

The Servitization of Manufacturing: An Empirical Case Study of IBM Corporation

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Abstract

A conceptual model of firm process transition from manufacturing to servitization is proposed based on empirical case study. It denotes that the firm process in traditional manufacturing is run by resource and technology, and the primary objective of the company is making a good quality product, which has been observed a significant difference in servitized manufacturing firms that are conducted through skills and knowledge, and the firms main focus on developing value added services and more solutions oriented to customers. This research explains how a traditional hardware manufacturer, namely 'IBM Corporation' revolutions in the computer industry through non-hardware (Service-ware) depend services activities; consulting, financing, training, and so on and has fundamentally shifted their business from not only producing goods to offering a bundle of goods and services (Servitization). It also discusses the pertinent aspects of the firm's cultural adaptation and strategic change process towards servitization of manufacturing based on our observations and interview results of IBM professionals.

Keywords: Manufacturing, Service, Servitization, Value addition process, Company transition, Cultural adaptation, Change process

1. Introduction

Servitization is one of the most key strategic choices for manufacturing firms in developed economies. Today, manufacturing firms, especially high-tech industries are under massive pressure and realize the difficulties to achieve desired profit from only selling goods, which forces them to respond by moving up value chain, seeking to innovate and create more sophisticated products and services so that they do not have to compete on the basis of cost alone (Porter and Ketels, 2003). In these circumstances, many leading companies, such as GE, IBM, Rolls Royce, Fujitsu, Siemens, and so on have already started to sustain themselves on the basis of value delivered by shifting their market share from manufacturing to more product-service-oriented systems. This value chain concept, first introduced by Vandermerwe and Rada in the late 1980s, is now widely recognized as the process of creating value by adding services to products (servitization).

But, servitization is not an easy strategic choice that a manufacturer needs to carefully design its services. In order to succeed with servitization, manufacturer is likely to need some new and alternative organizational principles,

structures, and processes. Wise and Baumgartner (1999), Oliva and Kallenberg (2003), and Weeks (2009) claimed that to implement a servitization strategy successfully, organizations are required to change their strategies, operations and value chains, technologies, peoples for supporting cultural shifts in the organizational blueprint, and system integration capabilities. However, commentators have strongly recommended that companies need to maintain a constant flow of innovation, not only in terms of what is offered to the customer, but also in how products and services are designed, produced, delivered, and marketed (Bititci and Martinez, 2003; Martinez and Bastl, 2010). Therefore, when engineers design products try to design services, they encounter difficulties such as a lack of organizational resources. Thus, the transition from a product-centric vision to a product-service-centric or customer-centric vision is still poorly understood and remains a new and complex concept.

In this paper, we have discussed the general concept of servitization and provided an idea of process transition how a pure manufacturing company can engage in product- service operations even there is no actual journey process for achieving those opportunities. However, there are many literatures and theoretical discussion available in the general field of strategic organizational change, but there are no models specific to the issue of servitization as a change process.

Therefore, this work aims to develop a conceptual model of firm process transition from pure manufacturing to a product-service operation (servitization) under the viewpoint of research and development, procurement, production, and sales and marketing, and after sales services. It also aims to identify the change factors toward implementing servitization strategy. In addition to these, the paper discusses the cultural issues associated with servitization and how a traditional hardware manufacturer, namely IBM Corporation has changed from product-centric culture to a service-centric culture. The rest of the paper is structured as follows: after this introduction section, literature review of servitization in manufacturing industry is explained. Section 3 describes the research methodology was used in this paper. This is followed by section 4, which verifies and analyzes real-life case study with regard to adapting a servitization strategy. The next section is presented firm process transition toward a new framework. Section 6 explains the influential factors of change process toward servitization. Section 7 describes the cultural adaptation toward new changes and the final section concludes the paper with a summary and conclusions.

2. Literature Review: Servitization of Manufacturing

Servitization is now widely recognized as the innovation of an organization's capabilities and processes to better create value through a shift from selling product to selling product-service systems (PSS). According to Baines *et al.* (2007), a PSS is an integrated combination of products and services that deliver value in use. Traditionally, services offered by manufacturing companies are after sales services, like the installation, maintenance and repair of goods sold. But, in the case of servitization, the offer is defined, as a 'bundle' consisting of both goods and services that contribute to the fulfillment of customer needs. Hence, services have conventionally been considered as necessary add-ons to the core product portfolio. The more contemporary view is that manufacturing companies need to move towards a more extensive provision of services to remain its competitiveness in the current marketplace (Foote *et al.*, 2001; Oliva and Kallenberg, 2003; Gebauer and Friedli, 2005). Wise and Baumgartner (1999), for example, argue that companies in mature industries should be looking for service opportunities to achieve new growth and profitability. Because, most customers just want more service that goes along with it – that is, the service that addresses the underlying needs (Steven Desmet, Van Dierdonck and Van Looy, 1998). However, offering a higher level of service than competitors is a way of making the offering more attractive to the customers. Therefore, offering better service than the competition can become an important competitive advantage and simply differentiate the firm from its competitors.

So, servitization or bundle of goods and services may consider as a competitive business strategy and meet customers' expectations as well. But, many suppliers simply add layer upon layer of services to their offerings without even knowing whether customers really want them, whether these services should be added on to the standard package or offered as an option, or what the costs associated with these services are (Anderson, Narus, 1995). As a result, the misunderstanding of this approach or executing it poorly may cause the firm unsuccessful or even lead to bankruptcy (Andy Neely, 2009). Thus, a successful implementation of servitization strategy requires the appropriate measurement of market demands, firm's capabilities, and ability to respond cultural and corporate changes, such as product-service design, policies, process, structure, strategy and organizational transformation (Vandermerwe and Rada, 1998; Wise and Baumgartner, 1999; Oliva and Kallenberg, 2003; Brax, 2005; Slack, 2005, Andy Neely, 2009).

A key feature of servitization strategies is a strong customer centrality. Customers are not provided with products but broader more tailored "solutions". These solutions are provided not merely by a good and some added-on services,

but by means of package that includes both goods and services. Oliva and Kallenberg (2003) consider this customer orientation to consist of two separate elements; (i) a shift of the service offering from product-oriented service to “user’s process oriented services” (*i.e.*, a shift from a focus on ensuring the proper functioning and/or customer’s use of the product to pursuing efficiency and effectiveness of end-user’s processes related to the product), and (ii) a shift of the nature of the customer interaction from transaction-based to relationship-based (*i.e.*, a shift from selling products to establishing and maintaining a relationship with the customer). In other words, both a transfer from the old transaction-based mode of service to continuous connection with the customer and a shift towards process-oriented services for end-users instead of physical goods efficacy is required.

Therefore, servitization is a strategic approach of manufacturing firm and fundamentally movement from not only producing goods to offering a combination of goods and services in a single “value packages” to their customers, which collectively meet the client’s needs in a single space. That is, servitization is the transition process of an organization that continuously innovates new services and added values with its core product, which in the end signifies a firm as the value provider and lead towards better success.

3. Research Methodology

The research conducted in this paper is developed based on qualitative case study. Data was collected from the interview and discussion with IBMers during one and half year period. The findings reported here are from a multinational computer and technology firm, hereafter referred to as ‘International Business Machine (IBM) Corporation’ United States that classified their business as the combination of goods and services (Servitization). The company is one of the largest computer and technology firm in the ICT industry, which conducted its activities into five business segments, and acquired market in the United States, Europe, Asia, Africa, Oceania, and so on.

A total of 9 in-depth interviews are conducted, where the participants are designated as a director of research and development, a senior management consultant, a marketing and communication manager, a service engineer, operational manager, and employees as well. The interview is conducted with the average time of 45 to 60 minutes in Japan. We separated the answer into two distinct phases for achieving the study objectives. The initial phase of the research, we look at the company’s process transition from manufacturing to servitization in the context of research and development, procurement, production, sales and marketing, and after sales services. The questions focus on the respondents’ career backgrounds, the history of company’s current and previous activities, and their perception of the shift from manufacturing to service operations. However, scant attention has been given to the respondents’ viewpoint on process transition and the evolving organizational structure. The second phase of the research concerns to find out how organization can make a successful changes towards servitization by focusing on the following key factors: vision creation; strategy development; leadership and teaming; value sharing and communication; anchoring the new service culture. These factors give a large amount of different kind of information that is crucial for building a service culture and its capabilities toward servitization of business. In addition to these, we also explore the cultural issues associated with implementation of servitization strategy.

4. Case Study: International Business Machine (IBM) Corporation

4.1 IBM Story and Service Journey

International Business Machine (IBM) is the world’s leading computer and technology firm, and was established in 1911 that offers a variety of products and services in information and communication technology (ICT) industry. In the beginning, company started its operations by producing commercial scales and tabulators, and steadily expanded its activities in producing hardware products including mainframes, software, servers, and other storage devices. In 1975 IBM first released its personal computer to the market, but the sales were disappointing as the demand of personal computers was minimal at the time. It was not until 1980 that IBM tried again to crack the personal computer market. By then many other companies were already making the machines, and IBM was not able to gain immediate control of the market. By 1991 their stock price had reached the lowest point since 1983. From 1986 to 1993 IBM had taken \$28 billion in charges and cut 125,000 people from their payroll after avoiding layoffs for more than 70 years. In January 26, 1993, in the face of looming disaster, CEO John Akers resigned and Louis V. Gerstner was appointed as CEO of the following year.

After few weeks on the job, Gerstner identified the company’s main problems and indicated that IBM had lost of customer touch and trust, costs were out of line, the firm was too decentralized, confusing and contentious performance measurement systems, and they had stayed with their old strategy too long. On the other hand the market was too much crowded by the early 1990s, there were tens of thousands of companies in the computer industry that offered the lower prices products and more choices to customers even many of which lived for a few

months or years, then disappeared. According to the industry trend and Gerstner's better understanding of customers' needs and on going business demand, he recognized that the market was shifting. The application of technology would become the key drivers of IBM not its invention. These insights led to a transformation that subsequently led IBM to exit the network hardware business, application software, storage, and personal computers to enter the services and develop a freestanding software business. After then to late 1990s, services were consistently growing 20-plus-percent a quarter. In 2001, services and software were \$35 billion and \$13 billion businesses, respectively, which combined represented 58% of total revenues and accounted for roughly half of IBM workforce. Since then, with Sam Palmisano to Virginia M. Rometty as CEO, IBM has continuing this remarkable shift to its business mix to more profitable segments, so that today, IBM has revenues of \$107 billion while more than 90% of its segment profit came from software, services and financing in the fiscal year 2011.

4.2 Identifying the IBM as Servitization of Business

The 'servitization' phenomenon is marked by a manufacturer's increasing focus towards service activities, a tendency to adopt services as a critical element of their competitive strategy (Quinn et al., 1990), and a trend whereby manufacturing firms create service businesses around and beyond conventional product offerings (Ren and Gregory, 2009). There are many authors who also have introduced the 'servitization' phenomenon in different concepts, such as: 'service encapsulation' [Howells, 2000]; 'product-service systems' [Marceau et al 2002]; 'integrated solutions' [Davies et al 2006]; product-service package' [Johnstone, 2008], and so on. But, the objectives of all views are the same, and they are to add value with manufacturing goods through services and solutions that collectively meet the user's needs. According to Vandermerwe and Rada, 'servitization of business' evolved in three overlapping stages; (i) Goods to Services that implies the institution's operational activities are either centered on goods or services, (ii) Goods + Services which focuses on both goods and services simultaneously, and (iii) Goods + Services + Support + Knowledge + Self-service that provides a bundle consisting of customer-focused combinations of goods, services, support, self-service, and knowledge.

After reviewing the IBM business description and historical background from company profile, website, and articles, we observed that even IBM is predominantly fall in the manufacturing category, but portray their products as an amalgamation of manufacturing and services. They have moved up in the value chain from production of hardware and reinvented themselves as providers of business solutions. These solutions are drawn from an industry-leading portfolio of consulting, delivery and implementation services, enterprise software, systems and financing. By considering this business nature of product-service combinations and on going business activities toward value addition, it is clear that beside of manufacturing products, IBM also offers accompanying services that identified the firm as servitization of business. However, there are some other factors that we also observed the reason of IBM as a servitized firm from financial and strategic viewpoints, like as, service revenues (Global Technology Services [GTS] and Global Business Services [GBS] accounted more than \$60 billion), Pre-Tax income of service segment (41%, which is equivalent of over \$9 billion), Return on Sales (Gross profit margin 46.89%; Operating profit margin 20.01%; and Net profit margin 14.83%), Return on Investment (ROE 78.73%, and ROA 13.62%), effect of probability, service quality, relationship quality between suppliers and buyers as well as buyers and sellers, and so on.

5. The Process Transition towards a New Framework

The process of servitization requires the implementation of various organizational changes, new processes, and strategies in the transition from product manufacturing to a service-focused total offering. In this case study, we aimed at demonstrating our concept to IBM process transition from the viewpoint of research and development, procurement, production, sales and marketing, and after sales services, which is portrayed in Figure 1.

The model shows a significant transition in IBM process from manufacturing to servitization in the period of 1990s that we have briefly discussed in the following:

- i. **Research and Development:** After taking the high profile servitization strategy in 1990s, the firm's research and development was shifting its focus from technology invention to application of technology and on-demand businesses, which main concern is to response the customer needs and expectations timely. Today they are investing approximately \$6 billion for research and development annually, and most of which are developing for software and services.
- ii. **Procurement:** In extend to IBM supply chain into value chain, they created its own globally integrated supply chain that provides a strategic advantage for the company to create value for clients and ensure greater efficiencies and lower costs. IBM spends around \$35 billion per year through its supply chain, procuring

materials and services globally.

- iii. **Production:** Considering the high quality and efficient services into the account, IBM has shifted resources toward building its capabilities and employee skills aiming to create superior services for its clients. They spent significantly more in staffs and processes and the breadth and depth of the company's capabilities. More important, the company was brimming with talented people who had unique expertise. In the old IBM, Gerstner observed "All of IBM capabilities were of a business model that had fallen wildly out of step with marketplace realities". Commenting on whether IBM, a hardware company, could make this transition, Gerstner said, "Services is entirely different. In services, you don't make a product and sell it. You sell a capability and knowledge and this kind of capability you can not acquire".
- iv. **Sales and Marketing:** In the case of sales and marketing, Gerstner believed that a successful company must have a customer or marketplace orientation and a strong marketing organization. But before reviving the brand in 1990s, there had never been a true marketing in IBM. And in IBM at that time the term "marketing" really meant sales. In June 1993, they hired Abby Kohnstamm as the head of corporate marketing for IBM, and developed and implemented a key customer strategy that convince customers and serving their interest focused on delivering value not just pushing "Iron" (Mainframes).
- v. **After sales:** When IBM approached to servitization in 1990s, they offer a full range of after sales services to its customers including technical support, knowledge management and self-help solutions, training, consultancy, etc. and transformed its resources toward building a strong client relationship. For example, when a customer buy something from the company, then train their people on that product and get familiar with how to support it and maintain a continuous touch with customers during product life time.

6. The Change Process for Successful Servitization

Change management is one of the most prominent aspects of organizational any changes, such as structural changes, policies changes, process changes, or the extension of new business operations and so on. This is very important for implementing firm's strategy more effectively and efficiently that realizes in IBM change processes towards servitization. A study of "Making Change Work", IBM Global Business Services (2008) showed that the key change management elements, ranked in order of most needed for successful change effort outcomes, are the softer skills in the change management portfolio is shown in Figure 2.

However, the key factors, like as vision creation, strategy development, leadership and teamwork, value sharing and communication, and anchoring a service culture has been also emphasized by IBM CEO, Luis Gerstner during the firm transition from product manufacturing to product-service systems (PSS). In the following, we have explained in details how these factors lead the IBM for successful changes towards servitization of business.

- a) **Create a service vision:** At the beginning of transformation Gerstner, CEO, announced that IBM needs right now is vision, and the first frame of that vision is to make the company profitable by continuing to be, in fact, the only full service provider in the industry. He noted that "whatever hard or painful things you have to do, do them quickly and make sure everyone knows what you are doing and why".
- b) **Strategy Development:** Since IBM transformed itself into a full range of service activities, they articulated their strategy in which services is a considerable component. They continuously develop this strategy turnaround the customer needs "on-demand business" that offering an open architecture, integrated process, and self-managing systems – selling computing services, not computers. .
- c) **Leadership and Teaming:** To make sure an efficient and effective work flows on new service vision, Gerstner turned his attention increasingly to the overall IBM team, top management team, and board of directors. He campaigned to rebuild the leadership team, give the workforce a renewed sense of purpose, and demanded the managers' work together to re-establish IBM's mission as a customer-focused provider of computing solutions.
- d) **Shared values and Communication:** In respect to IBM's basic beliefs; excellence in everything we do, superior customer service, respect for the individual, Gerstner give importance on value sharing for efficient changes. Besides of group meeting, he also met with individuals and receives their opinion and ideas for effective change process. At the same time IBM remaking its board and senior management systems that open up a clear and continuous communications with IBM employees. Gerstner mentioned that if employees do not know what's happening in the organization, if they do not believe a crisis exists, then, they will not make the sacrifices that are necessary to change.
- e) **Anchoring a new service culture:** Toward building a service environment, Gerstner focuses on eight new

principles for establishing the IBM's service-oriented culture. The first principle is the marketplace, which is the driving force of IBM that they need to focus on serving their customers, in the process, and beating the competition. Because, success in a company comes foremost from success with the customer, nothing else. Second, commitment to quality, which implies that technology has always been IBM's greatest strength but they need to funnel that knowledge into developing products that serve their customers' needs in all areas of the company, including hardware, software, and services. The third principle is measuring success through customer satisfaction and shareholder value. IBM believes that the best measure of success is increased shareholders value and no company can success, financially or otherwise without satisfied customers. Fourth, focus on productivity that forces the IBM to accept innovation, take prudent risks, and pursue growth, by both expanding old businesses and finding new ones. It requires the IBM's mindset, move faster, work more efficiently, and spend wisely. Strategic vision is the fifth principle, which is crucial for building a service culture. In order to succeed, IBM must need to have a sense of direction and mission, so that no matter who they are, the most important thing is what they are doing and how they fit in. The next principle is act with a sense of urgency, which signifies the IBM to be fast than insightful. Seventh, work together as a team that focuses on delivering value to IBM's customers. The final principle is the sensitive to the needs of all employees and communities in which IBM operate. In this regard, IBM wants their people to have the room and the resources to grow. They want the communities in which they do business to become better because of their presence.

7. Cultural Adaptation towards Servitization of Business

Organization culture is a system of shared actions, values and beliefs that develops within an organization and guides the behavior of its members (Schermerhorn, Hunt and Osborn 2008). More specifically, the concept of culture according to Trompenaars (1998) is "the way we do things around here" or "the way the organization does its business". The adoption of servitization strategy in IBM business observed a significant changes between two different cultures of hardware manufacturing to product-service systems (PSS). It is one of the big challenges for organization that they faced during transition period, which have advocated by commentators for developing and shifting from product transactional mindset to a services relationship cultural orientation (Oliva and Kallenberg, 2003). But, transforming the organization's culture constitutes one of the most fundamental challenges confronting an institution, as people's natural inclination is to hold on to whatever feels familiar, even if confronted with better alternatives (Munck, 2002). The similar situation is seen in IBM in 1994, when the CEO, Luis Gerstner outlined the behavioral changes needed to make IBM's new culture (Table 1), while most of the executives were very supportive but some had simply been shocked. In spite of the apparent complexity and difficulty involved, changing the way people think is the most powerful means to ultimately change behavior, which in terms of servitization is deemed to be vital importance (Pfeffer, 2005). The behavioral changes of International Business Machine (IBM) towards servitization are shown in Table 1.

In order to do the required changes and make them come alive for all IBMers, Gerstner made them simpler and bake them into what people did everyday. Defining the IBM new culture, Gerstner emphasizes three key components: win, execute, and team, which is most important for all IBMers that needed to apply in setting their goals. He required making the marketplace as the driving criterion for all of IBM's actions and behavior. In the new IBM, successful people would commit to getting things done fast and effectively. And this commitment is the acting as one IBM, plain and simple.

8. Discussion and Conclusions

Servitization is an on-demand strategy for manufacturing firms in a developed economy, particularly in such a "customer-oriented" business world. To be competitive, sustainable, and differentiate itself, it is one of the key strategic choices that the manufacturers can consider for long run business perspectives. Today, many leading companies like, IBM, Fujitsu, Siemens, and so on embraces this concept as a service-led competitive strategy, environmental sustainability, and the basis to differentiate themselves from competitors who simply offer lower priced products. But, the journey of servitization is not easy and associated challenges during the transition from product-centric to product-service-centric systems. This study was conducted to develop a conceptual model of firm process transition from manufacturing to servitization under the viewpoint of research and development, procurement, production, sales and marketing, and after sales services, based on empirical case study of IBM Corporation. The model explains how a traditional manufacturing firm can extend their value chain through process transition and achieve their desired objective of servitization. It is observed that the notion of servitization process emphasizes more on user needs and expectations, value proposition, and solution-oriented to customers while the process of manufacturing firm focuses on technological development or product standardization, market acquisition,

economies of scale and efficiencies. In order to transform the firm process or implementing servitization strategy successfully, the paper also identified the strategic change factors based on interview results, which is very important, such as service vision creation, strategy development, leadership and teaming, value sharing and communication, and anchoring new service culture. Servitization or product to service transition is a change in mindset from the understanding of value as that created in the production and exchange of goods to one in which value is attained from the use of an offering aimed at achieving customer goals. This change of mindset is based on service dominant (SD) logic as an appropriate philosophical for the development of service science. In addition to the main issues, this paper has presented how IBM culturally adapted into service provision through its behavioral changes, such as, from product out - to customer in, from do it my way - to do it the customers' way (provide real service), from value me - to value us, from attack the people - to attack the process, from rule-driven - to principle-driven, from fixed rewards -to variable rewards, from manage to morale -to manage to success, to name a few and developed a new IBM culture towards servitization of business. The experiences of this case study has helped to clarify how an effective process can enable a manufacturer to create a new solution for the customer and how a company can move from the traditional product-centric to value-chain operations.

In the future is important to make further research on measuring the level of performance between pure manufacturing and servitized organization in the same industry. What can be other alternatives for manufacturing firms rather than choosing servitization strategy?

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Table 1. IBM Behavioral changes towards servitization

From	To
Product Out	Customer In
Do It My Way	Do it the Customers' Way
Manage to Morale	Manage to Success
Decision Based on Anecdotes and Myths	Decisions Based on Facts and Data
Relationship-Driven	Performance-Driven and Measured
Conformity	Diversity of Ideas and Opinions
Attack the People	Attack the Process
Looking Good Is Equal to or More Important Than Doing Good	Accountability
United States Dominance	Global Sharing
Rule-Driven	Principle-Driven
Value Me	Value Us
Analysis Paralysis	Make Decisions and Move Forward with Urgency
Not Invented Here	Learning Organization
Fund Everything	Prioritize

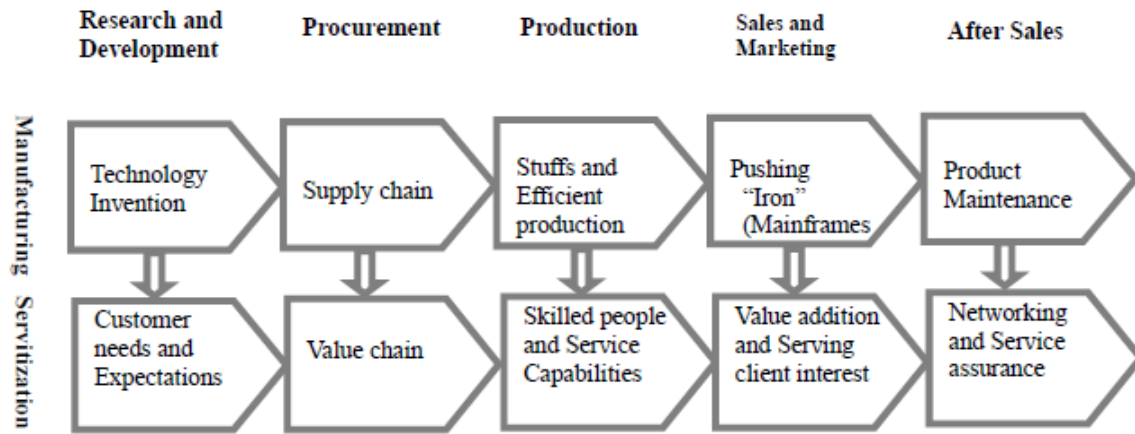


Figure 1. Conceptual model of IBM process transition

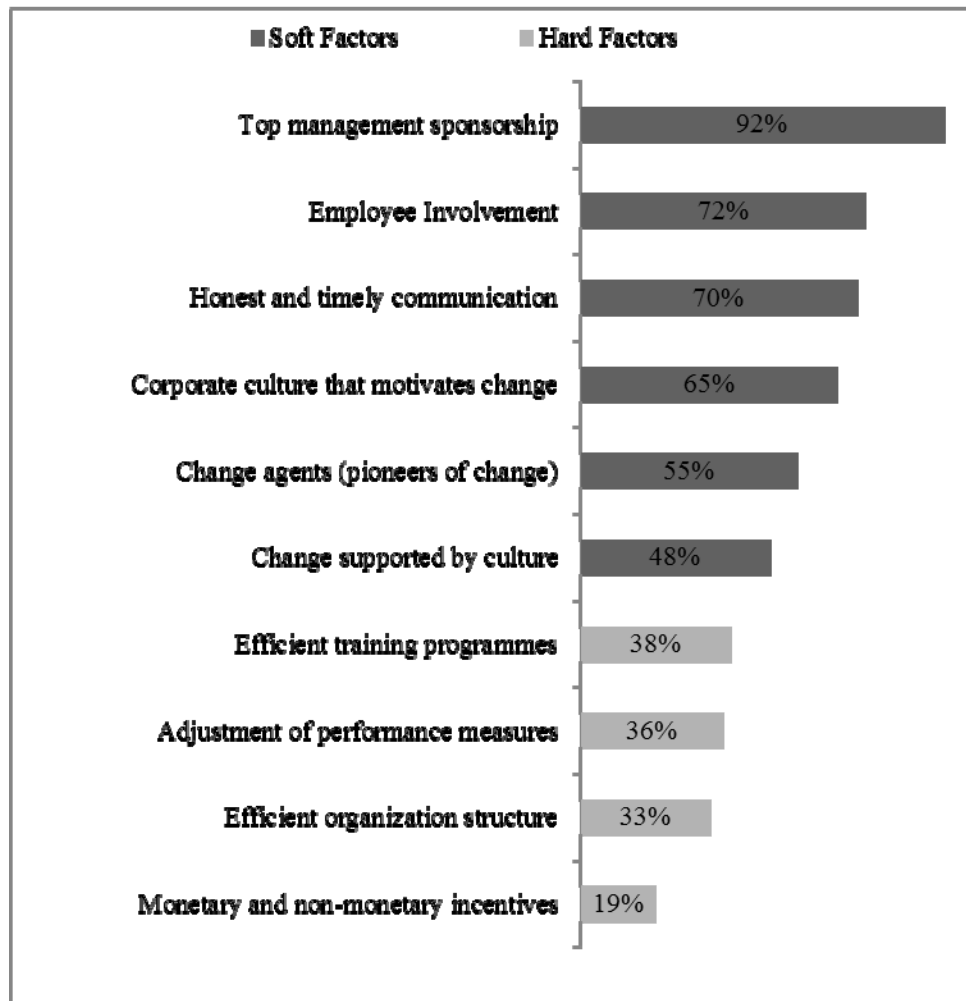


Figure 2. Factors for successful change