent faculty resource allocation, visiting faculty resource allocation, time tables and sections are made accordingly. It has also been stressed that in case of service industries, it is tricky and complex to decode the demand collaboration strategy, in particular when it comes to an education institution, like a business school, offering business administration degrees in the town.

An end to end service supply chain model is made portraying the depth of the supply chain of an educational institution. The model has clearly pinpointed the upstream side of the supply chain and the downstream side too. Focus has also been made on the supplied input and outputs generated though the aforementioned service supply chain.

Hence, students are the direct customers of the business school but not the end consumers. The end consumers are those stakeholders who are running the profit making industries, non-profit industries, society, parents and academicians. It is also recalled that students also act as suppliers to the business school.

The paper concludes that the interpretation of demand in a business school would be its education quality and total package skill set that a business school visions to inject in a student. Approaching closer to the aforesaid stakeholders and sharing the outcomes with the faculty and top management, can best balance the supply with demand in case of a business school.

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