

A Study on Hospital Supply Chain Management

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Abstract

The concept of Supply Chain Management which is traditionally applicable to manufacturing industry can also improve the overall operations of service industry, especially the healthcare industry. In order to get a more comprehensive understanding of hospital supply chain management and to identify the major players and their roles, this study looks into the supply chain process and the major players of the hospital supply chain in private hospitals in Bangladesh. The study initially focuses on exploring the existing literature on hospital supply chain management and subsequently, analyzes the effectiveness of the hospital supply chain process focusing on the key suppliers of the hospital industry. This research is a descriptive study, based on primary and secondary data. Primary data was collected through semi-structured questionnaire and in-depth interviews from respondents from several private hospitals in Bangladesh. The researchers have proposed a conceptual framework depicting a holistic view of Hospital Supply Chain Management and then an Integrated Private Hospital Supply Chain Management (IPHSCM) model was developed. The result of the study illustrates the efficiency of this chain is quite satisfactory. The study thus provides a comprehensive idea about the current supply chain process of private hospitals in Bangladesh. In addition, the study helps to identify the sectors where the concepts of supply chain can be applied in order to improve their operational excellence. This study has also created scopes of further studies on service supply chain management, more specifically hospital supply chain management. However, this study was limited to only private hospitals in Bangladesh. Further research can be done in this sector using the IPHSCM model developed by the researchers.

Keywords

Hospital Supply Chain Management, Integrated Hospital Supply Chain Management, Private Hospitals, HSCM

1. Introduction

Supply chain management is one of the most significant applications in business process that improves operational excellence. It has been considered as a comparative advantage that can be applied in both manufacturing and service industries. Nowadays, markets are becoming more competitive than ever before for which it is becoming difficult for organizations to maintain a balance between the profit of the organization and providing quality service to satisfy customers. A much-generalized idea is that the concepts of supply chain can only be applied in manufacturing organizations. However, in this competitive environment, the application of supply chain management concept can also make the service industry more efficient that will maximize stakeholders' satisfaction.

Healthcare industry may get special attention for this kind of research. This industry strives for making a positive impact on the quality of care through improving effectiveness in the operational process. Nowadays healthcare organizations in developing countries like Bangladesh are facing different challenges with different requirements like, dissatisfaction of customers, inappropriate costs of health service, inadequate level of service providers, lack of adequate level of medical kits, absence of the modern technology in the healthcare industries (Al-Saa'da et al., 2022). Therefore, in developing countries like Bangladesh, it has become a necessity to build a proper supply chain management system in the hospitals or in the healthcare in order to mitigate the customers' dissatisfaction level and to provide better service to the society (Pervez, Mahmud, & Bachar, 2016).

Hospital supply chain is comprised of both medical and nonmedical products. Medical products consist of clinical and pharmaceutical products like, stretchers, Anesthesia Machines, Patient Monitors, Sterilizers, ECG Machines, Surgical Tables, Surgical Lights, and Surgical Tools. On the other hand, nonmedical products consist of those items that are required in order to provide service to the patients like Apron, Skeletons, Bones, and Medical Books and administrative staffs (Pervez, Mahmud, & Bachar, 2016).

With the relative importance of SCM on the rise on one hand and the lack of awareness of Service Supply Chain Management on the other, especially Hospital Supply Chain Management, this study focuses on private hospitals in Bangladesh. The study looks into the main players of hospital SCM, they are the Suppliers, Service providers, Customers and Consumers at large that can be considered as the Society/Stakeholders.

The main objective of this study is to get inside of the performance of the hospital supply chain in private hospitals of Bangladesh. Therefore, the following objectives are revealed in this study:

- Explore the existing literature on Hospital Supply Chain Management. This will help identify the key players who play an important role in the entire supply chain process of the service provider.
- Conceptualize and develop a model based on the current scenario of the supply

chain process of the hospital/healthcare industry.

- Analyze the effectiveness of the supply chain process focusing on the key suppliers of the hospital industry. By focusing on the key suppliers and their functions and contribution in the supply chain process can help demonstrate how the application of the supply chain approaches to hospitals, can contribute to the improvement of the service level to the patients.

In this study, researchers have worked on the supply chain management and how the application of the supply chain may contribute to the management of hospitals to improve their operational excellence through sustainable hospital management as well as provide quality service to their customers. Therefore, the study would provide a comprehensive idea about the current supply chain process of private hospitals of Bangladesh.

This paper is organized as follows: Section 1 discusses general background of the study, scope of the study, research objective and highlights the significant of the study. Section 2 presents a review of the existing literature on supply chain management, the evolution of the concept and hospital supply chain management. In Section 3, the researchers propose a model presenting a holistic view of Hospital Supply Chain Management and the Conceptual Model of Integrated Private Hospital Supply Chain Management (IPHSCM). Sections 4 and 5 describe the methodology and data analysis based on the conducted survey. The paper concludes by presenting the summary of findings, conclusion and identifies scopes for further studies in Section 6.

2. Literature Review

2.1. Concept of Supply Chain Management

The term Supply Chain Management was first introduced by a Booz Allen consultant named Keith Oliver who, in 1982, defined the concept as follows: “Supply chain management (SCM) is the process of planning, implementing, and controlling the operations of the supply chain with the purpose to satisfy customer requirements as efficiently as possible. Supply chain management spans all movement and storage of raw materials, work-in-process inventory, and finished goods from point-of-origin to point-of-consumption.”

Since its introduction, the concept and the activities of SCM has been examined and explained by different researchers in different ways. This means, that the concept, understanding and explanation of SCM is not universal. There is no unanimity on its content; furthermore, the range of opinions is very wide and depends on the direction and the position of a particular researcher.

Researchers found that there was a great difference in understanding among practitioners in terms of both how they define and implement supply chain management.

An example of a basic supply chain is shown in **Figure 1**.

The basic supply chain includes suppliers, manufacturers, distributors, retailers, and customers. The customers are the main focus of the chain, since the

primary purpose of the existence of any supply chain is to satisfy customer needs, in the process generating profit for itself (Chopra & Meindl, 2001).

Evolution of Supply Chain Management

Originally focusing on manufacturing, the concept and application of SCM was concentrated on the purchasing function, stating that it was a basic strategic business process, rather than a specialized supporting function, Mukhamedjanova defined it as “an integrating philosophy for controlling the flow of a distribution channel from a supplier to an end-user”. The ideas of SCM were later expanded to include management of all works inside a supply chain.

An evolutionary timeline illustrated in **Figure 2**, helps us understand the progression of SCM.

Research on SCM before 1995 was mainly concentrated on analyzing and developing an efficient and effective supply chain management process for the manufacturing industry. Journals in manufacturing, distribution, marketing, customer management, transportation, integration, etc. published articles on SCM or SCM-related topics with focus on manufacturing industries. Due to the intense global competition the evolution of SCM continued into the 1990s (Habib, 2011).

With the growth of the service industry, scholars also began to examine and take into account the effects of service into the already established manufacturing supply chain management process. Fernie and Rees (1995) adopted SCM in the National Health Service, which is considered as one of the first papers on SCM in the service sector. Further studies were done to uncover the implication of SCM in different industries such as service, education, hospitals etc. where SCM would play a significant role.

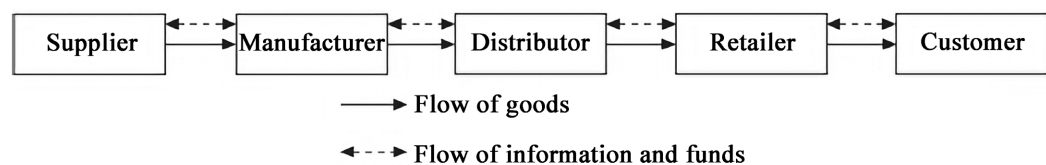


Figure 1. The basic supply chain (Chopra & Meindl, 2001).

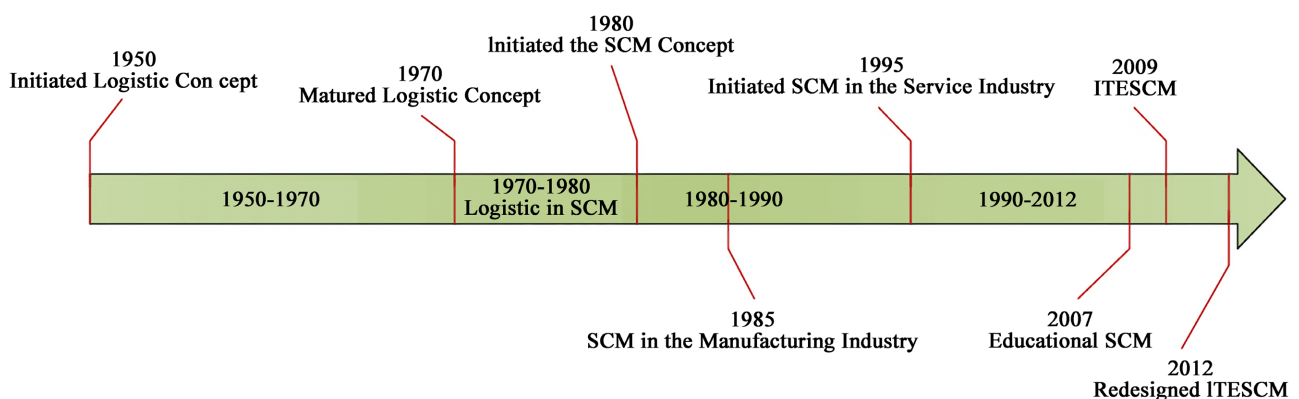


Figure 2. Evolutionary timeline of SCM (Habib & Hasan, 2019).

2.2. Service Supply Chain Management (SSCM)

Liu et al. (2019), defined the service supply chain (SSC) as all processes and activities involved in the planning, movement and repair of materials to enable after-sales support of the company's products. Thakur and Anbanandam described services supply chains as the supply of services to any organization, manufacturing unit, and public sector.

Further research on the service industry helped to identify the difference between the characteristics of service and manufacturing industries and also their supply chains. Um (2018) argued that service supply chains differ in terms of the standardized and centralized procedures and controls in manufacturing supply chains, with many supply chain decisions made locally and greater variation and output uncertainty resulting from the human involvement in service supply chains.

A typical supply chain model for the service industry is shown in **Figure 3**.

The service supply chain can be found in organizations with wide scale integrated service systems like airlines, catering, financial support, healthcare etc. These industries are some of the examples for service supply chains. Management of service supply chains can be more complex than the product supply chains as it requires more involvement of human and human interaction in both service creation and delivery.

The concept of service in service supply chain management is not only the service itself, but also includes the servitised products. According to Thakur and Anbanandam, the service delivered to the customers refers not only to a pure service, but also a servitised product, where they also provide some product supporting services to the end customers. And the manufacturing industries are also using the concept of "servitisation" widely in order to provide the products and services to the customer through the same channel and this will also provide them the competitive edge over their competitors.

Habib represents the first large scale empirical study that systematically investigate input of the university, output of the university through educational SCM. This exploratory research addresses the education supply chain, the research supply chain, and educational. In one of the studies Habib (2010) concluded, that SCM in the educational institutions needs more to be explored in the future. It is a surprising fact that researchers develop supply chain models mostly for improving business operations. Few, particularly academic researchers, do not realize that the research on academic SCM may also be conducted for their own educational institutions.

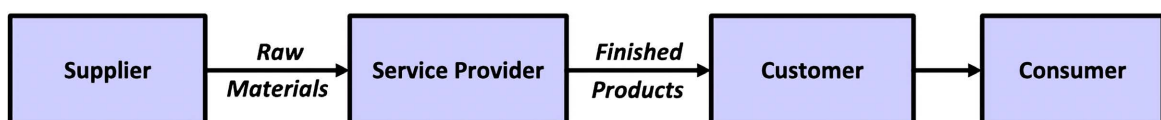


Figure 3. The basic supply chain of service industry (Habib, 2014).

2.3. Hospital Supply Chain Management (HSCM)

According to Kazemzadeh et al. (2012) “Hospital Supply Chain Management is a set of approaches to efficiently integrate suppliers or vendors, transport, hospital services (including outpatient, emergency, in-patient, laboratory, radiology, stores and purchase, food, laundry and medicines /equipment) to achieve Total Quality Management (TQM) in healthcare services by optimum utilization of resources” (Kazemzadeh et al., 2012).

Hassan (2006) proposed the following definition: “Hospital supply chain is the set of design activities, planning, procurement management, manufacturing (goods and services), delivery and return management, from the provider to the beneficiary (patients), taking into account all the trajectories of the patients in the hospital without which there is no product flows (pharmaceutical). These activities are driven by the information flow between the various partners in the supply chain and lead to financial flows. The aim is to provide optimal service for the quality and safety of patient care” (Hassan, 2006).

With the increasing competition, government regulations, rising costs and demand for higher quality of service, the healthcare sector is under enormous pressure. Healthcare industry as a business activity must strive for value addition across the supply chain to improve the supply chain performance. It will help organizations to provide better service to its stakeholders in this competitive world.

The supply chain management in healthcare industry faces quite a number of challenges in the long run like cost and risk. That is why, attention to the supply chain management in healthcare industry is required. The ultimate purpose is to ensure the satisfaction of different stakeholders of the supply chain.

Tamir, Ouzayd, and Chiheb (2017) proposed a structured model for the global hospital supply chain. However, the proposed structure has mainly focused on the pharmaceutical component. Here, the main players are the manufacturers or suppliers under the pharmaceutical industry, and they are responsible for supplying all the pharmaceutical products to the pharmacy and the pharmacy plays a vital role in order to supply all these products to the different services like hospitals, clinics etc. Later, the hospital management of stock, supplies the pharmaceutical products to the patients. And in return, financial flow takes place from patients to the hospital management system and from the hospital management system to the suppliers. (Figure 4)

In another research, Polater, Bektas, and Demirdogen (2014) have developed a health care supply chain model in terms of buying products and services in the public health sector in the context of Turkish health sector territory. The model has been constructed in order to conceptualize the flow of products and services in terms of satisfying those who serve the patients. Moreover, the main goal of the healthcare supply chain is to deliver the product and service at the right time, in order to accomplish the requirements of the healthcare service providers. In Figure 5, it is clearly stated that, in the health care supply chain, key stakeholders

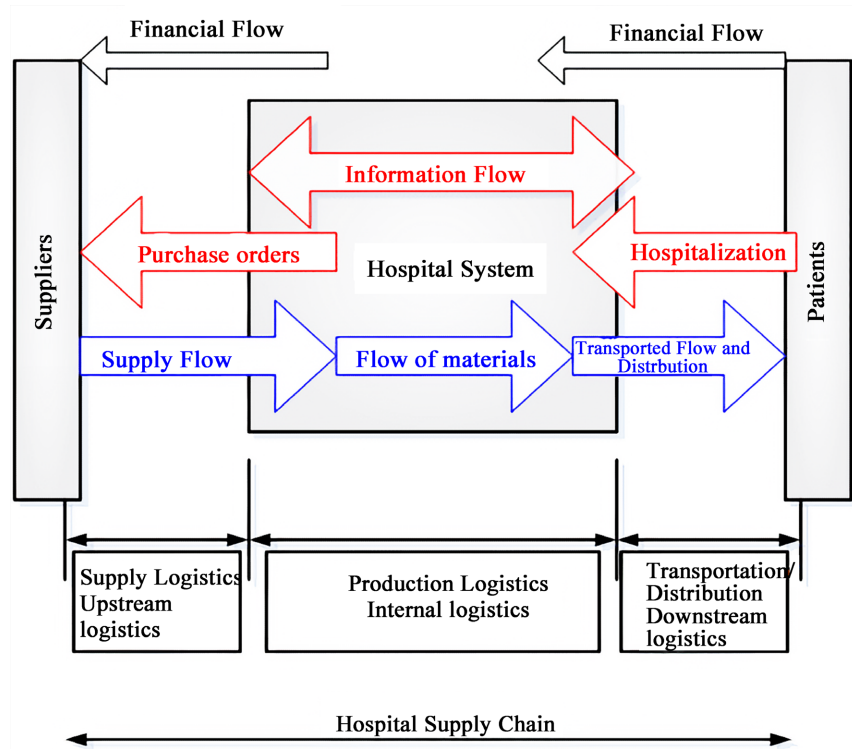


Figure 4. Structure of the global hospital supply chain (Tamir, Ouzayd, & Chiheb, 2017).

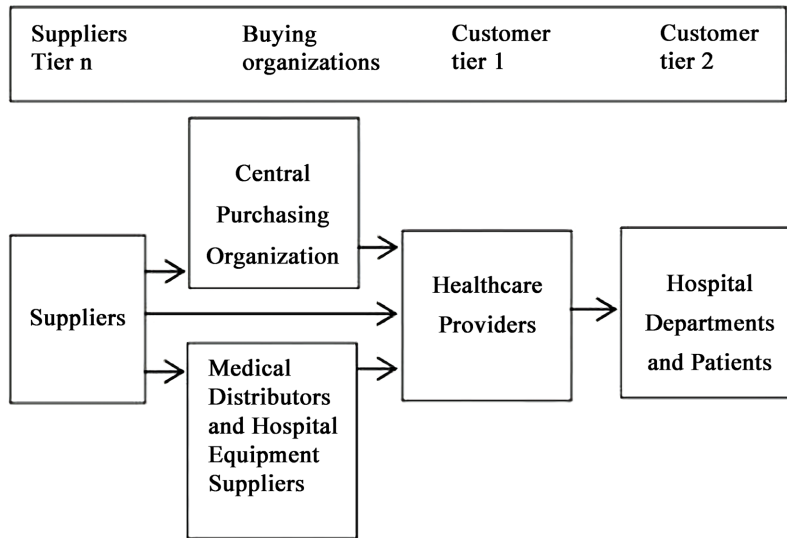


Figure 5. Polater's Turkish healthcare supply chain model (Polater, Bektas, & Demirdogen 2014).

are Producers, Purchasers, and Providers. Therefore, after producing the medical products, including, surgical supplies, medical devices, and pharmaceuticals, producers distribute the product to the purchasers like distributors and wholesalers. Likewise, purchasers hold inventories in order to facilitate the delivery of products to the providers. In healthcare, a provider represents those who are responsible for serving patients. The study provided a description of the current situation of the healthcare supply chain, and found potential solutions for in-

creasing material management practices in order to reduce inefficiencies and achieve cost savings. However, the study was conducted in the context of the Turkish public and private hospitals only.

The main intention of this research is to get inside the hospital supply chain and explore the excellence of the hospital supply chain in private hospitals of Bangladesh. In addition, from different literature of previous models, we have adopted a conceptual model for hospital supply chain in terms of private hospitals in Bangladesh. However, initially, a typical supply chain model, has been considered before reviewing all the previous healthcare supply chain models.

3. Conceptual Framework

3.1. Holistic View of Hospital Supply Chain Management

In our proposed conceptual model (**Figure 6**), we tried to conceptualize the satisfaction of all stakeholders, external and internal of private hospitals through the supply chain model. In our model we define how the hospital supply chain works, identify the stakeholders under the hospital supply chain, and how the hospital supply chain mechanism works in terms of satisfying the stakeholders. The development of the conceptual model started with concentrating on a holistic view of hospital supply chain management.

In accordance with the basic service supply chain model, the hospital supply chain management starts with the supplier. Suppliers can be categorized into two groups for a hospital-human and non-human. Human suppliers refer to the various individuals, doctors (reference of doctors), other hospitals who supply patients to the hospitals. Non-human suppliers are the suppliers of medical equipment, lab equipment, pharmaceuticals, different machines etc. to the hospitals. The patients and all these equipment and pharmaceuticals supplied by both human and non-human suppliers are considered as raw materials for hospitals.

The raw materials are supplied to the service provider in any service-oriented organization. In hospital supply chain management, hospitals act as the service provider. Patients and other materials are normally supplied to hospitals for further processing. As the process goes on, with proper materials and service, healthy patients and medical students can be produced as customers of a hospital supply chain management. The healthy patients and medical students being

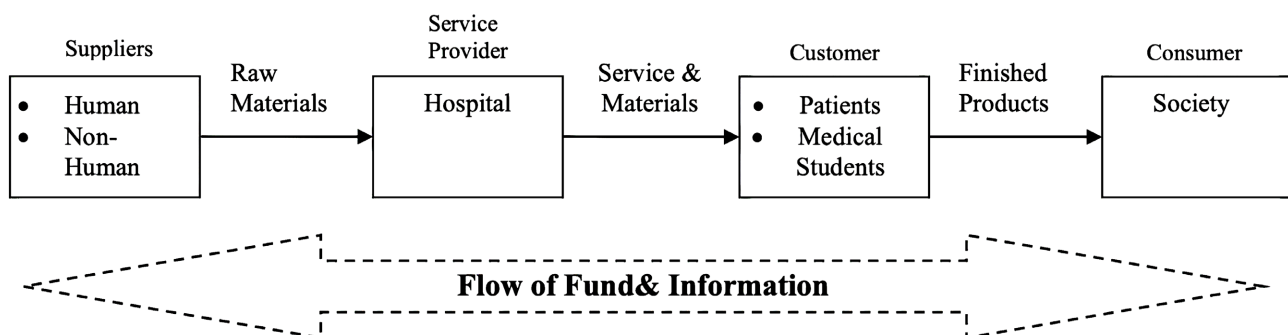


Figure 6. Holistic view of hospital supply chain management.

part of the society can serve the society according to the need. So, the holistic view of hospital supply chain management considers the society at large as the final consumer who can get the ultimate service from the whole process.

To make the process effective and efficient, two most important variables work through the whole process, they are, information and finance. Uninterrupted flow of information and finance at each and every step of the process is a must to better serve the society in a timely manner in this competitive market.

3.2. Conceptual Model of Integrated Private Hospital Supply Chain Management (IPHSCM)

Concentrating on the holistic view of hospital supply chain management, a detailed model has been developed and named integrated private hospital supply chain management (IPHSCM) model. In this model, we have categorized the non-human suppliers into three different segments including, Suppliers, Processing Centers and Pharmacy & Medical Instrument stores. In terms of Service Providers, we have included Hospital Administrations, Doctor & Medical Staff and Health Workers. Lastly, the consumers are the Patients and Medical students.

Suppliers: suppliers can be considered as international and national suppliers. (Urquiage, Cossio, Suarez, Rodriguez, & Marrero, 2020) Stated that, international suppliers are different countries across the world from where the national suppliers are importing raw materials, equipment, or finished products and distribute to the manufacturer, hospitals, and local pharmacy. In the hospital supply chain, suppliers are human suppliers and non-human suppliers. Human suppliers are responsible to supply patients to the hospitals. They refer patients to various doctors, hospitals. Non-human suppliers supply medical equipment, lab equipment, pharmaceuticals, different machines etc. to the hospitals. (Figure 7)

Processing Centers: Processing centers are responsible for producing health-care equipment including pharmaceuticals products and medical kits such as, stretchers, anesthesia machines, patient monitors, sterilizers, ECG Machines, surgical tables, surgical lights, surgical tools, and so on. We can state this category as a direct non-human supplier in terms of the hospital supply chain. However, there are some other categorized processing centers those are responsible for producing other equipment such as office stationeries, physical evidence products etc.

Pharmacy & Medical Instruments Store: Pharmacy and medical instruments stores are responsible for supplying drugs and medical instruments (Apron, Skeletons, Bones, and Medical Books etc) for the patients and medical students' care.

Hospital Administrations, Doctors and Health Workers: In the hospital supply chain, these specific segments are known as service providers. They have collected all the raw materials, equipment, physical evidence from the supplier's segments, and by utilizing all of these they are responsible for the patient's and

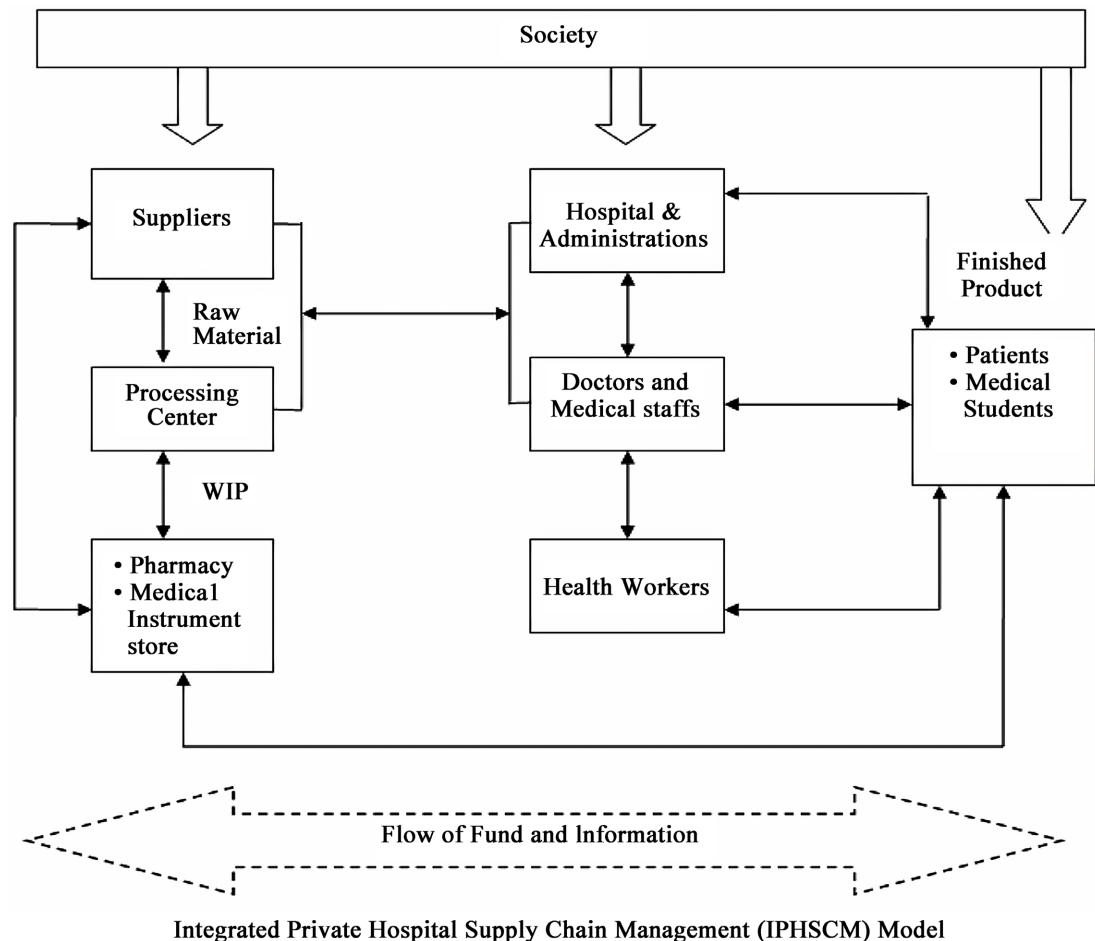


Figure 7. Integrated private hospital supply chain management (IPHSCM) model.

medical students' care. However, in our adopted conceptual (IPHSCM) model, this segment will be considered as the internal stakeholders and will be responsible directly for the customer's satisfaction.

Patients and Medical Students: Healthy patients and medical students can be considered as the finished product. In our conceptual model, healthy patients and medical students are playing a vital role in terms of customer satisfaction. According to the IPHSCM model, all the internal and external stakeholders of a hospital supply chain and the service providers are directly and indirectly responsible for the care of the patients. Therefore, if the end-users are satisfied, they will ensure the financial flow between the end-users and the service provider, and based on the medical demand the service provider will make the financial transit between manufacturer to the service providers and that is how the supply chain works in the hospital industry.

4. Research Methodology

This research is a descriptive study, based on primary and secondary data, which consists of research design to provide the framework for data collection and analysis. This study consists of hospital industry that would enable intensive;

micro-level analysis of data, as well as it is practical because a big sample is not feasible. This is an appropriate study to investigate the research question at the core of this study. While not representative of the whole healthcare sector, selecting the Bangladeshi hospital industry as this study provided valuable insights as well as a novel and in-depth understanding of the industry supply chain.

Due to the expected difficulty of getting access to hospital staff and the detailed work required for this research, a small sample was selected using simple random sampling method. Primary data was collected through semi-structured questionnaire survey using a simple attitude scale and in-depth interviewing and focus group discussion. Several numbers of private hospitals were selected for this purpose. A pre-ready set of questions with responses consisting of 5-point Likert scale was asked to the anonymized participants from the chosen hospitals. Secondary data was collected through extensive literature review and analysis of publications, journals, websites, public documents, etc. Statistical tool excel will be used to analyze the data.

5. Analysis and Discussion

Since the main objective of the study is to understand the performance of the hospital supply chain in private hospital of Bangladesh, therefore a survey questionnaire and a few focus group interview sessions have been conducted in order to gather primary data. In order to analyze the data, Excel has been used as a statistical tool. The analysis and interpretation of the survey and responses are shown below.

The survey questionnaire consists of 21 questions and for the analysis, the questions are divided into three categories including demographic, concentration on health service provider and admin staff, and concentration on patients and attendants.

5.1. Demographic Data

For this study, a survey questionnaire has been prepared with 21 questions and 137 responses have been collected. Among the 137 responses, 51 percent of participants were male, and 49 percent of participants were female. The respondents belong to different age group starting from 18 years to more than 55 years and from different educational background. The participants also include individuals from different levels of monthly income. This shows the diversity of the participants that contributed in collecting data for this research.

5.2. Health Service Provider and Admin Staff

Figure 8 represents the duration of service of the health service providers and admin staff who are working in the hospitals. Among the 137 responses, 26 percent of participants have been working in the hospital industry for more than 5 years and only 10 percent of participants have been in service for 3 - 5 years. 23 percent of responders had been in the hospital industry between 1 - 3 years,

while 41 percent of total respondents have work experience in the hospital industry for less than 3 years.

Figure 9 presents employees working shifts and the graph illustrates that, among the 137 responses, 42 percent of hospital service providers, including, doctor, and nurse and admin staff are able to choose their preferred working shift while 58 percent are unable to do so.

Concentrating on the working shift, according to **Figure 10**, 68 percent of total responses preferred working in day shifts, and only 9 percent of the total participants preferred the night shift. Moreover, 23 percent of total responses were



Figure 8. How long are you working in this hospital?

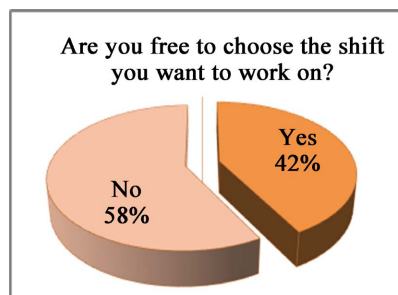


Figure 9. Are you free to choose the shift you want to work on?

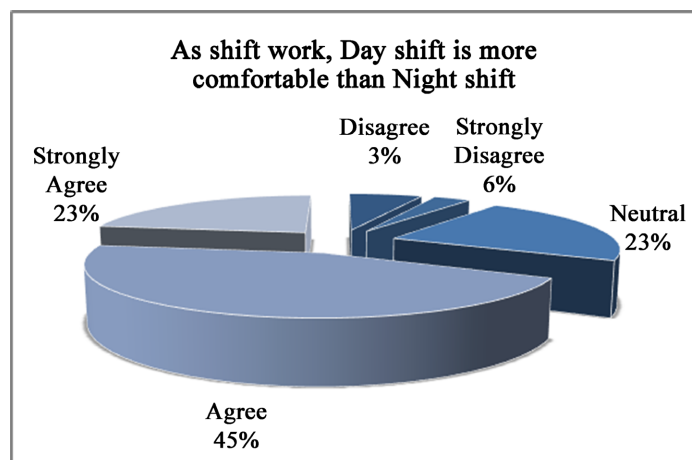


Figure 10. As shift work, Day shift is more comfortable than night shift.

neutral in terms of their choice of shifts.

According to **Figure 11**, total of 65 percent of the respondents feels their hospital authority does not deserve the right to change the working shift without the consent of employees, while only 6 percent of the total responses believe that, hospital authority should have the right to change the working shift. 29 percent of the employees were neutral with the statement.

5.3. Patients and Attendant

Figure 12 illustrates the source of information about the hospital. According to the figure, 41 percent of the total respondents have stated that they have received information about the hospital from their family members. 24 percent stated that they have selected the hospital because the hospital is situated near to their house. On the other hand, 16 percent of the total respondents have collected the information about the hospital from others like friends, colleagues, etc. 8 percent of participants stated that they have selected the hospital based on their previous experience and 11 percent have gathered information about the hospital from websites.

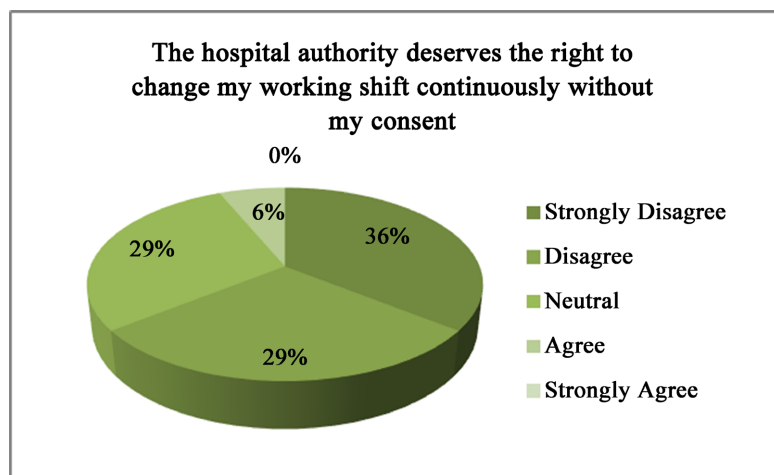


Figure 11. Hospital authority deserves the right to change my working shift continuously without my consent.

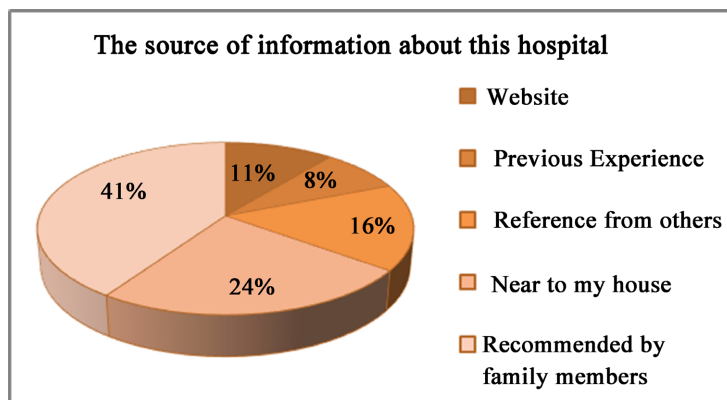


Figure 12. The source of information about this hospital.

Figure 13 presents the type of treatment that patients are receiving from the hospital and according to the figure, 43 percent of the total respondents came to the hospital for a normal checkup, 35 percent were in for a scheduled checkup and 22 percent of the total patients were in for surgery.

Figure 14 represents the time frame of receiving service from the hospital. 51 percent of the total respondents were receiving the service for 0 - 6 months, 16 percent have been receiving the service for 7 - 12 months, and 16 percent are continuing their treatment process for 1 - 3 years. On the other hand, 17 percent of the total respondents are continuing their treatment for past 3 years to more than 5 years.

Figure 15 highlights the patient's & attendant's satisfactory level regarding the hospital admission process. Among the 137 participants of the survey, 65 percent stated that the admission process of the hospital is smooth, easy, and convenient. On the other hand, only 16 percent did not agree with the statement while 19 percent were in a neutral position.

Figure 16 is about the hospital environment in terms of cleanness and hygiene. Among the 137 responses, 62 percent agreed and strongly agreed that the hospital is maintaining the cleanliness and hygienic environment properly. However, 8 percent of the total respondents are not satisfied with the hospital's hygienic environment and 30 percent are in the neutral position.

Figure 17 defines the hospital payment method, whether it is user friendly or not. From the survey, 49 percent of the total participants did agree with the

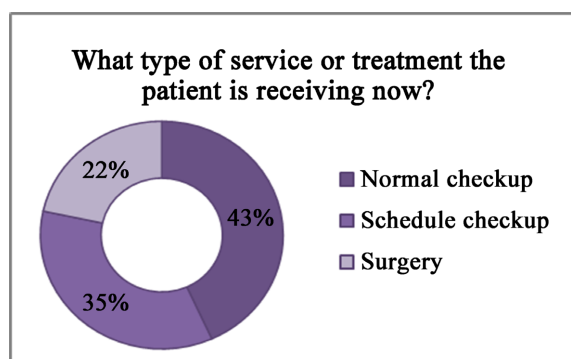


Figure 13. What type of service or treatment the patient is receiving now?

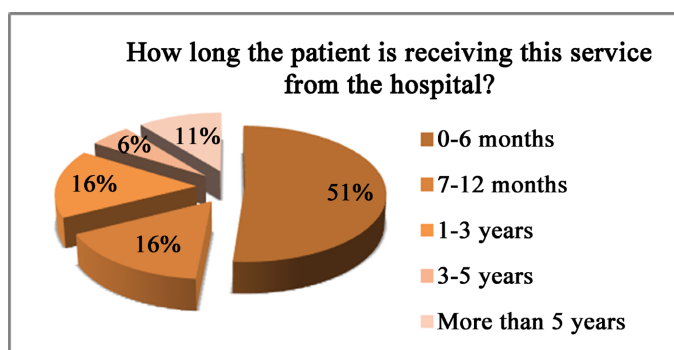


Figure 14. How long the patient is receiving this service from the hospital?

The admission process of this hospital is smooth, easy and convenient

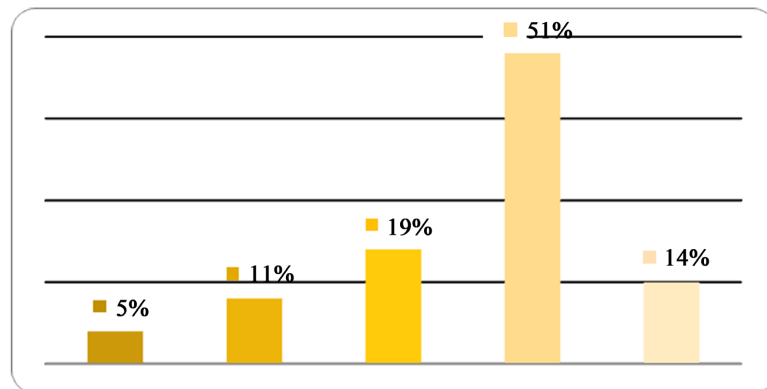


Figure 15. The admission process of this hospital is smooth, easy and convenient.

The hospital maintains clean and hygienic environment

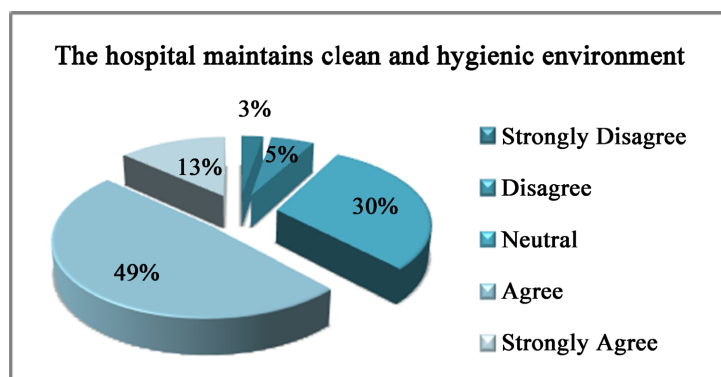


Figure 16. The hospital maintains clean and hygienic environment.

The payment method at this hospital is user friendly

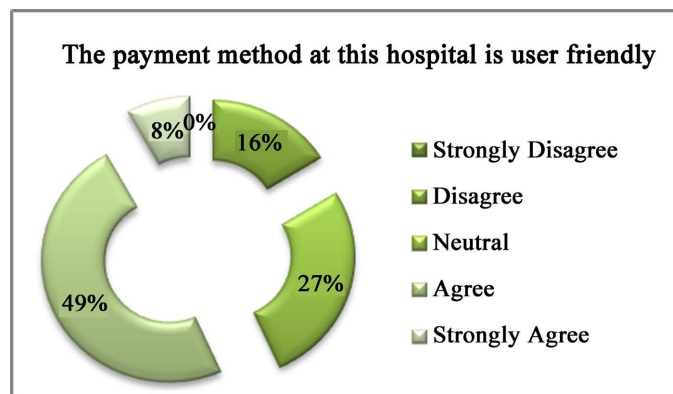


Figure 17. The payment method at this hospital is user friendly.

statement that the payment method of the hospital is user friendly while 8 percent did strongly agree with the statement. On the other hand, 16 percent of participants do not believe that the payment method is user-friendly. 27 percent of responders are in a neutral stage.

According to **Figure 18**, 62 percent of the total participants did agree, and 16 percent strongly agreed with the statement that they believe doctors and nurses are professional in terms of providing the service to the patients. Moreover, only

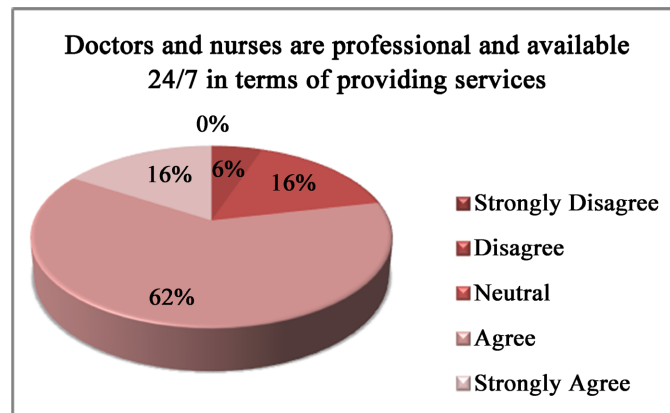


Figure 18. Doctors and nurses are professional and available 24/7 in terms of providing services.

6 percent of the total respondents did disagree with the statement and 16 percent are in the neutral position.

6. Summary and Conclusion

6.1. Summary of Findings

To sum up the discussion of the analysis of the data that we gathered from the survey of the questionnaire, we can say that there was an almost equal participation of male and female respondents. The respondents belong from different age group with different educational level and monthly income. The rest of the discussion shows that, respondents are quite satisfied with the overall service of private hospitals of Bangladesh. Small percentages of respondents are not satisfied with some specific service they are getting from hospitals and believe that the condition can be improved. Overall, the hospital supply chain has been defined in this report and the efficiency of this chain seems to be quite satisfactory according to our analysis of collected data.

6.2. Conclusion

The application of supply chain management in the business process is very significant for its overall operational excellence. In general, supply chain management would be applicable in manufacturing industry. However, service industry can also be benefitted from the application of this concept to improve the operational excellence in today's competitive world. This report focuses on the private hospitals of Bangladesh from service industry. It tried to identify the players in the supply chain process and conceptualize the whole process by developing a model. The effectiveness of the supply chain process was analyzed by the data collected through survey questionnaire and interviews of different parties of this process. This can be said to be a very preliminary analysis as very limited number of studies have been done before on supply chain management in service industry in this way. Application of supply chain management concept in hospitals can not only make it more cost effective, but also can help hospitals im-

prove the satisfaction level of different stakeholders, which is the main objective of the basic supply chain management concept.

The proper application of this concept will help hospitals manage and satisfy all the stakeholders of this industry, which can be mentioned as a contribution to the society. Hospital management usually does not think about the application of supply chain management from that perspective. They only believe that application of such concept will help them reduce the overall cost of hospitals. However, the developed model shows that there are other aspects of supply chain, which are usually ignored, as these do not go with the general concept. Moreover, satisfactions of the other aspects/parties/stakeholders are equally important to improve the efficiency of hospitals. To improve that, the application of these concepts is recommended from our side.

This study was limited to only private hospitals of Bangladesh. Moreover, Covid 19 pandemic made it difficult for us to collect data from hospitals. In addition, different parties from hospitals were a little skeptical while answering questions related to hospital, which may lead to a little variation in the answers from what the actual scenario is.

6.3. Further Study

The concept of supply chain management is known to be mostly applied in manufacturing industry. Therefore, for further studies the developed model can be applied in other businesses of service industry. This study mainly focused on private hospitals so the concept and the developed model can also be applied in government/public hospitals of Bangladesh and the result may be compared as well.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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