

**BUSINESS PROCESS MANAGEMENT: CONCEPTUAL FRAMEWORK AND  
APPLICATION**

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## **ABSTRACT**

Recent literature published by some practitioners, consultants, and researchers in the area of Business Process Management (BPM) identified that BPM is a new and emerging field of research and practice. The objective of this paper is to identify the conceptual framework of BPM, identify if connections exist with prior process improvement concepts such as Business Process Re-engineering (BPR), Total Quality Management (TQM) and Business Process Improvement (BPI), and apply BPM in a case study to determine the effectiveness of the current methodology. An extensive literature review was conducted, identifying multiple similarities between BPM and prior process improvement concepts, suggesting an evolving nature of the concept. The BPM methodology was then applied in a controlled case study, identifying a major inefficiency in the methodology. The findings of this paper are useful to researchers, educators, students, and managers to understand the evolution of BPM, and determine how it can be applied.

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## GLOSSARY

Terms that are used throughout this paper and related to the study include:

- ***Best Practices*** – procedures accepted as correct or effective
- ***BookKing*** – The payment gateway used by Continuing Studies to register students for Face-to-Face courses
- ***BPM Culture*** – a certain set of values that directly supports the achievement of BPM objectives, such as process enhancement or quality enhancement. (Zairi, 1997)
- ***Business Process*** – complete and coordinated set of activities and tasks that must be performed to deliver value to a customer, or to fulfill other strategic goals. (Guha & Kettinger, 1993)
- ***Business Process Improvement*** – systematic approach utilized by an organization to change the way their organization does business, resulting in a process that is faster, higher quality and lower in cost. (Grove & Kettinger, 1998)
- ***Business Process Management*** – a structured approach to identify, improve, and maintain the fundamental activities of an organization to attain or sustain a competitive advantage (adapted from Zairi, 1997)
- ***Business Process Re-engineering*** – is the fundamental rethinking and drastic redesign of business processes to achieve significant improvements in measures of performance, such as process cost, product quality, customer service, and process speed. (Hammer & Champy, 1993)
- ***Citation Pearl Growing*** – using one relevant source, or citation, in an article to find more relevant sources on a topic. (Markey & Cochrane, 1981)

- ***Competitive Advantage*** – is the ability to provide similar value as the competition but at a lower price, or provide greater value at same or higher prices in terms of product/service differentiation. (Business Dictionary, 2016)
- ***Course Merchant*** – The payment gateway used by Continuing Studies to register students for Online courses
- ***Chance Causes*** – variation that is part of the process and could include environmental changes or variations in raw material or machinery. (Mason & Antony, 2000)
- ***Definition/Modeling of Process*** – To implement any changes on a process, the process must be first defined/modeled. This includes developing a process map, identify all of the activities, identifying common parts, and defining all internal and external variables that influence that process. (Loos, Van Der Aalst, Houy, Fettke, & Krogstie, 2010)
- ***Desire2Learn (D2L)*** – The learning management system utilized by Continuing Studies to deliver online courses
- ***Execution of Processes*** – Once the implementation has begun, process execution will ensure the success of the implementation through continuous support and will see the implementation through to completion. (Loos, Van Der Aalst, Houy, Fettke, & Krogstie, 2010)
- ***Implementation of Processes*** – Once a process has been defined, the organization must then begin the implementation process. This consists of the decisions and activities required to enact a process change. (Loos, Van Der Aalst, Houy, Fettke, & Krogstie, 2010)

- ***Monitoring and Controlling of Process Execution*** – After the process change has been executed, continuous monitoring and control of the data will identify if the process is operating more effectively. (Loos, Van Der Aalst, Houy, Fettke, & Krogstie, 2010)
- ***Optimization/Continuous Improvement of Processes*** – Optimization and continuous improvement will evaluate the new process and productivity in relation to past future process efficiencies. It will evaluate performance measurements and identify new opportunities for process improvements. (Loos, Van Der Aalst, Houy, Fettke, & Krogstie, 2010)
- ***Organizational Culture*** – is the basic assumptions that an organization has invented, discovered, or developed to define the correct way to perceive, think and feel when coping with their internal and external environments. (Schein, 1984)
- ***Process*** – a series of actions or steps taken in order to achieve a particular end. (Oxford Universities Press, 2015)
- ***Process-Based Culture*** – an organizational culture that is based on the relationship between organizational structure, business strategy, operational systems, employee skills and superordinate goals (goals which require two or more people or groups to achieve). (Waterman, Peters, & Philips, 1980)
- ***Special Causes*** – variation that is not part of the process, such as operator error. (Mason & Antony, 2000)
- ***Statistical Process Control*** – SPC is a tool utilized in TQM practices, which focuses on the reduction of production variation by identifying the causes of variations in

processes through statistical measurements. (Shewhart & Deming, 1986; Porter, 1985)

- ***Strategy Development*** – Strategy development is the analysis and interpretation of process relevant data with the intent of determining future strategic potential and improvement strategies (Loos, Van Der Aalst, Houy, Fettke, & Krogstie, 2010)
- ***Total Quality Management*** – an organization-wide management practice with the objective of improving the quality of a product, service, or process, while creating efficiencies and cost savings. (Adaptation of Shewart & Deming, 1986 and Bailey, 1994)

## **CHAPTER 1**

### **INTRODUCTION**

The foundation of a business is the provision of a service or product to a client, with the goal of attaining revenue. Some businesses perform better than others, and those businesses claim to have a competitive advantage. Business Dictionary (2016) defined a ‘competitive advantage’ as the ability to provide similar value as the competition but at a lower price; or provide greater value in terms of product/service differentiation than the competition at the same or higher prices. Various organizations attain a competitive advantage over their competition through process improvement and quality management, including: Total Quality Management (TQM), Business Process Improvement (BPI), and Business Process Re-engineering (BPR) strategies. Within the last few decades, the concept of Business Process Management (BPM) emerged, addressing the limitations and concerns of previous management concepts such as TQM, BPI and BPR. According to Brocke & Sinn (2011), BPM emerged in the 1990’s as a technical, IT related concept that helped accomplish what Total Quality Management (TQM) in the 1980s and business process re-engineering (BPR) in the 1990s could not. It wasn’t until the late 1990’s when researchers began evaluating BPM beyond the IT realm, and focused on a holistic approach for evaluating an organization’s needs. Zairi (1997), one of few researchers, was aware of the potentials of BPM from an organizational perspective in addition to the IT perspective. As noted by Margherita (2014), BPM has become one of the most widely discussed concepts in modern organizations and management information systems.

The majority of peer-reviewed research papers have focused on two primary areas of BPM: Business Process Management Systems (BPMS) and Business Process Management Maturity Models. As noted by Sun, Su, & Yang (2016) a business process management system is a piece of software to aid BPM through automating functions. These systems help manage information, tasks, resources and processes to identify potential process improvements. Alternatively, BPM maturity models are a set of phases or stages that an organization would evolve through (Gobbi de Boer, Muller, & Schwengber ten Caten, 2015). Depending on the maturity model phase/stage an organization's current BPM capability can be identified, in terms of process discovery, design and execution, strategic alignment and governance and culture (Röglinger, Pöppelbuß, & Becker, 2012).

This research examines a third topic within BPM, the conceptual framework and methodologies for applying BPM. This topic area has been briefly researched over the last 20 years, yet still faces criticism due to the lack of a standardized methodology. Based on the literature review, it was identified that there is no systematic comparison of BPM with prior process improvement strategies, similarly there has been no systematic comparison of the BPM methodologies. This lack of comparative research available, as well as the limited research pertaining to the application of BPM, specifically the application within a not-for-profit environment, is addressed in this thesis. In recent years, BPM has become more prominent in academia, and therefore it is essential to explore the concept and its application.

The objectives of the research study are;

1. To explore the conceptual framework of BPM in relation to other process improvement strategies, such as TQM, BPI and BPR.
2. To explore and identify the current methodologies for applying BPM.
3. To evaluate the application of BPM in a case study to determine the effectiveness of the BPM methodology.

This study involved an extensive literature review of relevant research pertaining to Business Process Management, Total Quality Management, Business Process Re-engineering, and Business Process Improvement. The literature review is divided into four chapters: (1) identify and explore the conceptual framework of BPM; (2) evaluate the methodologies for applying BPM, (3) evaluate a prior case study of applying BPM, (4) evaluate the organizational characteristics that must be present to effectively implement BPM. In chapter 1, a literature review of TQM, BPI, BPR and BPM was conducted; including the identification of the fundamental concepts, benefits, and limitations. This evaluation of past research provided the conceptual framework for BPM. In chapter 2, a literature review evaluated the current methodologies for applying BPM. Based on the research it was identified that there is no current standard methodology utilized by BPM practitioners, however it should be noted that 4 of the 6 methodologies, specifically Elzinga, Horak, Chung-Yee, & Bruner (1995), zur Muehlen & Ting-Yi Ho (2006), Houy, Fettke, & Loos (2010), and Dumas, La Rosa, Mendling, & Reijers (2013) share a similar foundation. In Chapter 3, a literature review evaluated previous case studies conducted on the implementation of BPM. One specific study evaluated the implementation of BPM in a not-

for profit organization through the use of the Dumas, et al. (2013) methodology. The study revealed that through the implementation of BPM, the organization was able to increase the inflows of financial resources for three of the four business processes, provide operational efficiencies, increase employee satisfaction, and increase customer satisfaction, and thus concluding that BPM had an overall positive impact in the organization. Chapter 4, consisted of a literature review which evaluated the organizational characteristics required to successfully implement BPM. The research identified Hammer's (2010) observation that an organization must have 5 main characteristics: High-performance processes, strong leadership skills, a process-oriented culture, a BPM governance, and employees with BPM expertise or experience.

Based on the information gathered in the literature review, Section 2 applied a case study analysis utilizing data from a post-secondary department to explore if BPM can be implemented in a post-secondary institution. This case study also evaluated the effectiveness of the Dumas, et al. (2013) proposed methodology.

## **CHAPTER 2**

### **RESEARCH METHODOLOGY**

Multiple methods of analysis including an exploratory literature review and case study analysis were utilized to meet the following objectives proposed in this thesis:

1. To explore the conceptual framework of BPM in relation to other process improvement strategies.
2. To explore and identify the current methodologies for applying BPM.
3. To evaluate the application of BPM in a case study to determine the effectiveness of the BPM methodology.

To meet the first two research objectives proposed in this thesis, secondary information pertaining to BPM, TQM, BPI, and BPR were required. To meet the third objective, primary information was required to evaluate the implementation of BPM in a case study, to determine the effectiveness of the methodology.

#### **Literature Review Method for Objective 1 and Objective 2**

This section outlines the search strategy and selection criteria adhered to for the gathering of secondary information for objectives 1 and 2.

#### ***Search Strategy***

Relevant research pertaining to Business Process Management, Total Quality Management, Statistical Process Control, Business Process Re-engineering, and Business

Process Improvement were identified by conducting a highly sensitive search on Google Scholar and UNBC's Library Management system:

- “Business Process Management” OR “BPM” AND “Fundamentals” OR “Conceptual Framework” OR “Methodologies” OR “Limitations” OR “Applications”
- “Total Quality Management” OR “TQM” AND “Fundamentals” OR “Conceptual Framework” OR “Methodologies” OR “Limitations” OR “Applications”
- “Statistical Process Control” OR “SPC” AND “Fundamentals” OR “Conceptual Framework” OR “Methodologies” OR “Limitations” OR “Applications”
- “Business Process Improvement” OR “BPI” AND “Fundamentals” OR “Conceptual Framework” OR “Methodologies” OR “Limitations” OR “Applications”
- “Business Process Re-engineering” OR “BPR” AND “Fundamentals” OR “Conceptual Framework” OR “Methodologies” OR “Limitations” OR “Applications”
- “Business Process Management” OR “BPM” AND “Methodologies” OR “Models”
- “Business Process Management” OR “BPM” AND “Methodologies” OR “Models” AND “Limitations”

Additional resources were also identified using the citation pearl-growing search technique, wherein further articles were identified using the citations of relevant papers the

authors utilized in their research. Relevant papers were evaluated to identify if they aligned with the initial search parameters as defined in the Google Scholar search. Studies referring to computer-based models for management systems were excluded, unless they described the application of a methodology, which was not previously identified in the literature.

### ***Article Inclusion Criteria***

For an article to be utilized in this research it must meet the following inclusion requirements: Articles must be related to the topic and articles must be peer reviewed.

### ***Analysis and Dissemination Strategy***

Information collected through the literature review was collated, summarized and compared. The qualitative information is presented in a grounded theory method, constantly comparing BPM to prior process improvement strategies including BPR, BPI and TQM. This information is represented in tables and figures.

### **Literature Review Method for Objective 3**

This section outlines the search strategy and selection criteria adhered to for the gathering of secondary information for objective 3.

### ***Search Strategy***

Relevant research pertaining to Business Process Management application were identified by conducting a highly sensitive search on Google Scholar and UNBC's Library Management system:

- “Business Process Management” OR “BPM” AND “Application” OR “Implementation” AND “Unsuccessful”
- “Business Process Management” OR “BPM” AND “Application” OR “Implementation” AND “Successful”
- “Business Process Management” OR “BPM” AND “Organizational Characteristics” OR “Organizational Requirements” OR “Organizational Traits”
- “Business Process Management” OR “BPM” AND “Not-for-profit Implementations” OR “Not-for-profit Applications”

Additional resources were also identified using the citation pearl-growing search technique, wherein further articles were identified using the citations of relevant papers the authors utilized in their research. Relevant papers were evaluated to identify if they aligned with the initial search parameters as defined in the Google Scholar search. Case studies referring to implementation in for-profit organizations were not considered in the case study review due to the parameters of the research.

### ***Article Inclusion Criteria***

For an article to be utilized in this research it must meet the following inclusion requirements: Articles must be related to the topic and articles must be peer reviewed.

### ***Analysis and Dissemination Strategy***

Information collected through the literature review is collated, summarized and compared. The qualitative information is presented in a grounded theory method, evaluating the characteristics required for successful implementation of BPM. This information is represented in tables and figures.

### **Case Study Method for Objective 3**

This section outlines the search strategy and selection criteria adhered to for the gathering of secondary information for objective 3.

### ***Case Study Model***

This thesis features a case study using the BPM methodology proposed by Dumas, et al. (2013) to organize the steps and activities required to apply BPM. The Dumas et al. (2013) methodology is one of the more recent adaptations of the BPM methodology, and has been previously utilized in research papers for the application in not-for profit organizations.

The case study will focus on the application of BPM in a post-secondary institution environment, specifically within a Continuing Studies department. The methodology of this case study is adapted from the Haddad, Ayala, Maldonado, Forcellini, & Lezana (2016) study which evaluated the use of the Dumas et al. (2013) in a not-for profit. This model includes the completion of the following steps:

1. **Process Identification:** Identify what processes are executed within the department (designation) and the determination of which process should be prioritized (evaluation).
2. **Process Discovery:** Interview and evidence based discovery to determine the As-Is process.
3. **Process Analysis:** A qualitative or quantitative analysis to determine key process issues.
4. **Process Redesign:** Evaluation of various process redesign options, including task, flow and process levels.
5. **Process Implementation:** Implementaion based on a combination of organizational change management and/or process automation.
6. **Process Monitoring and Controlling:** Evaluation of the key performance indicators associated with the process change to determine effectiveness, identify improvements, and ensure conformance.

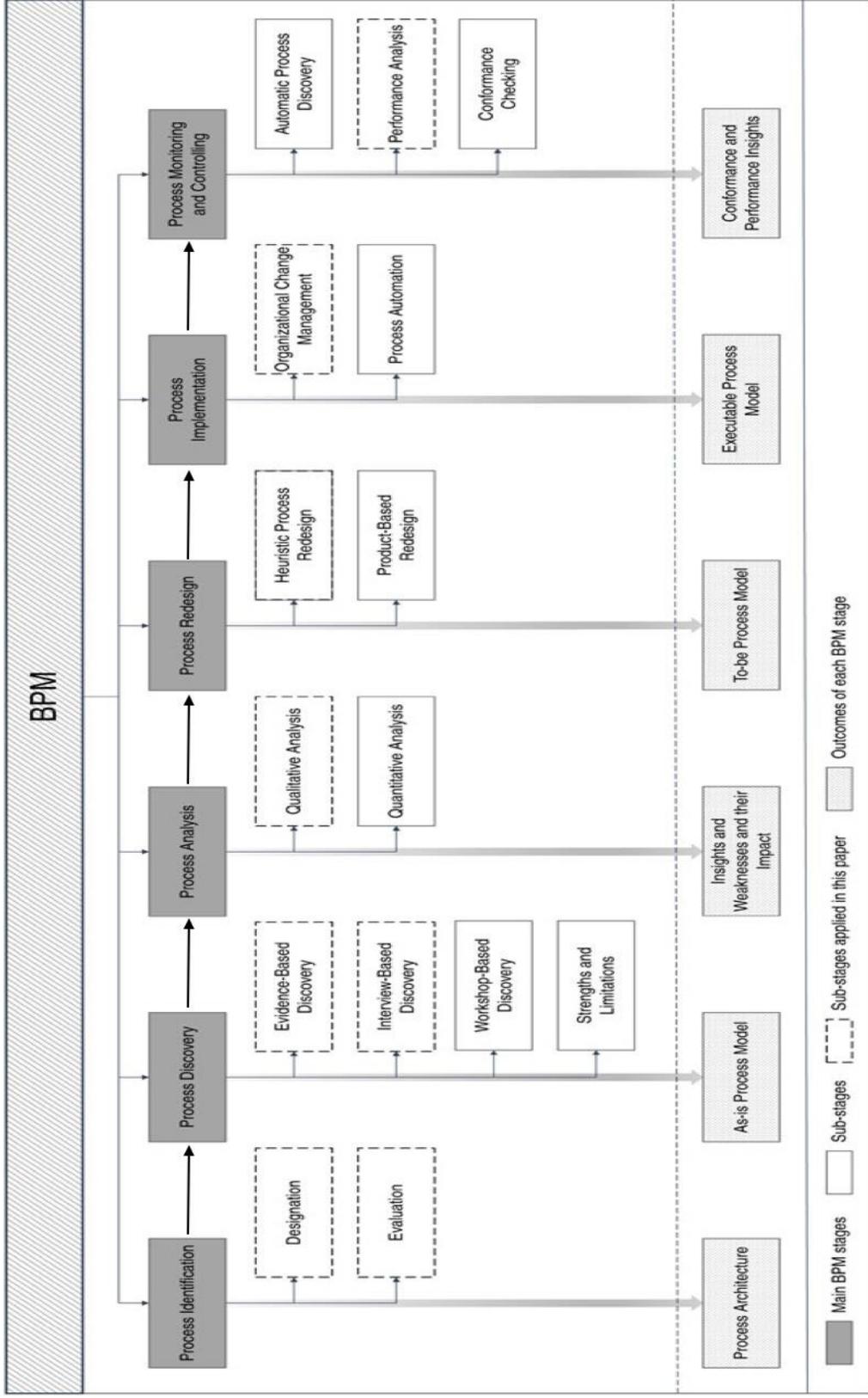


Figure 1. BPM Phases Model. Adapted from Haddad et al. 2016

## ***Participants***

Information was collected from three primary participants, two Continuing Studies managers, and the Manager of Continuing Studies Online. Secondary information was collected from 10 employees that worked for the managers. This information was collected by the respective Manager and shared via documentation with the researcher. Primary data was also contributed by the researcher, who was a member of the Continuing Studies team. All participants were recruited based on their roles in the department, and provided consent to participate. The purpose of utilizing the managers as the sources of information is due to each employee having previously gathered data in terms of processes, operations, pressure points and process issues from their respective teams. Each Manager has a full understanding of the operations within the department.

## ***Materials***

**Interview-based Discovery** – Unstructured interviews were conducted with the Continuing Studies Managers, with the overall purpose of identifying the current process that are either documented or followed. These interview questions are located in Appendix A. The preliminary interviews resulted in the creation of the As-Is process. Follow-up unstructured interviews were conducted to determine the core business functions, operational tasks, process inefficiencies and to evaluate the proposed processes. This information was reflected in the 5-Why's Model and the To-Be process.

**Evidence-based Discovery** – Various documents were evaluated to identify how current operations and processes work. This included information gathered from organization charts, current process documents, and operational process and procedure documents. Based on this information, the actual process was evaluated from a passive observer role. This information was compiled with the information gathered from the interview-based discovery and represented in the form of charts, tables, and process maps.

**Procedure** – The methodology of this case study is adapted from the Haddad et al. (2016) study which evaluated the use of the Dumas et al. (2013) in a not-for profit organization. Figure 1 shows the six stages of implementing BPM, and the methodology. The process level that will be evaluated is the operational overview, which includes: process, sub-process, and activities. It focuses on what is being done, not how it is done.

**Process Identification** – Interviews were conducted with the department managers, and current documented processes were collected with the intent of identifying what processes are executed in Continuing Studies (designation phase), and what processes should be focused on (evaluation phase). Processes were identified (designated) and prioritized (evaluated) based on three criteria's: importance, dysfunction, and feasibility.

**Process Discovery** – Process discovery consisted of two activities: interviewing the two Continuing Studies Managers and the Continuing Studies Online, and 10 of their employees (interview-based discovery) and collecting any documents related to employee processes, activities, or operational processes (evidence-based discovery). Based on the

information collected in the process identification and discovery stage, two As-Is models were created using Bizagi BPM Software.

**Process Analysis** – These processes were evaluated using a qualitative/quantitative “5 Why Root Cause Analysis” technique to identify key process issues. The “5 Why Root Cause Analysis” is a process wherein you identify the root cause of an issue through constantly asking the question why, until the underlying reason is uncovered.

**Process Redesign** – Based on the issues identified in the “5 Why Root Cause Analysis”, the processes were redesigned. The processes were redesigned through the evaluation of various process redesign heuristics, including: task level (operation heuristics), flow level (behaviour heuristics) and process level (organization and technology heuristics). Based on the heuristic redesign suggestions, the To-Be process was created using Bizagi BPM Software.

**Process Implementation** – Once the To-Be model has been approved, the process would be executed in the department. Since this case study is being conducted in a controlled environment, in which the researcher cannot influence the decisions within the organization to implement the process, the suggested To-Be process will not be implemented. However, the organization will be evaluated against the organizational characteristics required to successfully implement BPM, to determine whether or not implementation may have been successful.

**Process Monitoring and Controlling** – To evaluate the implemented change, we would traditionally evaluate the key performance indicators (KPI's) associated with the process. Since this case study is not implementing the proposed changes due to previously mentioned restrictions, the KPI's will not be evaluated.

### ***Analysis and Dissemination Strategy***

Information collected through the case study is collated, summarized and compared. The qualitative information is presented in a grounded theory method, comparing the successful traits for implementing BPM with the current traits of the organization evaluated in the case study. This information is represented in tables, figures and process maps.

## SECTION 1 LITERATURE REVIEW

### Section 1 Aims

- To describe and evaluate the fundamental concepts, benefits and limitations of Total Quality Management, Business Process Improvement, Business Process Re-engineering and Business Process Management.
- To describe and evaluate different theories and methodologies that have been used to apply BPM within a business environment.
- Evaluate previous applications of BPM
- Evaluate the organizational characteristics that must be present to effectively implement BPM

Section 1 involves an extensive review of literature and research papers concerning BPM, and other management concepts such as TQM, BPI, and BPR. Chapter 3 summarizes the conceptual framework of BPM, highlighting gaps in the literature that require further investigation. Chapter 4 reviews the existing methodologies for applying BPM. Chapter 5 evaluates the organizational characteristics to effectively implement BPM. Chapter 6 evaluates relevant case studies pertaining to the implementation of BPM in not-for-profit organizations.

## CHAPTER 3

### CONCEPTUAL FRAMEWORK OF BPM

Business Process Management as defined by Zairi (1997), is a systematic approach to analyze and continually improve the fundamental activities of an organization, to attain or sustain a competitive advantage through increased process efficiencies, product quality and/or cost reductions. Organizations striving for a sustained competitive advantage must have the ability to continuously provide above average services or products; or provide similar value as the competition but at a lower price, or provide greater value at same or higher prices (Business Dictionary, 2016).

As noted by Evans (2005), a strong competitive advantage is reflected through six characteristics of the product or service:

1. Be driven by customers wants and needs.
2. Contributes to the success of the business.
3. Match the organizations unique resources with the market opportunities.
4. Be durable and lasting and difficult to replicate by competitors.
5. Be the basis for further improvement.
6. Provide direction and motivation to the entire organization.

Furthermore, to improve a process it must first be defined and understood within the organizational context. Oxford Universities Press (2015, p.1) stated that a “process is a series of actions or steps taken in order to achieve a particular end”. However, most researchers agree with Guha & Kettinger’s (1993) definition that “A business process is a complete and

coordinated set of activities and tasks that must be performed to deliver value to a customer, or to fulfill other strategic goals.” (Guha & Kettinger, 1993, p. 14) A process consists of activities, tasks, and sub-tasks. Buletpoint (1996) stated there are four key features to any process, specifically a process must:

1. Be predictable and have definable inputs.
2. Have a linear and logical sequence or flow.
3. Have a set of clear definable tasks or activities.
4. Have a predictable and desired outcome or result.

Therefore, the basic understanding of a process in relation to the organization will determine the efficiency of the process. To understand Zairi’s (1997) definition of BPM, it is necessary to understand the origins of business process management, specifically the research pertaining to Total Quality Management, Business Process Improvement and Business Process Re-engineering concepts.

### **Total Quality Management**

Total Quality Management, also known as TQM, is an organization-wide management practice with the objective of improving the quality of a product, service, or process, while creating efficiencies and cost savings (Shewhart & Deming, 1986). The practice of TQM evaluates the relationship between internal capacity (employees, processes and resources) and external environment (customers, suppliers and stakeholders) (Shewhart & Deming, 1986). In the process of implementing TQM, ideal production and quality level scenarios are identified, keeping in mind the nature of internal processes and external factors, such as

customers, suppliers and stakeholders (Bailey, 1994). According to Thiagarajan & Zairi (1997), the fundamental characteristics of TQM include:

1. **Employee Engagement:** engaging employees and management to identify how to increase operational efficiencies.
2. **Analysis of Internal Requirements and External Environment:** evaluation of an organization's internal capacity (employees, processes, and resources) and how these are influenced by the external environment factors such as: customers, suppliers, and stakeholders.
3. **Process Focused:** improvements focus on processes, while neglecting other factors such as organizational culture.
4. **Performance Measurements:** a measurable goal, or objective to identify improvements through process changes.
5. **Continuous Improvement:** continuously re-evaluating processes to identify if future improvements can be made.

The implementation of TQM practices encourages quality improvements through a series of small changes within processes that lead to overall quality improvement. As a result, if TQM is implemented properly it could provide benefits such as: shortened process cycle time, increased flexibility, waste reduction, faster customer responsiveness, and lower costs (Becker, 1993).

Porter & Parker (1993) identified there are eight critical factors that must be part of the TQM implementation process to be successful: Necessary management behaviours (clear leadership and vision from senior management), a strategy for TQM implementation (objectives and requirements), appropriate organizational structure (team-based organizational structure), effective communication of TQM (communicating quality awareness and involvement), education and training (continuous skills upgrading), employee

involvement (involving and engaging the whole organization), existing process management and systems (documented quality systems), and quality technologies (programs such as statistical process control and benchmarking) (Porter & Parker, 1993).

In the mid 1980's researchers began identifying the tools for implementing TQM practices, such as statistical process control (SPC) (Shewhart & Deming, 1986; Porter, 1985). SPC is a tool utilized in TQM practices, which focuses on the reduction of production variation by identifying the causes of variations in processes through statistical measurements. Production variation is the result of one of two causes: special causes (not part of the process, such as operator error), or chance causes (part of the process and could include environmental changes or variations in raw material or machinery) (Mason & Antony, 2000). According to Mason and Antony (2000), the fundamental characteristics of SPC include:

1. **Monitoring:** Monitor process output and process parameters.
2. **Stabilizing:** Eliminate or reduce special causes of variation in processes.
3. **Determining Capability:** How capable a process is in regards to meeting the process specifications.
4. **Continuous Improvement:** Identify and reduce common causes of variation within processes.

As identified by Evans (2005), SPC helps improve process quality and capability, however, it is only effective in organizations that are in their initial stages of quality control implementation (Evans, 2005). Mason & Antony (2000) argued that if SPC is implemented

properly it could provide benefits such as: reduction in wasted efforts and cost, process improvement, quality consistency, variation reduction, and reduced quality costs. However, Hammer (1990) identified that SPC experiences some basic limitations such as: no clear definition of a process, and no clear way to determine what the overall goal of a process should be (Hammer 1990). In addition, Dale, Shaw, and Owen (1990) identified five reasons for the failure of SPC implementation: lack of training, lack of management commitment, lack of understanding of the benefits of SPC, lack of knowledge of which process characteristics to monitor, and inadequate measurement systems (Dale, Shaw, & Owen, 1990).

From an organizational perspective, TQM practices are intended to quickly implement process changes that would increase an organization's performance and product quality. However, as noted by Dooley and Mahmoodi (1996), TQM practices were unable to produce process changes as rapidly as initially proposed, potentially due to the lack of strategy for process improvement, as well as the lack of definition/modeling of a process (Dooley & Mahmoodi, 1996). Similarly Knights and McCabe (1999) argued that the single-mindedness of TQM practices to improve quality often ignored other multi-faceted requirements for improving organizational performance, such as organizational structure, organizational culture, and process ownership (Knights & McCabe, 1999). It was also noted by Zairi (1997) that the major problem in TQM implementation is the practitioners' tendency to focus on the hard aspects (activities) of organizational systems, instead of the soft aspects such as organizational culture. In addition, it was noted that TQM practitioners also tend to initiate process change without receiving complete buy-in or engagement from the organization's

employees (Zairi, 1997). A summary of TQM’s fundamental characteristics, objectives and shortcomings are provided in Figure 2.

TQM Characteristics	TQM Objectives	TQM Shortcomings
<ul style="list-style-type: none"> <li>• Employee Engagement</li> <li>• Analysis of Internal Requirements and External Environment</li> <li>• Process Focused</li> <li>• Performance Measurements</li> <li>• Continuous Improvement</li> </ul>	<ul style="list-style-type: none"> <li>• Shortened process cycle time</li> <li>• Increased flexibility</li> <li>• Waste reduction</li> <li>• Faster customer responsiveness</li> <li>• Lower costs</li> </ul>	<ul style="list-style-type: none"> <li>• TQM Practice               <ul style="list-style-type: none"> <li>• Lack of definition/modeling of a process</li> <li>• Does not address organizational culture/structure, or process ownership</li> </ul> </li> <li>• TQM Practitioners               <ul style="list-style-type: none"> <li>• Lack of process improvement strategy</li> </ul> </li> </ul>

Figure 2. Summary of TQM. Adapted TQM Characteristics from Chou & Owen (1989) Zairi (1997), Shewhart & Deming (1986), TQM Objectives from Becker (1993) & TQM Shortcomings from Dooley & Mahmoodi (1996) and Knights & McCabe (1999).

## Business Process Improvement

According to Grove and Kettinger (1998) BPI is defined as a systematic approach utilized by an organization to change the way their organization does business, resulting in a process that is faster, higher quality and lower in cost. The practice of BPI focuses on a bottom – up approach to process improvement (Davenport, 1993; Grove & Kettinger, 1998). The main objectives of BPI are to increase the efficiency of the process, attain a higher quality product, and achieve a lower process cost (Davenport, 1993; Grove & Kettinger, 1998). As noted by Grove and Kettinger (1998), the fundamental characteristics of BPI consist of:

1. **Employee Engagement:** Engaging employees from the bottom up.
2. **Systematic Process Review:** Focused change that includes identifying all aspects of the process and identifying potential enhancements.
3. **Process evaluation in relation to whole organization:** Evaluating what the organization goals, the customer base, and aligning the process to realize organizational goals.
4. **Performance Measurements:** A measurable goal, or objective to identify improvements through process changes.
5. **One Time Improvement:** Focuses on one-time changes that improve a process.

Shtub and Karni (2010) identified that the implementation of BPI practices enables organizations to answer three questions: What attributes of the process can be modified? What modifications can be made to the process itself? And what improvement measures are attainable from these modifications? By focusing on the improvement of individual processes in relation to the overall organization, BPI practices are able to identify and improve major process inefficiencies within an organization. The implementation of BPI practices encourages internal (processing time, operating costs, productivity) and external (speed of service, customer satisfaction, responsiveness, reliability) quality parameter improvements (Tannock, 2013). However, practitioners of BPI do not evaluate overall organizational quality, they also tend to focus on one-time process improvements instead of continuous improvement opportunities such as TQM, BPR and BPM. A summary of BPI's fundamentals, objectives and shortcomings are provided in Figure 3.

BPI Fundamentals	BPI Objectives	Shortcomings of BPI
<ul style="list-style-type: none"> <li>• Employee Engagement</li> <li>• Systematic Process Review</li> <li>• Process evaluation in relation to whole organization</li> <li>• Performance Measurements</li> <li>• One-Time Improvement</li> </ul>	<ul style="list-style-type: none"> <li>• Internal quality improvements (processing time, operating costs, productivity)</li> <li>• External quality improvements (speed of service, customer satisfaction, responsiveness, reliability)</li> </ul>	<ul style="list-style-type: none"> <li>• Does not evaluate overall organizational quality</li> <li>• Limited Scope</li> <li>• One time Process improvement</li> </ul>

Figure 3. Summary of BPI. Adapted BPI Fundamentals from Grove & Kettinger (1998), BPI Objectives from Tannock (2013), and Shortcomings of BPI from Davenport (1993) and Grove & Kettinger (1998).

### Business Process Re-engineering

Business Process Re-engineering (BPR), as defined by Hammer and Champy (1993), is the fundamental rethinking and drastic redesign of business processes to achieve significant improvements in measures of performance, such as: process cost, product quality, customer service, and process speed. The main objectives of BPR include: reduced costs, increased productivity, and the removal of process waste. According to Rigby (2015), the fundamentals of BPR practices consists of:

1. **Focused on customers' needs:** Identifying customers priorities and modifying processes to meet the identified customers' needs.
2. **Redesign core processes:** Evaluate core processes and inefficiencies, and redesign whole process.

3. **Cross-Functional organizational structure:** A horizontal operational structure that supports the development of teams from multiple areas to complete a task, enabling process change to happen between multiple departments.
4. **End-to-end process review:** Review process from start to finish, accounting for cross-functional issues that may be influencing process efficiency.
5. **Improve operational processes:** Reviewing high-level or operational processes to identify and eliminate faults such as: inefficient processes and out-dated machinery.

BPR practices identify that if an organization evaluates a complete process from end-to-end, they can observe the core processes and operational activities that may have faults. Based on these high-level activities, the organization can reengineer the process to fix the faults. Hammer and Champy (1993) identified three types of organizations that can successfully implement BPR:

1. Organizations that are in serious operational trouble, and need to either reengineer their operational processes or go out of business.
2. Organizations that are not in trouble but are expecting to face trouble in the near future.
3. Organizations that are not in operational trouble and see an opportunity to gain a competitive advantage.

Organizations that successfully implement BPR practices would experience benefits such as: increased productivity, reduced costs, faster processing times, and removal of process waste (Childe & Bennet, 1994).

BPR practices however only focus on the short-term results of a process, and do not address long-term operational factors such as: organizational culture, process relationships, resource availability, customer demand, continuous improvement and stakeholder engagement. According to Grover, Jeong, Kettinger, and Teng (1995), practitioners faced the following problems when attempting to implement BPR such as: lack of necessary resources, lack of training, poor project management, and difficulty communicating change within the organization. A summary of BPR’s fundamentals, objectives and shortcomings are provided in Figure 4.

BPR Fundamentals	BPR Objectives	Shortcomings of BPR
<ul style="list-style-type: none"> <li>• Focused on customers needs</li> <li>• Redesign core processes</li> <li>• Cross-Functional organizational structure</li> <li>• End-to-end process review</li> <li>• Improve operational processes</li> </ul>	<ul style="list-style-type: none"> <li>• BPR completely redesigns a process from end-to-end and focuses on fixing faults</li> <li>• Increased productivity</li> <li>• Reduced costs</li> <li>• Faster processing times</li> <li>• Removal of process waste</li> </ul>	<ul style="list-style-type: none"> <li>• BPR does not address continuous improvement</li> <li>• It does not account for external factors</li> <li>• It focuses too much on the complete process redesign</li> </ul>

Figure 4. Summary of BPR. Adapted BPR Fundamentals from Rigby (2014), BPR Objectives from Childe & Bennet (1994) and BPR Shortcomings from Hammer & Champy (1993).

## **Business Process Management**

In 2003 Smith and Fingar (2003) redefined BPM as the discovery, design, deployment and execution of business processes while accounting for the interaction, control, analysis and optimization of the process. Alternatively, Harmon (2003) referred to BPM as the managing, coordinating, prioritizing and monitoring of an organization process changes and resources. BPM is defined for the purpose of this paper as a structured approach to identify, improve, and maintain the fundamental activities of an organization to attain or sustain a competitive advantage (adapted from Zairi (1997)). Smith and Fingar (2003) identified that BPM consists of 5 fundamental traits:

- 1. Employee Engagement and Ownership:** Engaging the employees in operational changes as well as assigning specific processes and goals to employees to empower them and create a sense of ownership.
- 2. Systematic Process Review:** Focused change that includes identifying all aspects of the process within an organization, including internal and external factors, identifying potential enhancements.
- 3. Cross-Functional Organizational Structure:** A horizontal operational structure that supports the development of teams from multiple areas to complete a task.
- 4. Performance Measurements:** A measureable goal, or objective to identify improvements through process changes.
- 5. Continuous Improvement:** Continuously re-evaluating processes to identify if future improvements can be made.

Organizations striving to achieve a competitive advantage must align their organizational strategy and structure with the environment in which they are competing. Thus, best practices (procedures accepted as correct or effective) must be adapted to the market they are competing in. As noted by Hung (2006), the BPM practice is often considered by industry as a best-practice tool to ensure organizations attain or sustain a competitive advantage. BPM can support market competitiveness through analyzing and improving the fundamental process of its operations, adding value and reducing costs of their products or services (Trkman 2010). BPM strives to analyze and continually improve the core operating procedures within an organization, such as manufacturing, marketing and communications in relation to their market environment (Zairi, 1997). If successfully implemented within an organization, BPM can produce some very promising benefits, including: shorter turn-around time, greater process efficiency, higher team satisfaction, organizational transparency, cost savings and higher customer satisfaction. However, despite the benefits of BPM, many organizations experience difficulties when trying to implement BPM. As noted by Hung (2006), due to BPM's infancy, many organizations experience challenges when trying to implement BPM due to common issues such as: organizational culture is not appropriate, lack of managerial support, lack of technical knowledge or tools, and poor employee engagement. Hammer (2010) similarly noted that there are many other challenges in implementing BPM, including: Management structure, IT support, internal processes, and process strategies. In addition, Bandara, Indulska, Chong and Sadiq (2007) noted that BPM lacks a clear methodology for implementation, and lack of employee buy-in. Figure 5 represents the fundamentals, objectives and shortcomings of BPM.

BPM Fundamentals	BPM Objectives	Shortcomings of BPM
<ul style="list-style-type: none"> <li>• Employee Engagement and Ownership</li> <li>• Systematic Process Review</li> <li>• Cross-Functional Organizational Structure</li> <li>• Performance Measurements</li> <li>• Continuous Improvement</li> </ul>	<ul style="list-style-type: none"> <li>• Shorter turn-around time</li> <li>• Greater process efficiency</li> <li>• Higher team satisfaction</li> <li>• Organizational transparency</li> <li>• Higher customer satisfaction</li> <li>• Cost savings</li> </ul>	<ul style="list-style-type: none"> <li>• BPM Practitioners</li> <li>• Difficult to implement because               <ul style="list-style-type: none"> <li>• Organizational culture is not appropriate</li> <li>• Lack of managerial support</li> <li>• Lack of technical knowledge or tools</li> <li>• Poor employee engagement</li> </ul> </li> </ul>

Figure 5. Summary of BPM. Adapted BPM Fundamentals from Smith & Fingar (2003), BPM Objectives from Zairi (1997), and Shortcomings of BPM from Hung (2006).

As noted by Trkman (2010), the adoption of BPM alone will not fulfill organizational operational or strategic goals, it is necessary for organizations to make necessary organizational changes to increase the likelihood of continuous success.

## Discussion

In Chapter 3, the theories related to TQM, BPI, BPR and BPM were researched with the intent of identifying the conceptual framework of BPM. As noted by Deming (1986), TQM evaluates the relationship between internal and external factors, in order to identify how a process can be improved. It evaluates internal processes, and identifies how they need to modify the concept to meet the customers' needs. This approach provided a holistic analysis of the organization, very similar to the approaches of BPM. The core assumptions of TQM argued that through a top down management approach, processes could be improved.

This approach however did not account for the relationship between processes, and often did not account for the organizations culture when implementing changes. Wang (2004) argues that BPM and TQM share the same underlying assumptions, however BPM defines itself by focusing on every employee, not only managers. Through the inclusion of the employees involved in the processes, an organization is able to identify the relationship between processes and more effectively identify how a process could be improved.

Upon reviewing the fundamental characteristics and objectives of the four concepts reviewed, the similarities of these concepts became obvious. As noted in Table 1, of the five key characteristics for each improvement concept, there was a large overlap between each topic. An important note is that all five characteristics for BPM have been adopted from at least one of the prior process improvement concepts (shown by bolded text), with the highest association being with BPI and TQM.

Table 1  
*Comparison of Fundamental Characteristics of BPM, BPR, BPI and TQM*

	<b>BPM</b>	<b>BPR</b>	<b>BPI</b>	<b>TQM</b>
<b>Fundamental Characteristics</b>	<b>Employee Engagement</b>	Focused on Customers' needs	<b>Employee Engagement</b>	<b>Employee Engagement</b>
	<b>Cross-Functional Organizational Structure</b>	<b>Cross-Functional Organizational structure</b>	Process evaluation in relation to whole organization	Analysis of Internal Requirements and External Environment
	<b>Systematic Process Review</b>	<b>End-to-end process review</b>	<b>Systematic Process Review</b>	<b>Process Focused</b>
	<b>Performance Measurements</b>	Redesign core processes	<b>Performance Measurements</b>	<b>Performance Measurements</b>
	<b>Continuous Improvement</b>	<b>Improve operational processes</b>	One-Time Improvement	<b>Continuous Improvement</b>

*Note: Data for Fundamental Characteristics for TQM from Chou & Owen (1989) and Zairi (1997), for BPI from Davenport (1993) and Grove & Kettinger (1998), for BPR from Hammer & Champy (1993) and for BPM from DeToro & McCabe (1997), Zairi (1997) and Lee & Dale (1998).*

Similarly, when reviewing the fundamental objectives of each of the four process improvement concepts, similarities and trends were identified. As noted in Table 2, of the five fundamental objectives, four of them were similar to at least one of the other process improvement strategies, with the highest association being with BPI.

Table 2  
Comparison of Fundamental Objectives

Fundamental Objectives	BPM	BPR	BPI	TQM
	Greater process efficiency	Faster processing times	Faster Processing times	Shortened process cycle time
	Shorter turn-around time	Increased productivity	Increased productivity/ speed of service	Increased flexibility
	Cost savings	Reduced costs	Reduced operating costs	Lower costs
	Organizational transparency	End-to-end process redesign	Faster customer responsiveness	Faster customer responsiveness
	Higher customer and team satisfaction	Removal of process waste	Higher customer satisfaction	Waste reduction

Note: Data for Fundamental Objectives for TQM from Becker (1993), for BPR from Childe & Bennet (1994), for BPI from Tannock (2013), and for BPM from Zairi (1997).

Consequently, when comparing the shortcomings of each concept in Table 3, it is interesting to note that each concept is independent from each other. Based on the literature review it appears that BPM has effectively addressed the shortcomings of the prior concepts, however faces its own issue in regards to successful implementation.

Table 3  
*Concept Shortcomings*

	<b>BPM</b>	<b>BPR</b>	<b>BPI</b>	<b>TQM</b>
<b>Concept Shortcomings</b>	Difficult to implement due to organizational characteristics	Does not address continuous improvement	Does not evaluate overall organizational quality	Lack of definition/ modeling of a process
		Does not account for external factors	Limited scope	Does not address organizational culture/ structure, or process ownership
		Focuses too much on the complete process redesign	Only does one-time process improvement	Lack of process improvement strategy

*Note: Data for BPM from Hung (2006), for BPR from Hammer & Champy (1993), for BPI from Davenport (1993) and Grove & Kettinger (1998), and for TQM from Dooley & Mahmoodi (1996) Knights & McCabe (1999) and Zairi (1997).*

### **Summary**

Chapter 3 identified that the fundamental activities and objectives for TQM, BPI, BPR and BPM are similar, however the shortcomings of each concept are unique. Based on the identification that BPM shares all of the fundamental characteristics, and the majority of the objectives with prior process improvement strategies, suggest that BPM is an evolution of these prior process improvement strategies. This would imply that BPM is either an evolution, or an improvement of these concepts, attempting to address the shortcomings that these concepts exhibited. Many organizations are unable to differentiate between BPM and other process improvement strategies, and therefore do not clearly understand the impact the strategies will have both on the process, and the organizational structure. Although BPM has been around for 20 years, many practitioners will still choose to implement prior process improvement strategies due to their experience with the respective process improvement strategy, or the organizational structure they are working with. Few studies identify the relationship between each concept, or evaluate the differences between each of them, leading

to practitioners not having a clear understanding of the benefits that BPM offers. Therefore, further research into the similarities and differences of TQM, BPI, BPR and BPM would be beneficial to better understand the conceptual framework of BPM.

## **CHAPTER 4**

### **BPM METHODOLOGIES**

BPM is a structured approach used to analyze and continually improve fundamental activities, such as manufacturing, marketing, communications, and other major elements of an organization's operation (Elzinga, Horak, Chung-Yee, & Bruner, 1995). A BPM methodology is a standard approach that ensures when a practitioner is implementing BPM in an organization, they have a structure that they are able to follow to ensure success. Research into the BPM methodology has continued to evolve over the years, and this evolution has often been criticized as the greatest weakness of BPM. The lack of a step-by-step process, or standardized methodology for implementing BPM has prevented many organizations from successfully implementing BPM, and has limited the amount of research evaluating the effectiveness of BPM implementation. This chapter will evaluate notable BPM methodologies over the last two decades, and the key aspects of these methodologies.

#### **Continuous Improvement Cycle: Elzinga et al. (1995)**

In 1995, Elzinga et al. (1995) suggested that the continuous improvement cycle, or methodology, for practicing BPM consists of 5 main activities: process selection, process description, process quantification (classifying a process through numerical scale), process improvement and process implementation. It was noted in this study that prior to engaging in the continuous improvement cycle, organization must first prepare for BPM. Preparation for BPM consists of the identification of the organizations vision, mission and goals. Once these have been clarified, the organization must identify their critical success factors (CSF). As noted by Rockart (1979), CSF's are the main performance factors, which require the

continuous attention of management to remain competitive. Once the preparation phase is complete, the organization can begin the continuous improvement cycle. This lifecycle is shown in Figure 6.

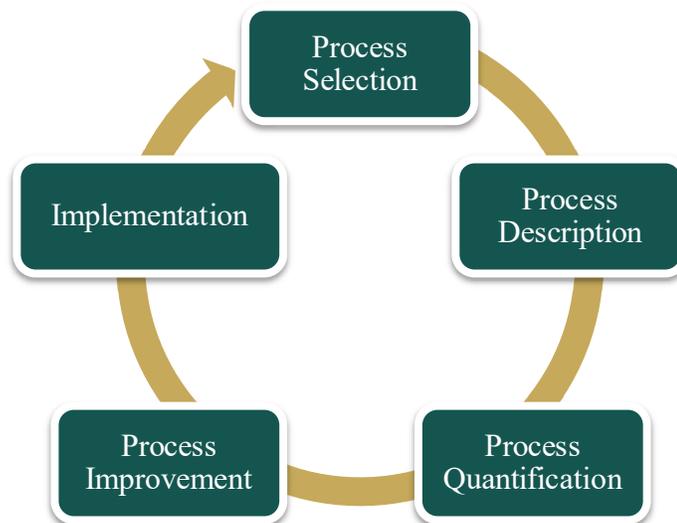


Figure 6. Adaptation of Continuous improvement cycle. Adapted from Elzinga et al. (1995).

- **Process Selection:** Process selection is conducted when an organization selects a specific process from several processes to evaluate and improve. This process will most likely relate to the organizations CSF's. When trying to determine between multiple processes, an analytical hierarchy process (AHP) is conducted, which assigns value to each process to identify which is most important to the organization. The AHP is a theory of measurement which identifies value, based on the discrete and continuous paired comparisons (Saaty, 1987). This process of analysis most likely leads to the identification of improvement opportunities. Once a process has been selected, it is associated with a process owner who is responsible for the success or failure of the process.

- Process Description:** The next step identified by Elzinga et al. (1995) is process description. Once a process has been selected, it is now necessary to get a detailed process description. This is done in three stages. First, the boundaries to the process must be set. Secondly, a systematic description of the process must be designed, which can be done using flowchart and cause and effect diagrams. Third, the process should be computerized using tools such as the structured analysis and design technique (SADT) (Elzinga et al.,1995). As stated by Ross (1985), SADT is a tool that enables people to express, understand, manipulate and check problem elements in a visible and easy to use manner.
- Process Quantification:** Once the process has been designed, the next step is process quantification. According to Elzinga et al. (1995), once the process has been identified, and the description clarified, it is time to identify the costs associated with improving the previously identified opportunities for improvement. Process improvements are broken down into two categories, value added, and non-value added. These costs are traditionally calculated using activity based costing (ABC) which identifies resource requirements, costs, time and value that would be obtained.
- Process Improvement:**After the process has been quantified, the next step is process improvement selection. This decision is made based on the process description and quantification, in relation to the organizations CSF's. Process improvement selection first identifies the non-value added activities to see if they can be reduced or eliminated. Next it evaluates the value added activities

and classifies them into the process cost-value matrix identified in Figure 7. As you will note, activities that are identified as low cost and high value should be invested in.

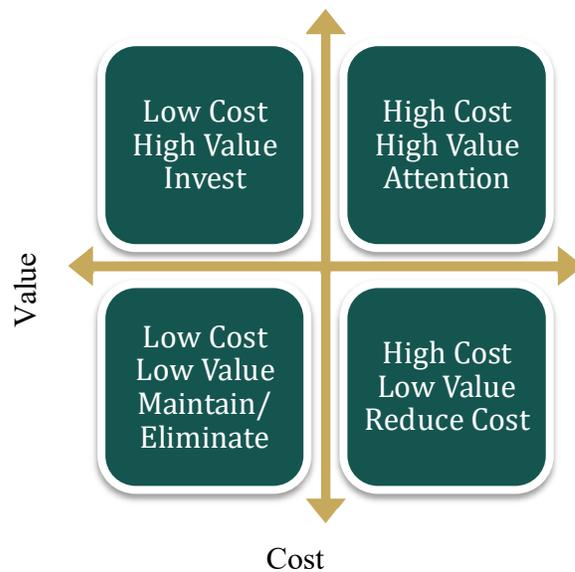
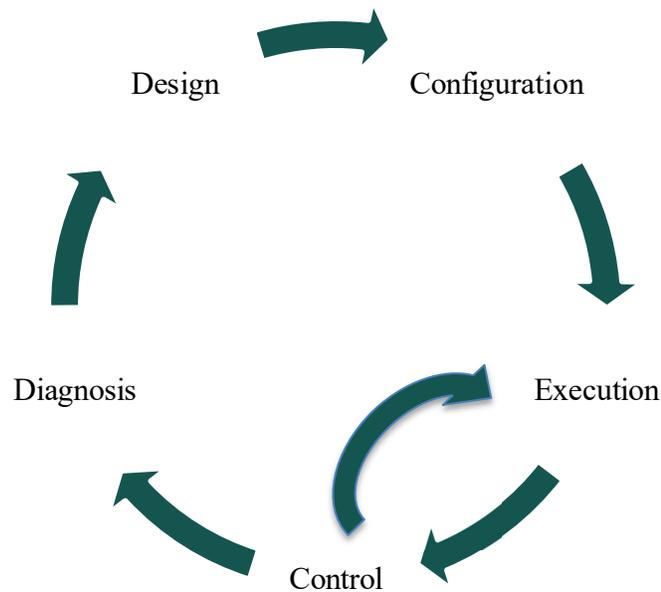


Figure 7. Process Cost-Value Matrix. Adapted from Elzinga et al. (1995).

- **Implementation:** Once the process improvement opportunities for each process have been selected, it is time to specify the improvement and implement the changes. The first step for this requires a more detailed process description and quantification, which evaluates the improved process in relation to the current process. Once the change has been implemented, each improvement should be monitored to identify actual outcomes. Once the improved process has been completed, the continuous improvement cycle can start again.

## BPM Life Cycle: Netjes, Reijers, & van der Aalst (2006)

Netjes et al. (2006) evaluated BPM in terms of technological support systems, such as BPM systems, instead of the organizational concept of BPM. However, in their studies they analyzed the BPM lifecycle, and identified it as 5 stages: design, configuration, execution, control and diagnosis. Their report analyzed if BPM systems support the BPM lifecycle, and to do so, defined what each stage means. This lifecycle is shown in Figure 8.



*Figure 8. BPM Lifecycle. Adapted From Netjes, Reijers, & van der Aalst (2006).*

- **Design:** In the first phase of the BPM cycle, the purpose is to create an alternative workflow to previously identified workflows. This would include the evaluation of a processes current workflow, identification of potential redesign, and the use of a computer-based system (FileNet) to run a process simulator which evaluates alternative scenarios to choose from.

- **Configuration:** Once the design scenarios have been identified, the FileNet process designer would configure the alternative workflows and identify relationships between the workflows. They would then evaluate the workflows in relationship to the available resources and develop the workflow configurations.
- **Execution:** Once the workflows configurations have been created, the FileNet process engine would configure the execution phase and allocate resources accordingly.
- **Control:** In the control phase, the operational business process is monitored to obtain the performance of the current workflow and log the information. Once the information is logged, it can be compared and evaluated to identify inefficiencies such as bottle necks.
- **Diagnosis:** In the diagnosis phase, analysing the operational process identifies areas for improvement. Based on this analysis, ideas for redesign are generated and proposed. If there are new redesigns promoted, this will initiate the beginning of the BPM lifecycle for the improved process.

### **BPM Lifecycle: zur Muehlen & Ting-Yi Ho (2006)**

In 2006 zur Muehlen and Ting-Yi Ho (2006) evaluated the risks associated with BPM projects along the phases of the BPM lifecycle. To do so they identified the phases of the BPM lifecycle, the transitions between each lifecycle, and the risks that may be addressed. Their research was based on a continuous process management lifecycle that consisted of 6 main phases: Goal Specification, Environmental Analysis, Process Design, Process

Implementation, Process Enactment, Process Monitoring and Process Evaluation. This lifecycle is shown in Figure 9.

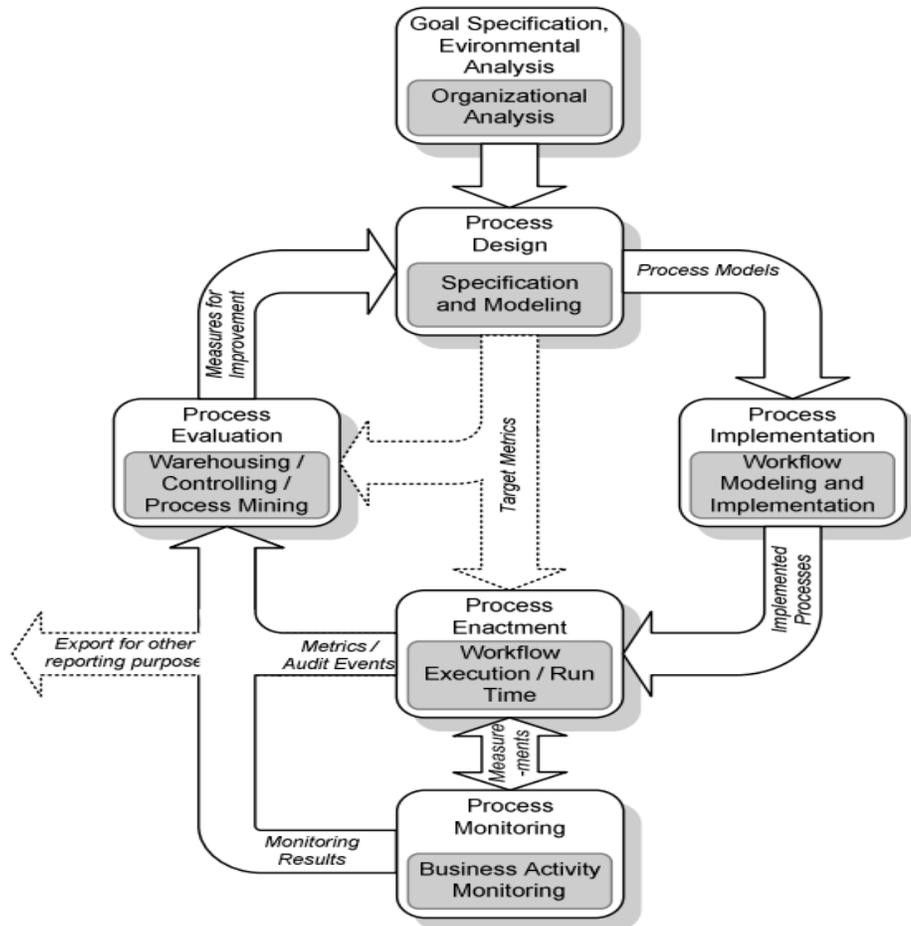


Figure 9. BPM Lifecycle. From zur Muehlen & Ting-Yi Ho (2006).

- Goal Specification and Environmental Analysis:** The first phase of this lifecycle consists of the definition of organizational and process goals, including the assessment of environmental factors or constraints that may influence the organization.
- Process Design:** Once the specific goal has been identified, the next phase is to identify the process an organization intends on evaluating, redesigning or

automating. The process is mapped out, and all internal and external variables that influence the process design are identified.

- **Process Implementation:** During this phase, the process models identified in the design phase are evaluated, either manually or technically (BPMS) and new workflows are transferred into the operational environment.
- **Process Enactment:** Once the workflows have been derived, they will be executed and will be evaluated based on performance, producing metrics that can then be monitored and evaluated.
- **Process Monitoring:** Once the process has been enacted, the process monitoring will evaluate the impact of the process change.
- **Process Evaluation:** During this phase, all of the inputs from the process monitoring will be evaluated to identify trends and design flaws. Feedback will be developed and recommendation for further improvement will be distributed.

### **BPM Life Cycle: Kannengiesser (2008)**

In 2008 Kannengiesser (2008) argued that the BPM lifecycle must become more adaptive and inclusive through the use of the function behaviour structure (FBS). According to Kannengiesser (2008), a FBS can evaluate the functions, behaviours and structure of a process. Based on his research into FBS, he proposed utilizing two strategies asynchronously for BPM: Concept Design and Realisation Design. Each design addressed 6 main features in a BPM lifecycle: formulation, synthesis, analysis, evaluation, documentation and reformulation. This lifecycle is shown in Figure 10.

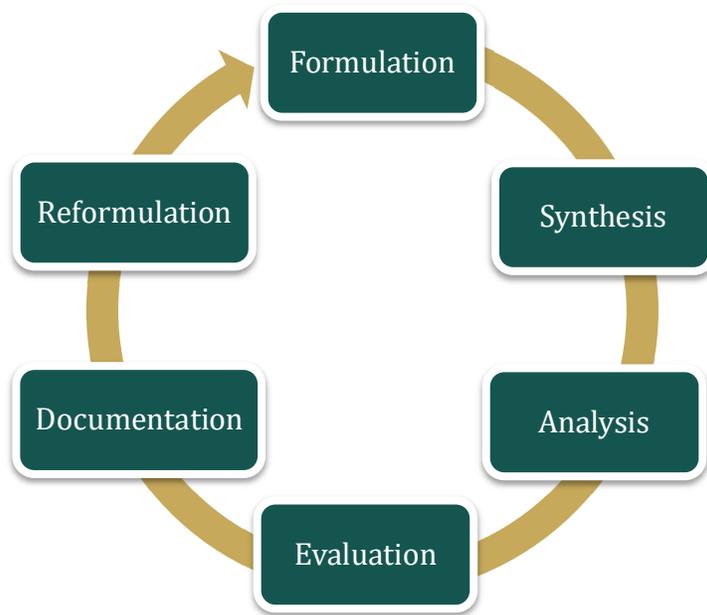


Figure 10. BPM Lifecycle. Adapted from Kannengiesser (2008).

- **Formulation:** A concept design analysis of formulation would identify the initial goals, performance targets, and activities of a business. Based on this they would identify a set of behaviours that need to be considered. The realisation design would construct process structures, and decide on the concepts that need to be considered in the workflow design.
- **Synthesis:** Once the process has been formulated, concept designers would create the structure of a business process to meet the required needs. The realisation designer would also generate a workflow structure that would meet the required needs.
- **Analysis:** Once the structures have been designed, the concept designers would interpret the external business process structure, and identify actual behaviours for evaluation purposes. The realisation designer would interpret the structure of the external workflow structure to derive actual behaviours.

- **Evaluation:** Both designers would evaluate the expected behaviour to the real behaviours identified from analysis.
- **Documentation:** Once the business process design is satisfactory, the concept designers would produce a representation of the final business process to be passed on to the realisation design. Once realisation designers are satisfied with their evaluation, a representation of the final workflow is developed.
- **Reformulation:** Both concept designers and realisation designers can at any time focus on a different function, behaviour or structure. But must communicate with each other of any changes.

#### **BPM Framework: Houy, Fettke, & Loos (2010)**

In a study conducted by Houy et al. (2010), six stages in the BPM methodology were suggested, based on an aggregation of concepts presented by Elzinga, Davenport and Short (1990), Netjes et al. (2006), Hallerbach, Bauer, & Reichert (2008) and Kannengiesser (2008). The methodology proposed by Houy et al. (2010) was then elaborated on by Loos, Van Der Aalst, Houy, Fettke, and Krogstie (2010), providing a detailed structure for BPM that could be applied in any field and is easily replicable. It focused on six activities including: strategy development, definition/modeling of a process, implementation of process, monitoring and controlling of process execution, and optimization/continuous improvement of processes. This lifecycle is shown in Figure 11.

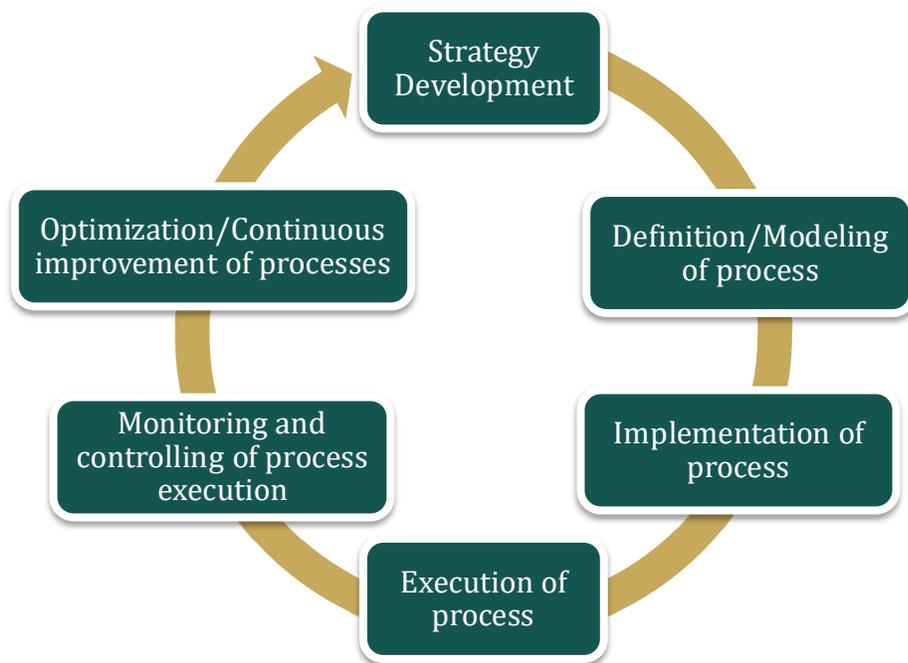


Figure 11. BPM Lifecycle. Adapted from Houy, Fettke, & Loos (2010).

- **Strategy Development**- Strategy development is the analysis and interpretation of process relevant data with the intent of determining future strategic potential and improvement strategies.
- **Definition/modeling of process** – To implement any changes on a process, the process must be first defined/modeled. This includes developing a process map, identify all of the activities, identifying common parts, and defining all internal and external variables that influence that process.
- **Implementation of processes** – Once a process has been defined, the organization must then begin the implementation process. This consists of the decisions and activities required to enact a process change.

- **Execution of processes** – Once the implementation has begun, process execution will ensure the success of the implementation through continuous support and will see the implementation through to completion.
- **Monitoring and controlling of process execution** – After the process change has been executed, continuous monitoring and control of the data will identify if the process is operating more effectively.
- **Optimization/continuous improvement of processes** – Optimization and continuous improvement will evaluate the new process and productivity in relation to past future process efficiencies. It will evaluate performance measurements and identify new opportunities for process improvements.

### **Dumas et al. (2013) BPM Lifecycle**

In the book, *The Fundamentals of Business Process Management*, Dumas et al. (2013) argued that for an organization to engage in the act of process improvement they will follow a general BPM lifecycle consisting of 6 phases: process identification, process discovery, process analysis, process redesign, process implementation and process monitoring and control. The organizations ability to smoothly go through this lifecycle is largely dependent on how much process thinking has taken place before in the organization, and how well they can identify the scope of a process and identify the relationships between multiple processes. This lifecycle is shown in Figure 12.

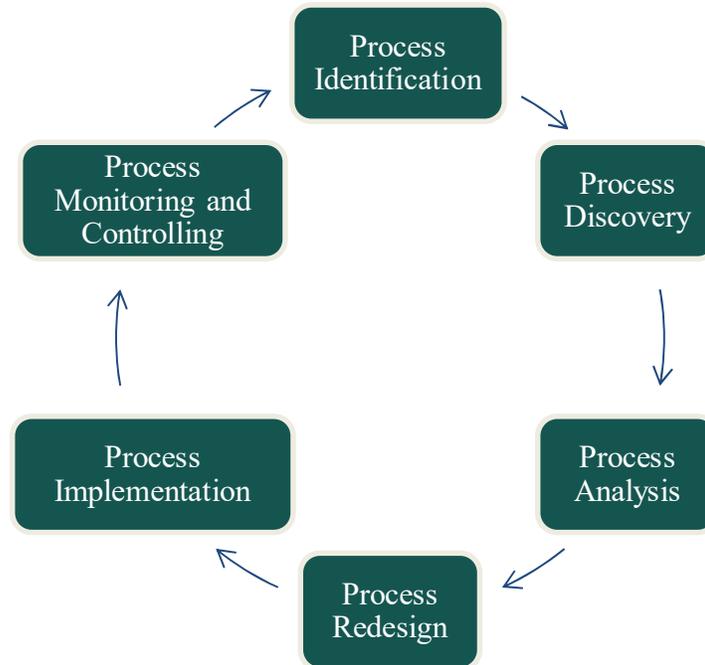


Figure 12. BPM Lifecycle. Adapted from Dumas et al. (2013).

- **Process Identification** – The first phase to implementing BPM is process identification, as described by Dumas et al. (2013); this consists of identifying the processes and their organizational relationships through data collection. The purpose of process identification is to identify processes that could be improved that would have the greatest impact on the client, in terms of cost-relation, or error rates.
- **Process Discovery** – Once the processes have been identified, it is necessary to identify which performance measures should be used to evaluate the effectiveness of any process changes. According to Dumas et al. (2013), this involves the identification of the As-Is process model, which is used to facilitate communication between stakeholders involved in the BPM activity.

This commonly includes diagrams, process documentation, process modeling etc.

- **Process Analysis** – After identifying the as is process model, the next step is to analyze the issues in the process. This would consist of identifying specific performance measures issues based on data collection. Each issue would be identified, classified and the main causes for the issue would be identified with potential solutions proposed. Each potential solution would be evaluated to identify how changing one process can influence other processes in the organization.
- **Process redesign** – Once the potential solution has been identified the next step is process redesign. This includes the creation of the To-Be process. The process redesign may consist of multiple new processes created, such as process improvements or process redesigns, or the creation of new processes. Each of these new processes would be evaluated, and one chosen to be implemented.
- **Process Implementation** – Once the new process has been selected, the IT systems team in partnership with the organization's management team will implement the process change so it can be executed. Process implementation consists of the organizational change (change to participants roles, responsibilities, or new procedures) as well as the process automation (reconfiguration of BPM IT systems, including the delegation of tasks to participants).
- **Process Monitoring and Controlling** – Once the process has been implemented, there will be continuous monitoring of the process to identify if

the process changes provide a higher value to the organization. This data is evaluated against the as is model, and is continuously evaluated and controlled to ensure that process meets expectations. If the process does not continue to meet expectations, the cycle will begin again.

## **Discussions**

Chapter 4 researched whether or not BPM follows a standard methodology or lifecycle to ensure the proper execution of process improvement. During the research, six main studies that evaluated the BPM methodology were identified. A summary of these methodologies is represented in Table 4.

In 1995, Elzinga et al. (1995) suggested that the order of activities for BPM consists of process selection, process description, process quantification (classifying a process through numerical scale), process improvement and process implementation. In 2006, Netjes, Reijers, & van der Aalst (2006) argued that BPM systems, which are the technological applications of BPM, followed a set lifecycle, specifically that there are 5 stages: design, configuration, execution, control and diagnosis. In 2006, zur Muehlen & Ting-Yi Ho, (2006) also proposed a new methodology which consisted of 6 main traits: goal specification and environmental analysis, process design, process implementation, process enactment, process monitoring, and process evaluation.

Table 4.  
Comparison of BPM Lifecycles from Various Researchers

Elzinga et al. (1995)	Netjes et al. (2006)	zur Muehlen & Ting-Yi Ho (2006)	Kannengiesser (2008)	Houy et al. (2010)	Dumas et al. (2013)
Process Selection	Design	Goal Specification/ Environmental Analysis	Formulation	Strategy Development	Process Identification
Process Description	Configuration	Process Design	Synthesis	Definition/ Modeling of Process	Process Discovery
Process Quantification	Execution	Process Implementation	Analysis	Implementation of Processes	Process Analysis
Process Improvement	Control	Process Enactment	Evaluation	Execution of Processes	Process Redesign
Process Implementation	Diagnosis	Process Monitoring	Documentation	Monitoring/ Controlling of Process Execution	Process Implementation
		Process Evaluation	Reformulation	Optimization/ Continuous Improvement of Process	Process Monitoring and Controlling

Note: Data from Elzinga et al. (1995), Netjes, Reijers, & van der Aalst (2006), zur Muehlen & Ting-Yi Hu (2006), Kannengiesser (2008) Houy, Fettke, & Loos (2010), and Dumas et al. (2013).

In 2008 Kannengiesser (2008) suggested that BPM must utilize 2 strategies which would run asynchronously: Concept design, and Realisation Design. Each design addressed 6 main features in a BPM lifecycle: formulation, synthesis, analysis, evaluation, documentation and reformulation. In 2010 a study conducted by Houy et al. (2010), proposed six activities for BPM: strategy development, definition/modeling of a process, implementation of process, monitoring and controlling of process execution, and optimization/continuous improvement of processes. These activities were then evaluated by Loos, Van Der Aalst, Houy, Fettke, & Krogstie (2010) and a detailed structure for BPM was outlined that could be applied in any field, and is easily replicable. The most recent methodology reviewed was

from 2013, Dumas et al. (2013), where they simplified Houy et al. (2010) model by providing clear and concise activities for each of the stage of the methodology. Dumas et al. (2013) proposed 6 activities which were process focused including: process identification, process discovery, process analysis, process redesign, process implementation, process monitoring and controlling. By simplifying the process, they created a scenario where individuals that are not experts in BPM, have the steps needed to attempt to implement BPM in their organizations.

#### **Chapter 4 Summary**

Based on the research we can assume that there is no current standard methodology utilized by BPM practitioners, however it should be noted that 4 of the 6 methodologies, specifically Elzinga et al. (1995), zur Muehlen & Ting-Yi Ho (2006), Houy et al. (2010), and Dumas et al. (2013) do share a similar structure: Identifying/ Modelling of process, Process Improvement/ Implementation, and Process Monitoring/ Evaluation. This suggests that the newer methodologies may be an adaptation or an evolution of prior methodologies, attempting to improve the BPM methodology process. For the purpose of our research, the Dumas et al. (2013) methodology will be used. This methodology is the most recent peer reviewed methodology and has a recent case study evaluating the implementation in a not-for-profit organization.

## **CHAPTER 5**

### **ORGANIZATIONAL CHARACTERISTICS ASSOCIATED WITH SUCCESSFUL BPM IMPLEMENTATION**

Business Process Management when successfully implemented can produce favourable results, by focusing on designing end-to-end processes. However, if an organization does not recognize the relationship between processes and the overall operational efficiencies of the organization, they will not be able to effectively implement BPM. Hammer (2010) recognized the need for certain organizational traits, and identified there are 5 main characteristics that must be present for an organization for BPM to succeed: High-performance processes, leadership, culture, governance, and expertise.

#### **High Performance Processes**

According to Hammer (2010) there are five critical enablers of high-performance process: process design, process metrics, process performers, process infrastructure, and process owner.

- A process design is the fundamental structure of a process. It defines what the tasks are, who will be doing them, when it will be done, what the location of work is etc. A detailed process design enables an individual to understand their role within the organization, and enables the organization to see how each process is connected to the overall operation.
- The process metrics are the means by which the performance of the process is tracked. It provides a guideline to identify efficiencies or inefficiencies in the process performance and identify targets or goals. Metrics are also utilized

when implementing process improvements, to identify if the process changes have increased or decreased the efficiency of the process.

- Process performers are the individuals who understand the end-to-end life cycle of the process, and can identify how process changes will affect the overall process.
- Process infrastructure enable performers to do their job. A process infrastructure is an integrated information system such as an Enterprise Resource Planning (ERP) system.
- Process owners are individuals which are responsible for a whole process. They are traditionally senior Managers instead of the process performers (Hammer, 2010).

## **Leadership**

Business Process Management consists of implementing change across the whole organization, with the intent of increasing the operational efficiencies of the organization. This change needs to be supported by strong leadership, which understands the change and is able to effectively communicate it. The study of change management states that an organization's leadership characteristics and style greatly impact the successful outcome for implementing change (Gill, 2002). Gill (2002) noted that there are specific requirements for effective leadership including: cognitive intelligence, spiritual intelligence, emotional intelligence and behavioural skills.

In terms of Business Process Management, a leader must be able to understand the organization's processes and utilize cognitive skillsets such as problem solving and intuition to produce a vision of what change can be attainable. They must then be able to associate that change with an employee's individual sense of work, and motivate them to participate in the change through establishing a meaning or spiritual intelligence. That leader will also need to understand the impact that change will have on an employee's emotional intelligence and self-worth, and propose a shared vision. Lastly, a successful leader for BPM would need to be able to follow through with implementing the proposed change, and communicating effectively the future change they would like to see within the organization. (Ohtonen, 2012)

## **Culture**

Organizational culture defines an organization's ability to respond to changes in their organizational environment, business activities and business practices. Various researchers of BPM practices (including Smith & Fingar, 2003; Elzinga, Horak, Chung-Yee, & Bruner, 1995; Loos, Van Der Aalst, Houy, Fettke, & Krogstie, 2010; Van Der Aalst, Ter Hofstede, & Weske, 2003; Hallerbach, Bauer, & Reichert, 2008; Kannengiesser, 2008; Niehaves, Poepelbuss, Plattfaut, & Becker, 2014; Brocke & Sinni, 2011) agree that there are a series of values, assumptions and traits that must already be part of an organizations culture to support the development of a BPM culture. As noted by Brocke and Sinni (2011), organizational culture is recognized as one of the central factors influencing BPM initiatives, and it is often referenced as a source of project failure or success.

According to Zairi (1997) BPM culture refers to a certain set of values that directly support the achievement of BPM objectives, such as process enhancement or quality enhancement. Zairi argues that for an organization to create or recreate a BPM culture, they must first have a process-based culture; which is defined by Waterman, Peters, & Philips (1980) as an organizational culture that is based on the relationship between organizational structure, business strategy, operational systems, employee skills and superordinate goals (goals which require two or more people or groups to achieve). Process-based culture adheres to the processes and procedures of the organization and continuously improves their processes to enhance the organization. Upon reviewing the literature, there are six common organizational traits that promote the successful implementation of BPM, as represented in Figure 13.

- Organizational structure
- Pervasiveness
- Ownership
- Documentation
- Measurement
- Inspection

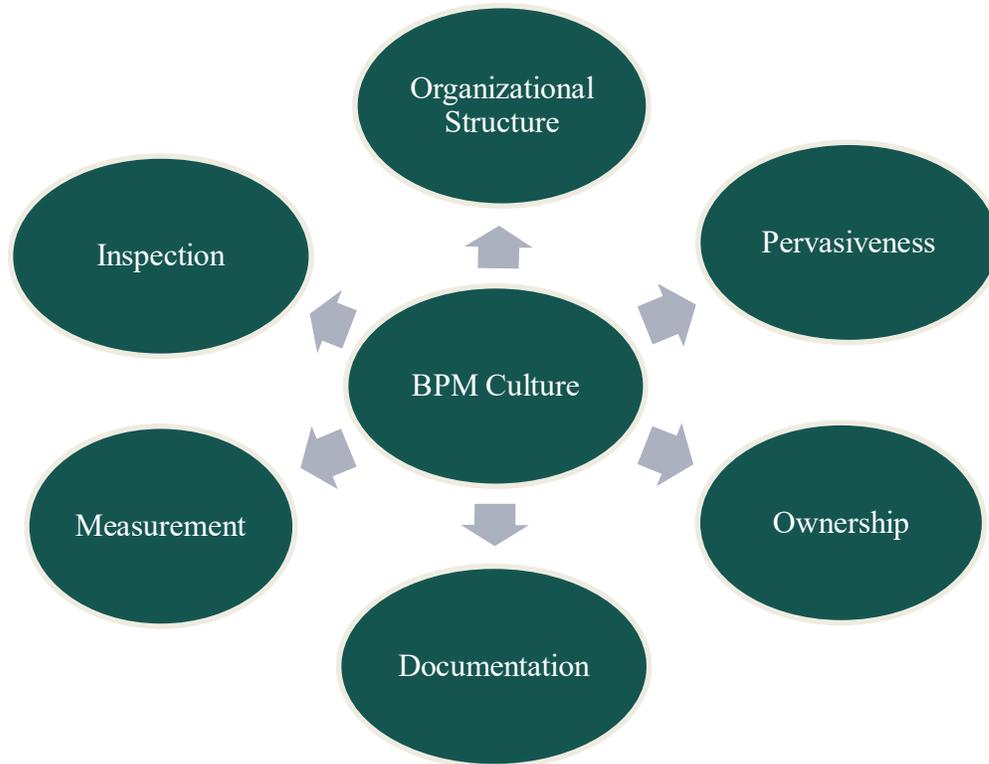


Figure 13. BPM Culture. Adapted from DeToro & McCabe (1997), Zairi (1997), Lee & Dale (1998)

The first three organizational traits (organizational structure, pervasiveness, ownership) focus on the basic assumptions (underlying beliefs and behaviours) and the values of the organization.

**Organizational structure:** For an organization to implement BPM, they must first have a flat or horizontal organizational structure. A horizontal organizational structure as discussed by Claver-Cortés, Zaragoza-Sáez, & Pertusa-Ortega (2007), emphasizes an employee-centered approach, which is cross-functional and supports multi-function teamwork and collaboration.

- **Pervasiveness:** As defined by Lee and Dale (1997), pervasiveness is the understanding and application of a principle or strategy throughout the whole organization. In the case of BPM, pervasiveness would be an organization-wide

understanding of the application of BPM throughout all aspects of the organization. Organizations that want to implement BPM must have a process-based culture, as previously defined by Waterman et al. (1980), as an organizational culture that is based on the relationship between organizational structure, business strategy, operational systems, employee skills and superordinate goals (goals which require two or more people or groups to achieve), an organization-wide understanding of BPM in relation to process discipline, continuous improvement and cross-process integration. Specifically, the organization must analyze and continually improve all fundamental activities of operations, such as manufacturing, marketing, communications, finance and all other operational elements.

- **Process Ownership:** Organizations that are attempting to implement BPM must have clearly defined process ownership, a trait that was lacking in TQM, SPC, BPI and BPR. Process ownership ensures that all parts of a process have a clearly defined owner who reviews and is responsible for the process performance and continuous improvement. This includes receiving support from senior management and cross-functional work teams.

If the organizations culture effectively supports the principles of organizational structure, pervasiveness and ownership, it is possible that they would receive more employee engagement when implementing BPM practices.

The remaining three traits, documentation, measurement and inspection, refer to the environmental and process management aspects of the organization, specifically:

- **Documentation:** Process mapping of end-to-end activities, including in-process controls, document and information usage, management controls, and complete process design.
- **Measurement:** Performance measurement based on setting targets for improvement including evaluating efficiency and effectiveness in terms of cost, quality and time measurements. All processes are tracked, and measurements taken at critical steps.
- **Inspection:** The continuous measurement and improvement of processes to identify gaps, determine effectiveness, and ensure best practices. Inspection is often conducted by the process owners, and focuses on reducing variability.

These organizational traits identify the key factors that will determine if an organization's culture is suitable for BPM. If an organization already has these traits incorporated, there is a higher probability they would benefit from the use of BPM. However, as noted by Lee and Dale (1998) BPM is a tool/technique utilized to achieve process improvement, however it is most successful when linked to organizational policy development, and focuses on critical objectives and organizational goals.

## **Governance**

Organizational governance consists of an organization's processes, rules, practices or responsibilities. As noted by Hammer (2010) organizations that want to implement BPM

must instil set governance mechanisms (structures, processes, policies) that assign appropriate responsibilities to employees, and ensure that processes integrate with one another. A BPM governance model would consist of clear definitions of the roles and responsibilities for employees across all levels of the organization. Including the development of a BPM steering committee, or equivalent means of providing strategic oversight, guidance, and decision-making capacity.

### **Expertise**

The last organizational characteristic that must be present is expertise. As noted by Hammer (2010) implementing and managing process changes are a complex activity, which requires experienced managers and employees to facilitate the task. Individuals that are not familiar with the previously mentioned high-performance process traits will find it extremely difficult to implement process changes.

### **Discussion**

Chapter 5 researched the organizational characteristics required to successfully implement BPM. It identified Hammer's (2010) observation that an organization must have 5 main characteristics: High-performance processes, strong leadership skills, a process-oriented culture, a BPM governance, and employees with BPM expertise. Further research supported Hammer's (2010) observations and expanded on the main characteristics and traits of organizations that successfully implemented BPM. Based on the research, an organizational profile can be created that could be used to evaluate if an organization could

support BPM applications. This profile would include the following organizational characteristics:

- **High-performing Processes** – Organizational processes consist of: process designs, process metrics, process performers, process infrastructures and process owners.
- **Leadership Skills** – Organizational leadership demonstrates cognitive intelligence, spiritual intelligence, emotional intelligence and behavioural skills.
- **Process-based Culture** – Organizational culture consists of the following characteristics: flat or horizontal organizational structure, an organization-wide understanding of BPM, clear process ownership and documentation, specific performance measurement, and continuous inspection and improvement of processes.
- **BPM Governance** – Clear definitions of the roles and responsibilities for employees across all levels of the organization.
- **BPM Expertise** – Staff that understand BPM, and the use of BPM to facilitate process changes based on performance measures.

## Summary

Based on the literature review, it has been identified that there are specific organizational traits that support the successful application of BPM. These traits include: High-performance processes, strong leadership skills, a process-oriented culture, a BPM governance, and BPM Expertise. For the purpose of our research, these traits will be helpful to evaluate if Continuing Studies meets the organizational requirements to successfully implement BPM.

## **CHAPTER 6**

### **BPM RELEVANT CASE STUDY**

A recent study conducted by Haddad et al. (2016) evaluated the potential use of Business Process Management in a not for profit organization. The intent of the study was to suggest a way to improve the processes of the organization. The research consisted of developing a case study using the BPM Lifecycle proposed by Dumas et al. (2013) to systematically implement BPM in the organization (Haddad, Ayala, Maldonado, Forcellini, & Lezana, 2016). The case study collected the initial data through document analysis and interview-based discovery. The information was then entered into the BPMS Bizagi software, where an As-Is model was developed. From that base model, the process was analyzed to identify inefficiencies, by using the 5 why model (root cause analysis). Based on the previously identified process inefficiencies, two new models were proposed through the use of Bizagi, a heuristic process redesign (improving current process) and a product based design (creating a new process). Of the two new processes, the heuristic process redesign was selected to be implemented. The new process was then deployed by the department Manager and was monitored through the evaluation of KPI's related to process orientation.

The results of the study conducted by Haddad et al. (2016) include: increase in the inflows of financial resources for three of the four business processes, increase in organizational understanding of quality, increased customer satisfaction, increased staff satisfaction, improved flow of information, improved communication between units, increase in department's overall goal, and increase in the number of partners willing to develop solutions tailored to the final customer.

## **Discussion**

The study conducted by Haddad et al. (2016) was able to successfully implement the Dumas et al. (2013) BPM methodology. Resulting in the development of a centralized process which increased the organizations inflow of financial resources, provided operational efficiencies, increased employee satisfaction, and increased customer satisfaction. The study was able to conclude that BPM had an overall positive impact in the organization, even though it was only able to create process efficiencies in 3 of the 4 processes.

However, in the case study, the organizational characteristics and culture were not stated during the implementation phase. Thus, there is no way to determine if the organizational structure was one that would support the implementation of BPM. Further evaluation into the organizational traits would provide evidence to support Hammer's (2010) observation that there are specific organizational characteristics that support the successful implementation of BPM.

## **Summary**

When searching for relevant case studies, additional articles were found that did not meet the requirements of this research. These articles tended to focus on the implementation or application of Business Process Modelling, and did not account for the management theory associated with Business Process Management. For the purpose of this research, the case study techniques utilized by Haddad et al. (2016) will be applied within a post-secondary environment to evaluate the effectiveness of the Dumas et al. (2013) methodology for BPM.

## SECTION 2: CASE STUDY

### Section 2 Aims

- **Describe the Case Study**
- **Summarize significant findings from Case Study**

Section 2 details the Case Study used to test the application of the Dumas et al. (2013) BPM methodology in a post-secondary environment. The intent of the case study is to identify the effectiveness of the BPM Lifecycle proposed by Dumas et al. (2013) and summarize any significant findings.

## CHAPTER 7

### CASE STUDY: APPLYING BPM IN A POST-SECONDARY ENVIRONMENT

Process improvement strategies, such as BPM, have been researched extensively in relation to for-profit organizations, however there is limited research that identifies the viability of utilizing process improvement strategies like BPM in not-for profit organizations (NPO), such as a post-secondary educational institution. Universities naturally strive to grow as an institution and increase their reach and impact in the communities they serve, in turn they are trying to maintain a competitive advantage over their competitors. However, currently in British Columbia, 13 of 25 post-secondary institutions are experiencing declining enrolment. According to BC Stats (2014), the projected student population for post-secondary institutions will decrease by over 30,000 in BC over the next 5 years, 41% of which would traditionally have attended university. Universities face multiple challenges that complement the decline in student enrolment, including an overall decrease in government funding. As noted by Shaw and Culbert (2014), “The advanced-education budget is projected to fall from \$1.952 billion this year to \$1.911 billion by 2016/17, a continuation of the government’s goal of reducing funding for universities and colleges by \$50 million annually” (Shaw & Culbert, 2014, p. 1). As Universities continue to compete against each other, the only way to balance their budgets is by increasing student enrolment or by decreasing their operating costs. Is it possible that through the implementation of BPM, this can be achieved?

A recent study conducted by Haddad et al. (2016) evaluated the potential use of BPM in a NPO. The study tried to identify ways to improve the processes of the organization, and successfully implement this change. The study consisted of developing a case study using the

BPM Lifecycle approach by Dumas et al. (2013) to systematically implement BPM in the organization (Haddad, Ayala, Maldonado, Forcellini, & Lezana, 2016). The case study collected the initial data related to employee activities and identified key processes. Through document analysis and interview based discovery, the information was entered into BPMS Bizagi program, where an As-Is model for the key business processes was developed. The As-Is model was structured in a swim-lane process diagram, wherein the roles, sequence of events and activities for the overall process was identified. From those base models, each process was analyzed to identify inefficiencies using the 5 why model (root cause analysis). Based on the identified process inefficiencies, two new models were proposed through the use of Bizagi, a heuristic process redesign (improving current process) and a product based design (creating a new process). Of the two proposed processes, the heuristic process redesign was selected to be implemented due to the potential efficiencies such as process improvement, reduced workload, and increased customer satisfaction. The proposed process improvement was then implemented by the department Manager, and was monitored through the evaluation of KPI's related to process orientation.

The results of the study conducted by Haddad et al. (2016) included: increase in the inflow of financial resources for 3 of the 4 business processes, increase in organizational understanding of quality, increased customer satisfaction, increased staff satisfaction, improved flow of information, improved communication between units, increase in departments overall goal, and an increase in the number of partners willing to develop solutions tailored to the final customer.

Based on the Haddad et al. (2016) study, it has been identified the BPM can be implemented in NPOs, however it is unclear whether or not it can be applied in a University.

The aim of this case study is to identify whether or not the same BPM methodology followed by Haddad et al. (2016) can be successfully implemented in a University setting. Based on the previous research, it was hypothesized that BPM can be implemented in a University if it aligns with a set of organizational characteristics that support successfully BPM implementation. These organizational characteristics include:

- High-performance processes (process design, process metrics, process performers, process infrastructure, and process owners).
- Strong leadership (cognitive intelligence, spiritual intelligence, emotional intelligence and behavioural skills).
- Process-based organizational culture (flat organizational structure, pervasiveness, process ownership, documentation, performance measurement, and inspection).
- BPM Governance structure (clear definitions of the roles and responsibilities for employees across all levels of the organization).
- BPM Expertise (clear understanding of processes, and BPM).

The second objective of this case study is to assess the structure of the BPM methodology proposed by Dumas et al. (2013), and identify if there are any changes to the methodology that can be made. Based on the research into BPM methodologies, it is hypothesized that analyzing the organizational structure of an organization prior to process

identification would determine if the organization is capable of implementing BPM prior to evaluating the processes.

### **Description of the Case Study**

This case study evaluates the organizational processes of the department of Continuing Studies, within a University. The department was established in 2002, and branched into two departments in 2013: online and face-to-face. The organizational structure of the University can be found in Figure 14. Each year, Continuing Studies services approximately 2000 students, in courses in business, arts and culture, health and wellness, safety, natural resource management, language and writing, general interest and experiential learning categories. Continuing Studies courses are offered across the province of British Columbia and also as far away as Eastern Canada.

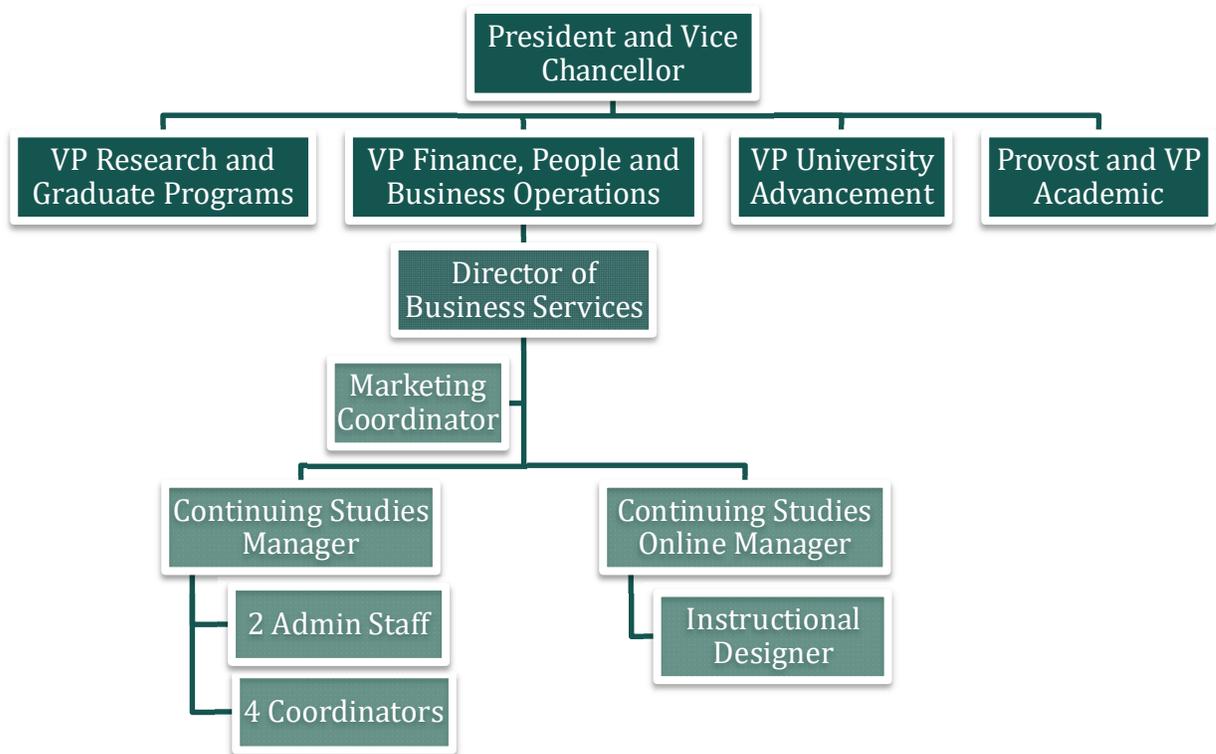


Figure 14. University Structure. Adapted from [www.unbc.ca](http://www.unbc.ca)

The two departments are currently evaluating the possibility of merging their processes to increase operational efficiencies, identify financial savings and increase productivity. Continuing Studies currently has limited documentation in regards to operational processes, however they have detailed processes for administrative tasks and responsibilities. To date there are currently two major processes documented: Face-to-face course development (in-person delivery), and online course development (online delivery). These two processes have current inefficiencies and gaps such as: they do not thoroughly identify all process activities, have overlapping tasks and responsibilities, and have not been updated since the creation of two teams in 2013. This case study will evaluate the application of BPM in Continuing Studies, and identify if the methodology proposed by Dumas et al. (2013) can be effectively applied, or has room for improvement.

## Case Study Project

### Process Identification

#### *Process Designation*

The current processes for Continuing Studies (CS) were identified from the initial interviews with the CS managers and document analysis. Based on this information it was identified that there are currently three primary processes that are followed: face-to-face course development/ delivery, online course development, and a series of operational processes that are documented on an activity level instead of an overall process level. The evaluation of the current business processes and information collected from team members, led to the development of the process architecture for the As-Is process, as identified in Table 5.

*Table 5  
Continuing Studies Process Architecture*

Core Business Function	Sub-Business Function	Product Types			
		Face to Face Products			Online Products
		Certificate Programs	Workshops	Custom Courses	Online Certificates and Courses
Course Development	Course Planning	✓	✓	✗	✓
	Market Research	✓	✓	✗	✓
	Course Creation	✓	✓	✓	✓
	Content Development	✓	✓	✓	✓
	Course set up	✓	✓	✓	✓
Course Delivery	Course Recruitment	✓	✓	✗	✓
	Course Delivery	✓	✓	✓	✓
	Monitor and evaluate	✓	✓	✓	✓

The process architecture defines the business functions, sub-business functions, product types, and sub-business functions related to product types in a systematic flow.

Based on the data collected, the key departmental business functions were identified as:

- Course Development – Key business functions include course planning, market research, course creation, content development, and course setup.
- Course Delivery – Key business functions include course recruitment, course delivery and monitoring and evaluating.

The process architecture identified 4 main product types delivered by Continuing Studies: certificate programs, workshops, custom courses and online products. The cells that contain an “✓” identify which sub-business functions are completed for each product type. As noted in the architecture, the majority of the sub-functions are completed for all product types. The exception is custom courses; wherein course development and course delivery related activities are fewer than other product types. Upon reviewing the process architecture, the current business processes can be identified. They include:

- Process 1: Face-to-Face – Includes the development of certificates, workshops and custom courses that are delivered in a face-to-face medium. It focuses primarily on course development, and delivery.
- Process 2: Online Courses – Includes the development of online programming that is delivered asynchronously. It focuses primarily on course development, with a secondary focus on delivery.

Based on the evaluation of the current process, and information gathered during the interviews, it was identified that the current Face-to-face and Online Course processes need to be re-engineered to achieve the following goals:

1. Reduce repetitive tasks/ activities
2. Enable coordinators to identify online course development opportunities during initial course development
3. Identify the roles and responsibilities of coordinators in online/ face-to-face course development
4. Define a process for course delivery separate from course development

### **Process Discovery**

For the identified processes that need to be re-engineered, the following information was collected to assist in the development of the As-Is model: activity owners, process inputs, tasks performed, and outputs.

Face-to-face As-Is Process (Process 1) has the following activity owners: Managers, Instructors, Coordinators, Admin personnel, and Conference and Events personnel. The process inputs include: Academic Plan, CS Business Plan, Marketing Strategy, BC Economic Outlook, course proposal, course content and multi-media inputs. The tasks performed in this process are identified in Table 6. The outputs include: yearly course schedules, market research on programs, course proposals, new products, course delivery, and the collection of student feedback for Face-to-face courses. The main customers include: organizations, ministries, students, and UNBC academic and administrative departments.

Table 6  
Face-to-face Process Activity Breakdown

Core Business Function	Sub-business Function	Key Business Activities	Activity Owner
Course Development	Course Planning	Evaluation of current course offerings	Manager
		Identification of new course ideas	Manager/ Coordinator
	Market Research	Evaluate market opportunity	Coordinator
		Identify competitors	Coordinator
		Determining current market needs	Coordinator
		Identify funding opportunities/ partners	Manager/ Coordinator
	Course Creation	Identify instructors/partner institutions	Manager/ Coordinator
		Identify course learning outcomes	Coordinator
		Create course proposal	Coordinator
		Approve/ deny course proposal	Manager
	Content Development	Purchase/acquire course content	Coordinator
	Course set up	Create course codes	Admin
		Create marketing material	Marketing Coordinator
		Load course into booking/course merchant	Admin
		Update website	Marketing Coordinator
		Set up instructor contracts	Coordinator
		Book rooms/catering	Coordinator
	Course Delivery	Course Recruitment	Define marketing strategy
Implement marketing strategy			Marketing Coordinator
Register students			Admin
Invoice/ accept payment			Admin
Course Delivery		Go/ No go decision	Coordinator
		Create/ship course packages	Coordinator/ Admin
		Create/ship instructor packages	Coordinator/ Admin
		Student notifications	Admin
		Classroom set up	Coordinator
		Instruction/delivery	Coordinator
		Course wrap up	Coordinator
Monitor and evaluate		Monitor student/instructor progress	Coordinator
		Provide student feedback forms	Coordinator
	Evaluate and share results of feedback	Coordinator/ Admin	

Online As-Is Process (Process 2) has the following activity owners: Managers, Instructors, Coordinators, Admin personnel, and Marketing Coordinator. The process inputs include: course proposal, blended/online course, and course offering. The tasks performed in this process are identified in Table 7. The outputs include: market research on programs, course proposals, new products, course development, course delivery, and the collection of student feedback for Online courses. The main customers include: organizations, ministries, communities, and students.

Table 7  
Online Process Activity Breakdown

Core Business Function	Sub-business Function	Key Business Activities	Activity Owner
Course Development	Course Planning	Evaluation of current course offerings	Manager
		Identification of new course ideas	Manager
	Market Research	Evaluate market opportunity	Manager
		Identify competitors	Manager
		Determining current market needs	Manager
		Identify funding opportunities/partners	Manager
	Course Creation	Identify instructors/partner institutions	Manager
		Identify course learning outcomes	Manager
		Create course proposal	Manager
		Approve/ deny course proposal	Manager
	Content Development	Set up instructor contracts	Manager
		Purchase/acquire course content	Manager
		Develop Project Plan	Manager
		Develop Style Guide	Instructional Designer
		Acquire Content Chunking	Manager
		Develop learning resources/ assets	Instructional Designer
		Storyboard Content	Instructional Designer
		Design Alpha/Beta/Gold	Instructional Designer
		Test online content	Manager/ Instructional Designer
	Approve course	Manager	
Course set up	Create course codes	Admin	
	Create marketing material/ update website	Marketing Coordinator	

Course Delivery		Create Course shell in Learning Management System (D2L)	Instructional Designer	
		Create additional learning resources in D2L	Instructional Designer	
		Load course into course merchant	Admin	
	Course Recruitment		Define marketing strategy	Marketing Coordinator
			Implement marketing strategy	Marketing Coordinator
			Register students	Admin
			Invoice/ accept payment	Admin
	Course Delivery		Instruction/delivery	Instructional Designer
			Student notifications	Admin
	Monitor and evaluate		Check in on student/instructor progress	Instructional Designer
Provide student feedback forms			Instructional Designer	
Evaluate and share results of feedback			Instructional Designer/ Admin	

Based on the interviews and document analysis the As-Is processes were developed, as shown in Figure 15, 16 and 17. Process 1 (Face-to-face) starts with the Coordinators completing their course planning to determine which courses should run, followed by market research to identify the demand for the product, and if there is demand, they proceed to course creation, where content is either purchased or acquired. Once the course is created, the Coordinator then works with the Admin team to create course codes and load the product in the payment gateway, they also work with Marketing team to develop marketing material and update the website, and then work with Purchasing department to set up Instructor contracts, and Conference and Events services to book rooms and catering. Once they have completed those tasks, it is the responsibility of the Marketing team to recruit students into the course using various marketing platforms, and the Admin team's responsibility to accept payment for student registration. If a course receives the minimum number of students, the admin team or the Coordinator creates/ships course and instructor packages if needed, sends out student reminders, while the Coordinator ensures the classrooms are setup, and assists the

instructor if needed for course instruction/delivery. Upon completion of the course, the Coordinator will check in on the instructor's progress, provide student feedback forms, and evaluate feedback for future course deliveries.

In the second process (Online), represented in Table 7, the same general steps are followed with the addition of multiple tasks in content development, and the exclusion of multiple activities in course delivery, specifically activities related to the physical delivery of a course, such as room bookings, and course materials etc. Key business activities that are unique in each process are identified in Table 8, and are highlighted in the Bizagi Process Maps Figures 18, 19 and 20. When comparing the two processes, it is interesting to note that there are only six unique activities in the Face-to-face process (mostly pertaining to physical classroom activities) and 11 unique activities in the Online process (mostly pertaining to online course development). This indicates that the majority of the process activities that are occurring in each process are duplicated, indicating the possibility to streamline the process to reduce the duplication of work.

Table 8  
 Identification of Process Variations in Face-to-face and Online Processes

Core Business Function	Sub-business Function	Key Business Activities	PROCESS VARIATIONS	
			Face to Face Process	Online Process
Course Development	Course Planning	Evaluation of current course offerings	✓	✓
		Identification of new course ideas	✓	✓
	Market Research	Evaluate market opportunity	✓	✓
		identify competitors	✓	✓
		determining current market needs	✓	✓
		identify funding opportunities/partners	✓	✓
		Identify instructors/partner institutions	✓	✓
	Course Creation	Identify course learning outcomes	✓	✓
		create course proposal	✓	✓
		identify viability of success	✓	✓
	Content Development	Set up instructor contracts	✓	✓
		Purchase/acquire course content	✓	✓
		Develop Project Plan	X	✓
		Develop Style Guide	X	✓
		Acquire Content Chunking	X	✓
		Develop learning resources/ assets	X	✓
		Storyboard Content	X	✓
		Design Alpha/Beta/Gold	X	✓
		Test online content	X	✓
		Approve course	X	✓
	Course set up	Create course codes	✓	✓
Create marketing material/ update website		✓	✓	
Create Course shell in D2L		X	✓	
Book Rooms and Catering		✓	X	
Create additional learning resources in D2L		X	✓	
Load course into booking/ course merchant		✓	✓	
Course Delivery	Course Recruitment	Define marketing strategy	✓	✓
		Implement Marketing Strategy	✓	✓
		Register Students	✓	✓
		Invoice/ accept payment	✓	✓
	Course Delivery	Go/ No go decision	✓	X
		Enroll students in online courses	X	✓
		Create/ship course packages	✓	X
		Create/ship instructor packages	✓	X
		Student notifications	✓	✓
		Classroom set up	✓	X
		Instruction/delivery	✓	✓
		Course wrap up	✓	X
	Monitor and evaluate	Monitor student/instructor progress	✓	✓
		Provide student feedback forms	✓	✓
Evaluate and share results of feedback		✓	✓	

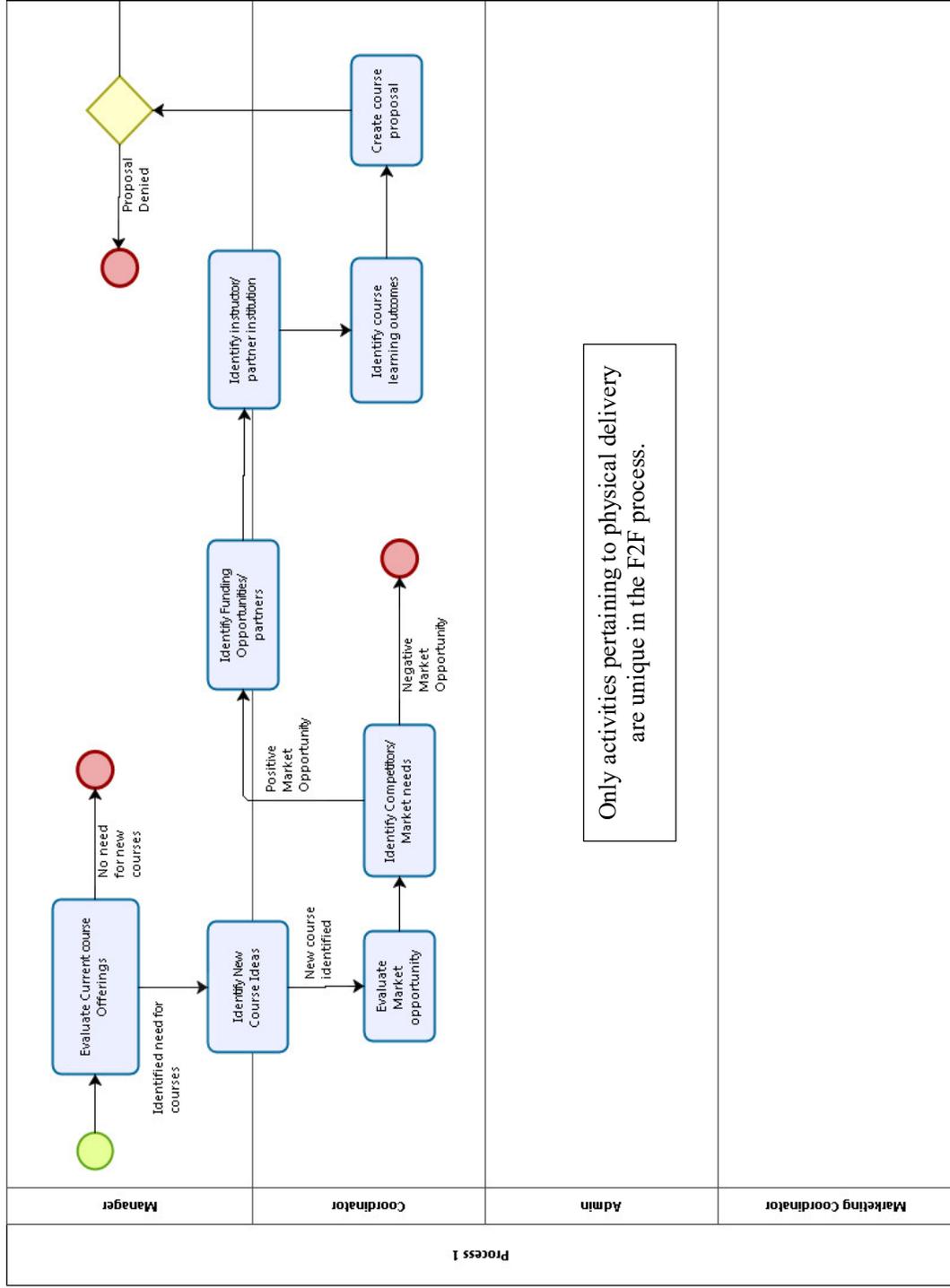


Figure 15. Face-to-face As is Process Part A. Adapted from Face-to-face Process Activity Breakdown Table 6.

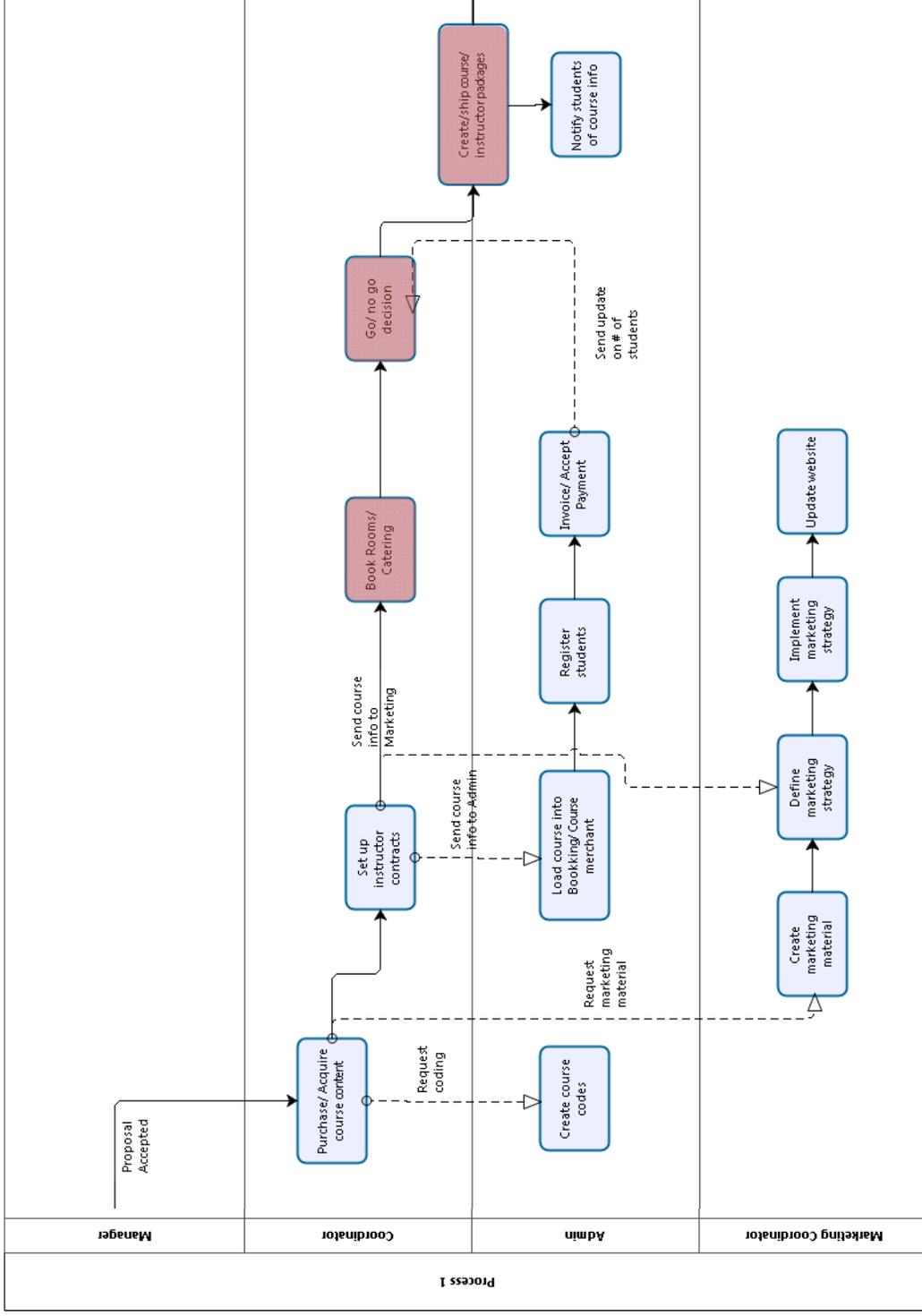


Figure 16. Face-to-face As is Process Part B. Adapted from Face-to-face Process Activity Breakdown Table 6.

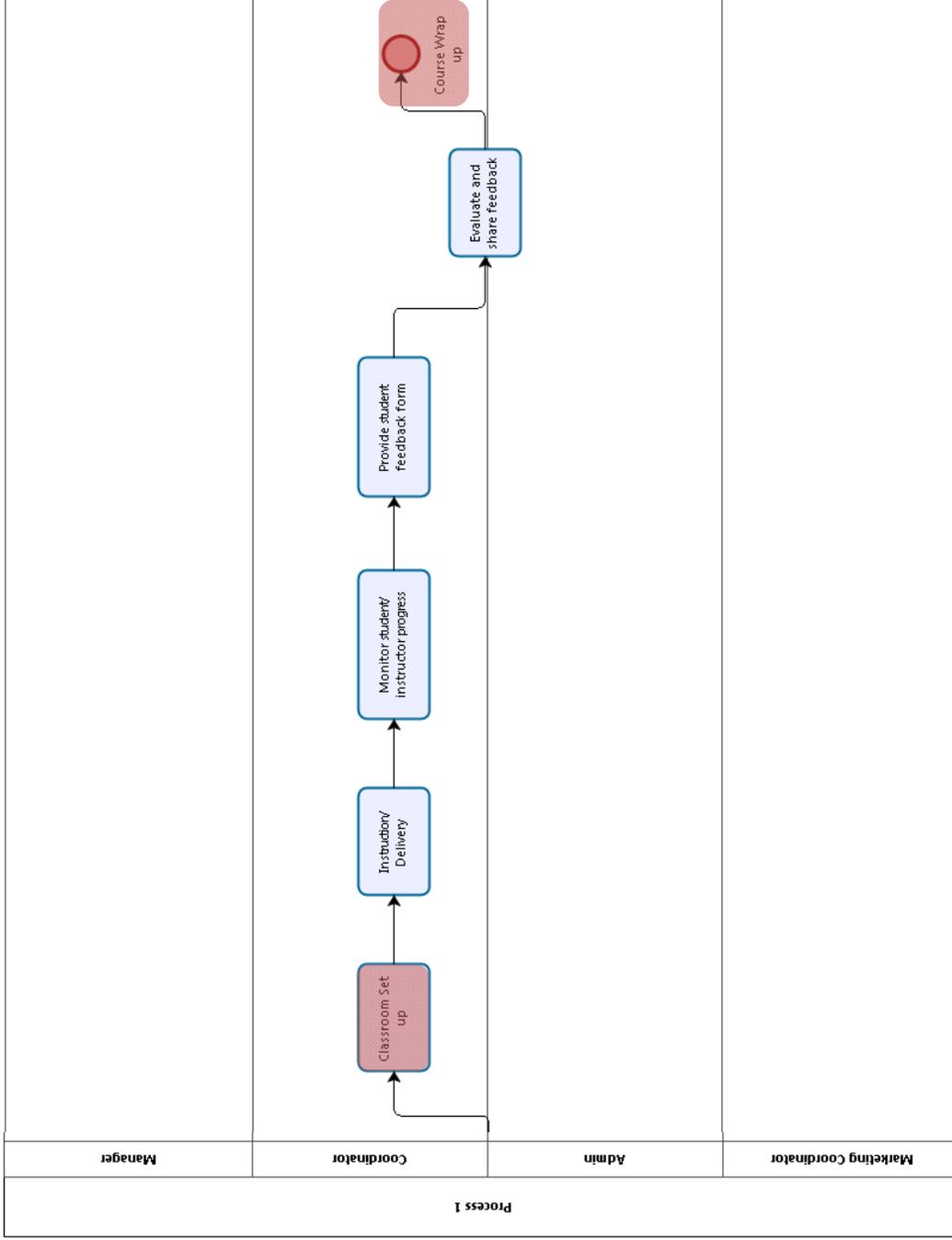


Figure 17. Face-to-face As is Process Part C. Adapted from Face-to-face Process Activity Breakdown Table 6.

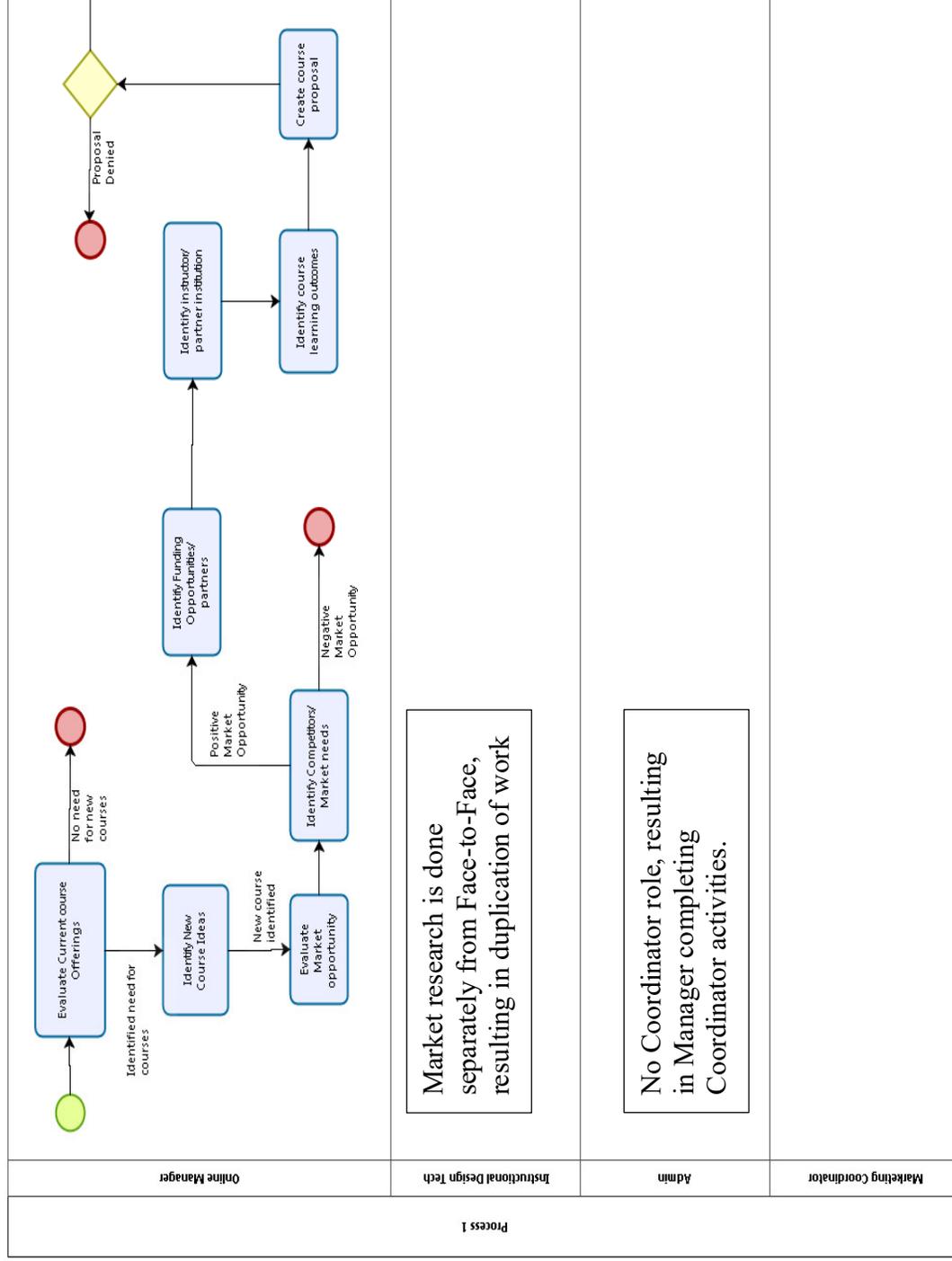


Figure 18. Online As Is Process Part A. Adapted from Online Process Activity Breakdown Table 7.

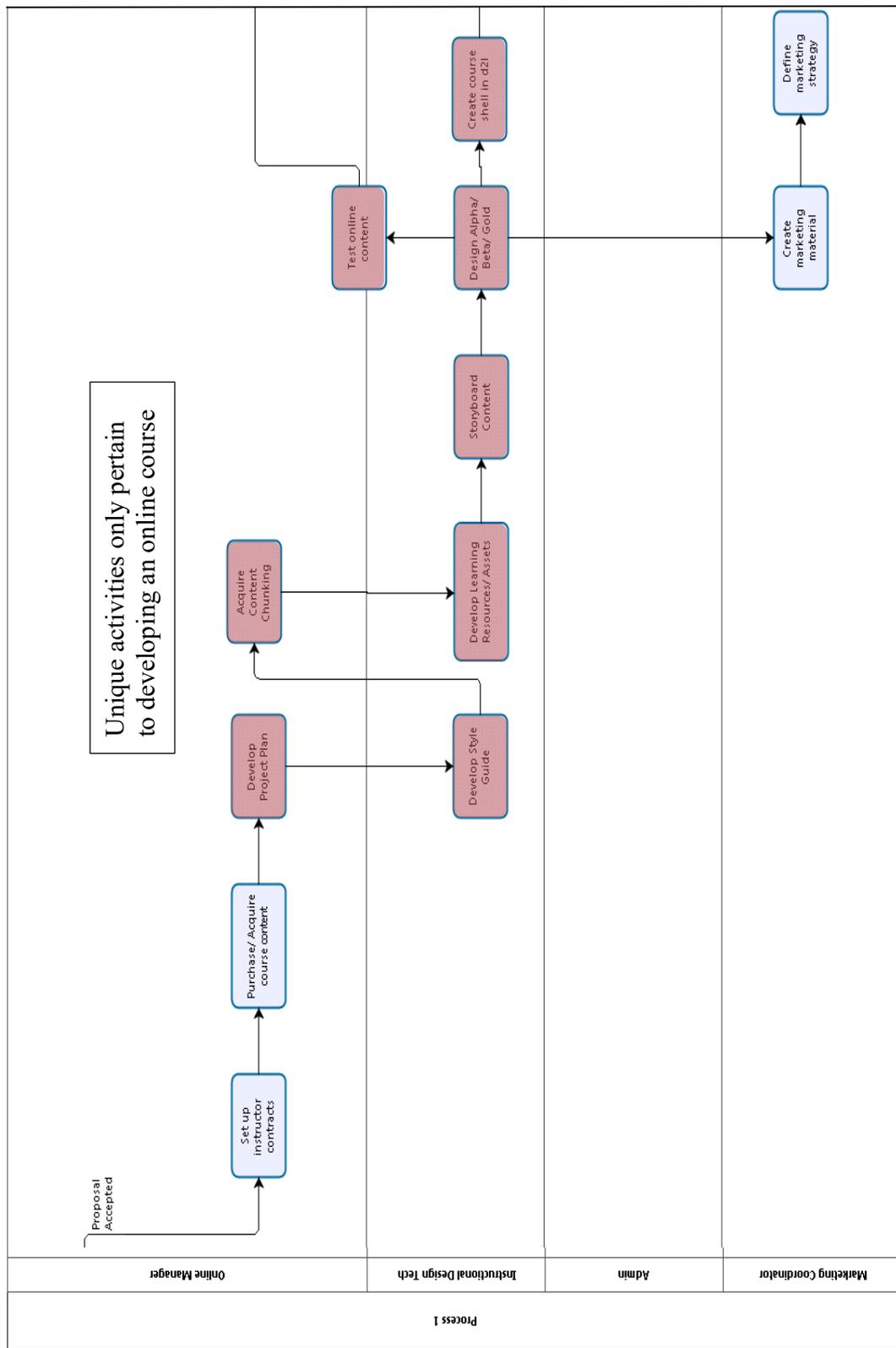


Figure 19 Online As Is Process Part B. Adapted from Online Process Activity Breakdown Table 7.

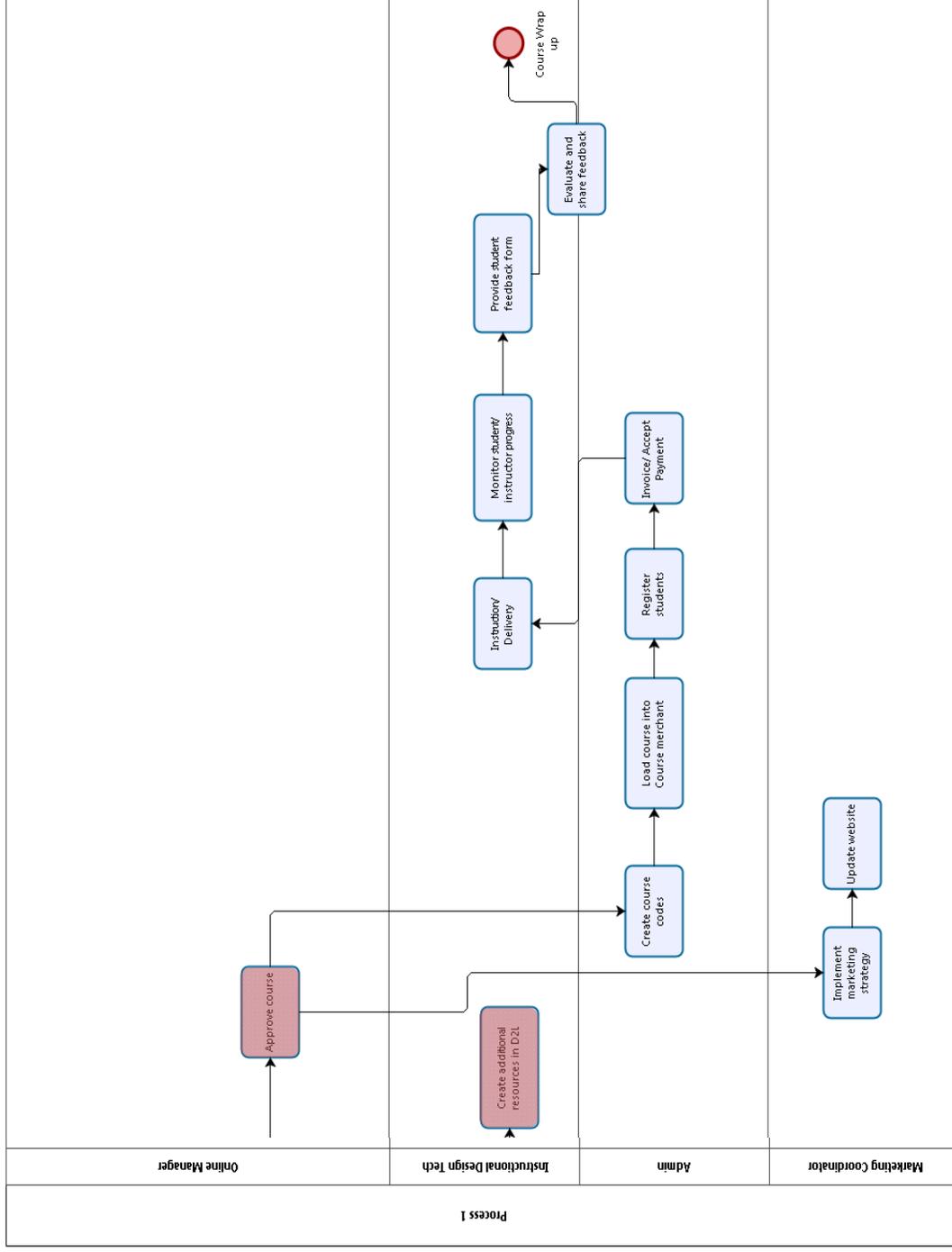


Figure 20. Online As Is Process Part C. Adapted from Online Process Activity Breakdown Table 7.

## Process Analysis

Continuing Studies is a cost-recovery department within the University, meaning they have to generate enough revenue each year to cover their operating costs. The way they generate revenue is through the effective development and delivery of certificate programs/workshops for their students. By reviewing the Bizagi Models for each As-Is process, in addition to the Process Variations table (Table 8), specifically evaluating individual position's workloads, process workflow, and areas for potential bottlenecks, the following inefficiencies were identified:

- The current processes operate independently from each other, resulting in multiple areas of overlap and repetitive tasks.
  - As shown in the Bizagi Models, the majority of the Face-to-Face tasks are duplicates of the tasks completed in the Online Process, such as identifying new course ideas, and market research.
- Work that is traditionally done by a Coordinator for face-to-face products is the responsibility of the Online Manager for online products.
  - As shown in the Bizagi Model, there is no Coordinator for Online.
- Due to the lack of interaction between face-to-face and online products, there are no control mechanisms to identify if there is overlap in market research, instructor identification (suppliers), or target markets (clients). This can cause delays in the development of products, duplication of work, as well as a disconnect between market demand, and products produced.
- The Online Manager is the only dedicated person to manage the development of online products, reducing the Online Manager's opportunity to identify new

strategic initiatives for the departments such as technology trends, strategic partnerships and emerging markets.

- The extensive workload associated with the Online Manager was identified in in both the Bizagi Model and Table 8.

To determine the root causes of the process issues identified in the Bizagi Models, a “5 Why Analysis” was completed, as depicted in Table 9. The primary issues were identified by the CS Manager and Online Manager through an unstructured interview, and the root causes were identified through evaluation of the processes, and further discussions with both Managers. The As-Is Processes as depicted by Bizagi in Figures 15-20 provided a foundation for this analysis.

*Table 9  
5 Why Analysis of Continuing Studies Processes.*

<b>Process</b>	<b>Issue</b>	<b>Why?</b>	<b>Why?</b>	<b>Why?</b>	<b>Why?</b>	<b>Why?</b>
<b>Online Process</b>	Management is doing the work of coordinators	Not enough staff	Not enough workload for new staff	Not enough projects on the go	No Coordinator to initiate projects	No money to support new projects
<b>F2F and Online Process</b>	Missed course development opportunities	Lack of communication between teams	Teams focus on their own medium for delivery	Responsibilities separated based on delivery medium	Processes do not involve one another	Two separate teams
<b>F2F and Online Process</b>	Duplication of work between teams	Each team works separately	Two separate managers and priorities	Lack of holistic business plan	Two different budgets	
<b>F2F and Online Process</b>	No motivation to develop online courses	Coordinators do not see it as part of their job	No benefit to their portfolio for developing online	Online course revenue not realized in their portfolio	Two different budgets	

As presented in Table 9, the F2F and Online Process are facing missed course development opportunities, duplication of work, and reduced motivation. This is primarily due to the fact that the two teams operate as separate entities, which do not share operating budgets and do not have inter-relationships between the processes. In addition, the Online Process has an unequal distribution of the workload, due to the lack of staff, primarily due to the lack of money to support new projects and positions.

### **Process Redesign**

The process redesign focuses on the inefficiencies or challenges that were pointed out in the “5 Why Analysis”. The processes were evaluated using the following heuristics:

- Flow Level - Modifying process through re-sequencing the order of activities, or creating parallelism.
- Task Level - Modifying the process through task elimination and task composition.
- Process Level - Modifying the process through specialization (breaking a process apart), standardization (combining two processes together) or resource optimization (utilizing current staff to complete more work).

Based on the redesign heuristics, process changes were proposed at the Process and Task Level, and are identified in Table 10.

Table 10  
Heuristic Proposed Process Changes

Heuristic	Proposed Change	Reasoning	Potential Benefits
Process Level Process Standardization	Consolidate the Face-2-Face and the Online process into one	Both processes currently replicate multiple activities, that can be more evenly distributed between the workforce	Consolidating the process can result in lower operational costs and increased efficiencies.
Process Level Resource Optimization	The CS Manager becomes responsible for all strategic management activities	Centralize the budget into one department, removing the two team's perspective	A centralized team may increase the development of online products, increasing overall revenue
Process Level Process Specialization	Separate the Course Delivery from the Course Development portion of the current process	Creates the ability to identify financial costs to develop a course, in comparison to the cost to deliver	Identify ROI for course development to support future initiatives
Process Level Resource optimization	Assign tasks that are currently being completed by the Online Manager to the CS coordinators	Free up the time of the Online Manager to manage the online systems, online course development and online delivery	Potential increase in operational efficiencies, reduce the need to hire more employees
Task Level Task Composition	Merge the evaluation of F2F and Online course development throughout every stage	Remove the duplication of work that arises from online and F2F working independently	Create operational efficiencies, potentially increase production without increasing operational staffing

Based on the proposed heuristic changes, the current processes were redesigned into two new processes: Course Delivery and Course Development. The To-Be Process for Course Development was created and is represented in the *Proposed Course Development Process* in Table 11, and in the revised *Course Development Process Map* in Figure 21 and 22. Redesigning the processes to address the development of both online and face-to-face products would enable Continuing Studies to reduce the duplication of work for course planning, market research, course creation and course set up. This would also reduce the

workload for the Online Manager, creating more capacity for the Manager to oversee daily operations and identify new markets for development.

Table 11  
Heuristic Proposed Course Development Process

Core Business Function	Sub-business Function	Key Business Activities	Activity Owner
Course Development	Course Planning	Evaluation of current course offerings	Manager
		Identification of new course ideas	Manager/ Coordinator
	Market Research	Evaluate market opportunity	Coordinator
		Identify competitors	Coordinator
		Determine current market needs	Coordinator
		Identify funding opportunities/partners	Manager/ Coordinator
	Course Creation	Identify instructors/partner institutions	Manager/ Coordinator
		Identify course learning outcomes	Coordinator
		Create course proposal for Online and/or F2F delivery	Coordinator
		Approve/ deny course proposal	Manager
	Content Development	Set up instructor contracts	Online Manager or Coordinator
		Purchase/acquire course content	Online Manager or Coordinator
		Develop project plan	Online Manager
		Develop style guide	Instructional Designer
		Acquire Content Chunking	Online Manager
		Develop learning resources/ assets	Instructional Designer
		Storyboard content	Instructional Designer
		Design alpha/beta/gold	Instructional Designer
		Test online content	Online Manager/ Instructional Designer
		Approve course	Online Manager
	Course set up	Create course codes	Admin
		Create marketing material	Marketing Coordinator
		Load course into booking/course merchant	Admin
		Create Course shell in Learning Management System (D2L)	Instructional Designer
		Create additional learning resources in D2L	Instructional Designer
		Book rooms/catering	Coordinator

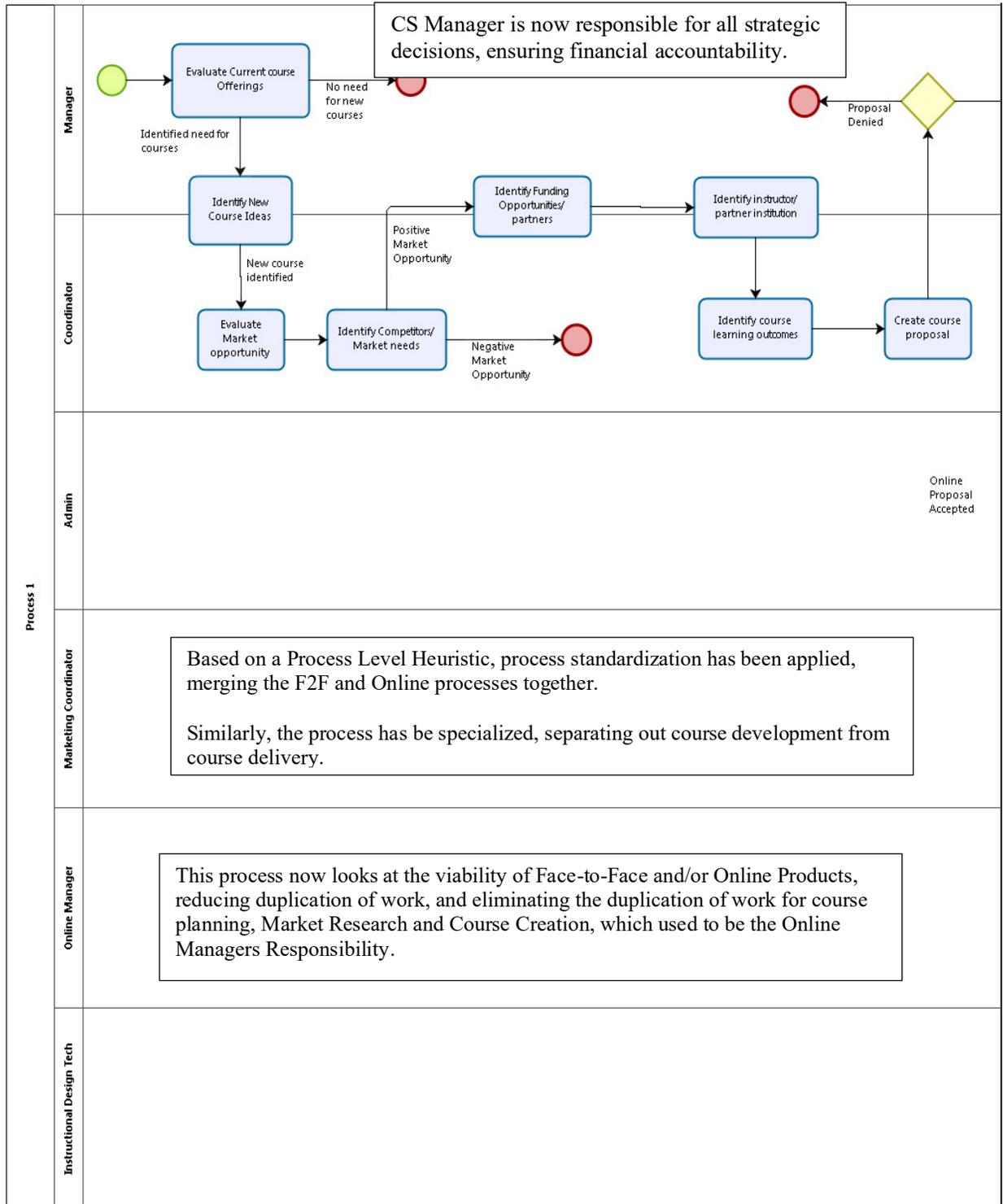


Figure 21. Course Development Proposed Model Part A. Adapted from Heuristic Proposed Course Development Process Table 11.

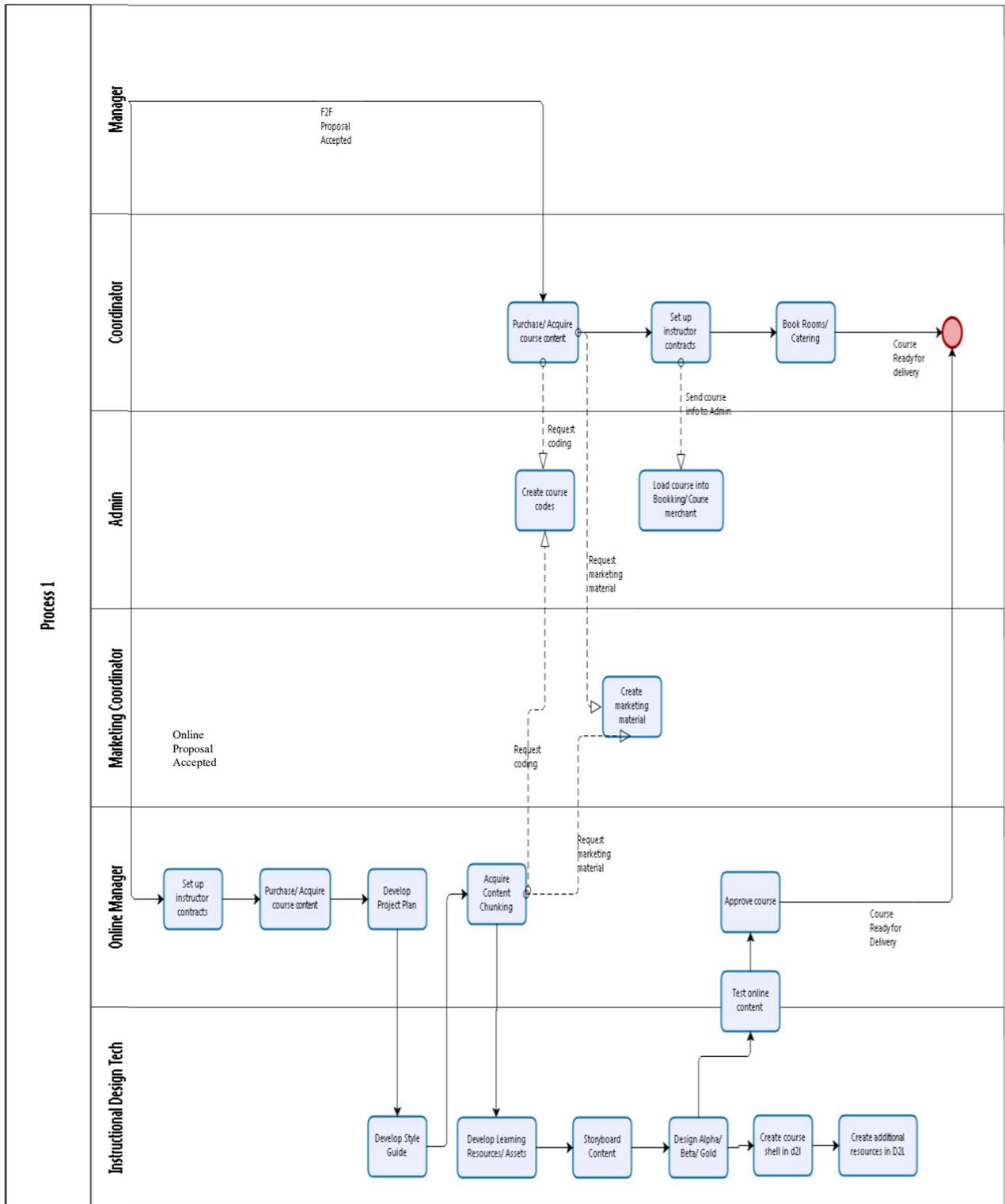


Figure 22. Course Development Proposed Model Part B. Adapted from Heuristic Proposed Course Development Process Table 11.

The To-Be Process for Course Delivery was created and is represented in the *Proposed Course Delivery Process* in Table 12, and in the revised *Course Delivery Process Map* in Figures 23 and 24. Similarly, redesigning the processes to address the delivery of both online and face-to-face products would enable Continuing Studies to utilize their marketing and admin resources more effectively for all of the sub-business functions.

Table 12  
Heuristic Proposed Course Delivery Process.

Core Business Function	Sub-business Function	Key Business Activities	Activity Owner
Course Delivery	Course Recruitment	Define marketing strategy	Marketing Coordinator
		Implement marketing strategy	Marketing Coordinator
		Register students	Admin
		Invoice/ accept payment	Admin
	Course Delivery	Go/ No go decision	Coordinator
		Create/ship course packages	Coordinator/ Admin
		Create/ship instructor packages	Coordinator/ Admin
		Student notifications	Admin
		Classroom set up	Coordinator
		Instruction/delivery	Coordinator or Instructional Designer
		Course wrap up	Coordinator or Instructional Designer
	Monitor and evaluate	Check in on student/instructor progress	Coordinator or Instructional Designer
		Provide student feedback forms	Coordinator or Instructional Designer
		Evaluate and share results of feedback	Coordinator/ Admin

The creation of the two new processes which encompass the needs of both delivery mediums for Continuing Studies could create potential benefits such as:

- Lower operational costs and increased process efficiencies due to the sharing of job responsibilities.

- Increase in online products due to the transfer of course planning, market research and course creation from Online Manager to the Coordinators, increasing overall revenue for the department.
- Increased return on investment from course development through the elimination of duplication of work, and increase in delivery medium options for coordinators.
- Increase in production capacity for new courses, without increasing operational staffing.

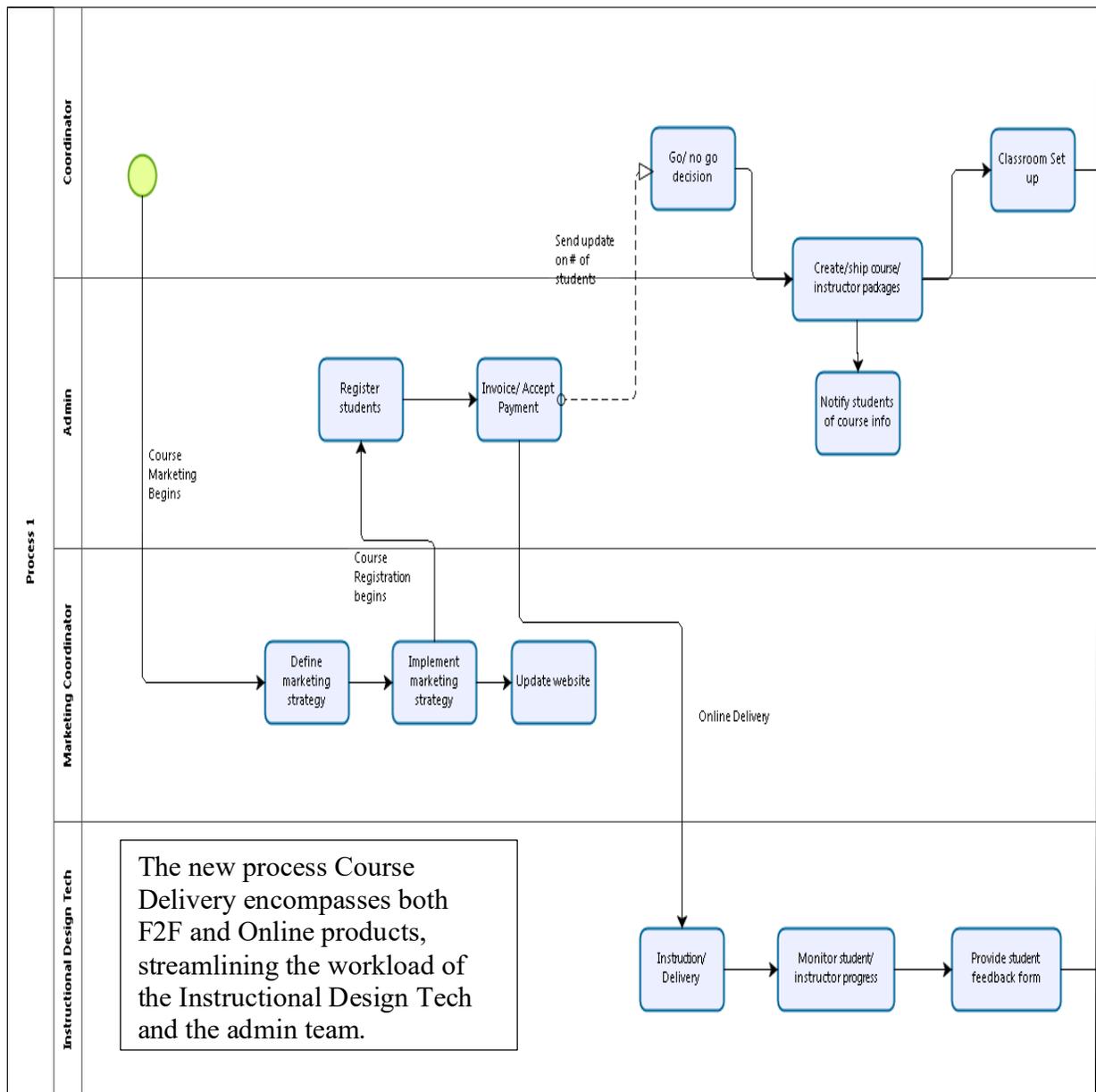


Figure 23 Course Delivery Proposed Model Part A. Adapted from Heuristic Proposed Course Delivery Process Table 12.

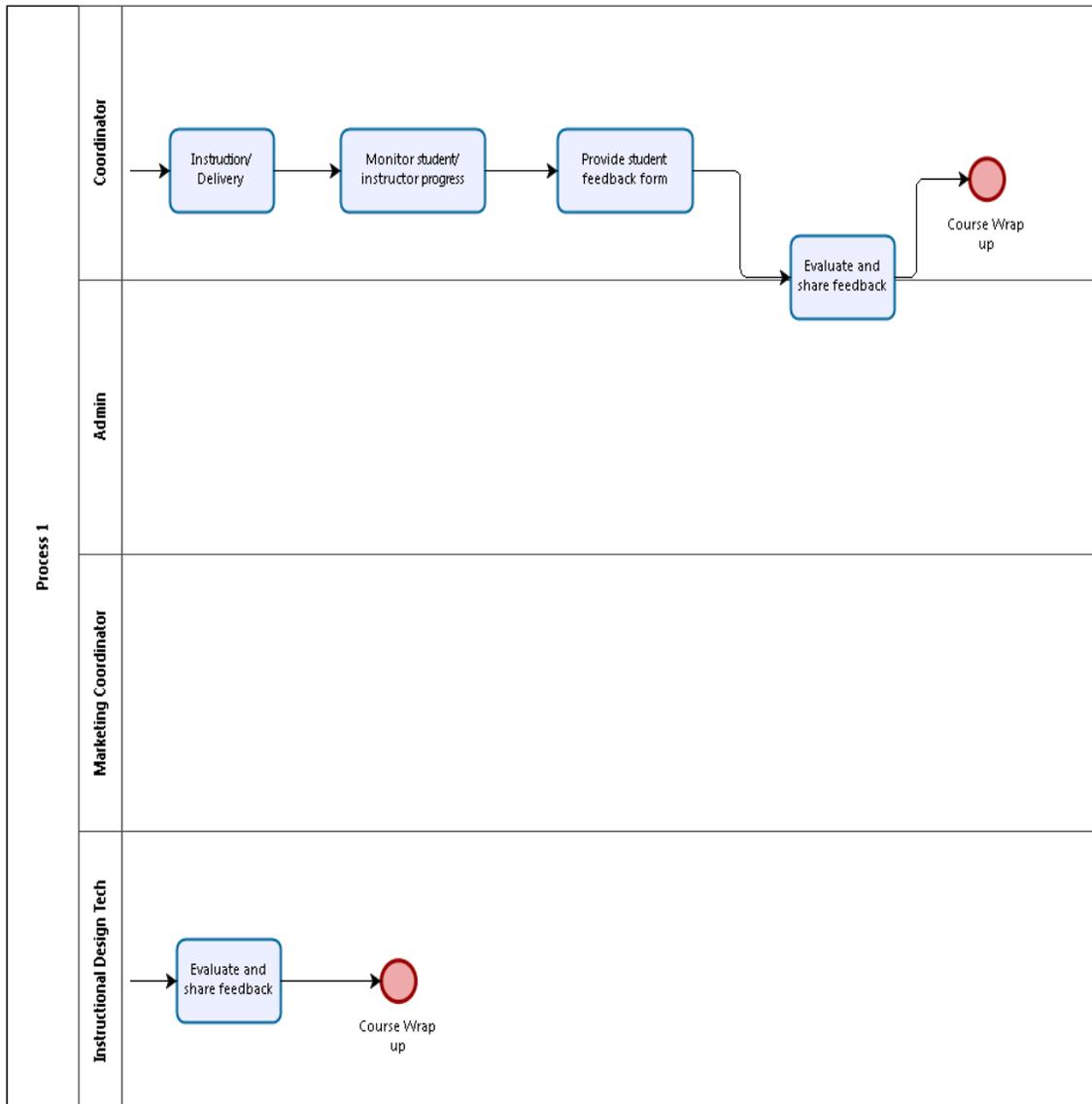


Figure 24. Course Delivery Proposed Model Part B. Adapted from Heuristic Proposed Course Delivery Process Table 12.

## Process Implementation

In general, process implementation consists of two components: organizational change management and process automation. Based on the approved To-Be model, we would begin implementation with organizational change management. This would consist of the following activities:

- Communicating the reasoning and benefits of the changes to the process to all parties involved to the point where they fully understand the rationale.
- Creating and implementing a change management plan so all parties know when and how changes will be put into effect.
- Developing training manuals and activities for all parties regarding the new process and how to complete their tasks and monitor their progress.

Since this case study is being conducted in a controlled environment the process will not be implemented. However, the probability of Continuing Studies successfully implementing these changes will be evaluated based on the organizational characteristics required to successfully implement BPM, as previously mentioned in Chapter 5.

Hammer (2010) observed that in order to effectively implement BPM in an organization, they must have 5 main characteristics: High-performance processes, strong leadership skills, process-based culture, BPM governance, and employees with BPM Expertise. Table 13 depicts the requirements for successful implementation and assess the organizational traits of Continuing Studies.

Table 13  
Organizational Traits for Successful Implementation

Organizational traits for successful implementation	Continuing Studies Organizational Traits
<p><b>High-performing Processes:</b> - process designs, process metrics, process performers, process infrastructures and process owners</p>	<p><b>Entry Level Processes:</b> - High level process designs, few metrics, not all process have process owners <i>Does not meet the minimum requirements to implement BPM.</i></p>
<p><b>Leadership Skills:</b> - cognitive intelligence, spiritual intelligence, emotional intelligence and behavioural skills.</p>	<p><b>CS Leadership:</b> Leadership has changed on a departmental level, as well as on an Institutional level multiple times in the last three years. <i>Does not meet the minimum requirements to implement BPM due to lack of leadership stability.</i></p>
<p><b>Process Based Culture:</b> - horizontal organizational structure, organization wide understanding of BPM, clear process ownership, clear process documentation, specific performance measurement, and continuous inspection of processes</p>	<p><b>Not a Process Based Culture:</b> - vertical organizational structure, limited organization wide understanding of BPM, inconsistent identification of process ownership, average process documentation, recently defined performance measures, inconsistent inspection of processes <i>Does not meet the minimum requirements to implement BPM</i></p>
<p><b>BPM Governance:</b> - clear definitions of the roles and responsibilities for employees across all levels of the organization</p>	<p><b>Continuing Studies Governance:</b> - clear definition of roles and responsibilities across the department <i>Meets the minimum requirements to implement BPM</i></p>
<p><b>BPM Expertise:</b> - Staff that is used to process changes based on performance measures</p>	<p><b>Continuing Studies Expertise:</b> - Staff do not traditional change processes due to performance measures, but modifies processes when inefficiencies are identified <i>Meets the minimum requirements to implement BPM</i></p>

Based on the evaluation of Continuing Studies organizational traits in comparison to the traits needed for successful implementation presented in Table 13, Continuing Studies does not meet the organizational traits required for successful implementation. Specifically, the department needs to create a process-based culture, which focuses on developing processes for all aspects of the department, incorporating metrics and mechanisms to ensure

the success of the process. For the department to successfully transition to a process-based culture, they will need to promote a flat or horizontal organizational structure, that has consistent leadership that is able to motivate organizational change.

### **Monitoring and Control**

If the process changes were to be implemented, they would be evaluated against the predetermined KPI's (Key Performance Indicators) that were selected for evaluation. If the data identified that the process changes were not meeting the targets, or there were major inefficiencies, the processes would then be re-evaluated to identify changes that need to be made. This process would happen regularly throughout the lifecycle of the process, focusing on continuous improvement.

### **Discussion and Implications**

Since this case study was limited to the theoretical application of BPM, in comparison to the full implementation of the theory, it was only able to evaluate the methodology not the implementation for process change proposed by Dumas et al. (2013). Through the application of this methodology, process improvement strategies were proposed based on identified inefficiencies within the department's current processes. A new process which suggested the merging of roles and responsibilities between product offerings was developed, which would potentially increase operational efficiencies. More importantly, this case study identified that even after a "To-Be process" was developed and proposed, the organization must showcase key organizational traits to be able to successfully implement the identified process improvements. In the case of Continuing Studies, there were some key barriers that

the department faced, which could potentially inhibit their ability to implement the process changes without first identifying their organizational traits. Overall this study identified that the current methodology requires a large amount of time and effort to be utilized to identify process improvement strategies, prior to the evaluation of the organizational structure or readiness. This can result in a proposed process not being implemented until the organization's culture and structure is supportive of the changes.

## **Conclusions**

The aim of this case study was to identify whether or not the same BPM methodology followed by Haddad et al. (2016) can be successfully replicated within a University environment. Based on the study's results, it was identified that the identification, discover, analysis and redesign steps of the methodology proposed by Dumas et al. (2013) were successfully completed, however the process implementation phase was unable to be completed due to the following organizational characteristics of Continuing Studies:

- **Entry Level Process Structure:** High level process designs that do not encompass full department processes and consists of very few metrics for evaluation.
- **Leadership Instability:** Constant leadership changes in the last 3 years do not support any major departmental changes at this point.
- **Organizational Structure:** The University supports a vertical organizational structure, which is not conducive to process changes, specifically BPM.

The second objective of the study was to assess the structure of the BPM methodology proposed by Dumas et al. (2013) and identify if there are any changes to the methodology that can be made. Based on the identification that not all process improvement suggestions can be implemented based on the organizational characteristics, it is our suggestion that the model be adapted to include organizational fit evaluation as the first step prior to beginning the process improvement methodology. Organizational fit would be evaluated based on Hammer's (2010) identification of the organizational traits needed to successfully implement BPM. A modified diagram of the process improvement methodology is detailed in Figure 25. Further research should be conducted to determine if evaluating an organization's fit prior to beginning the process identification phase would reduce the amount of work and increase the overall success rate of BPM implementation.

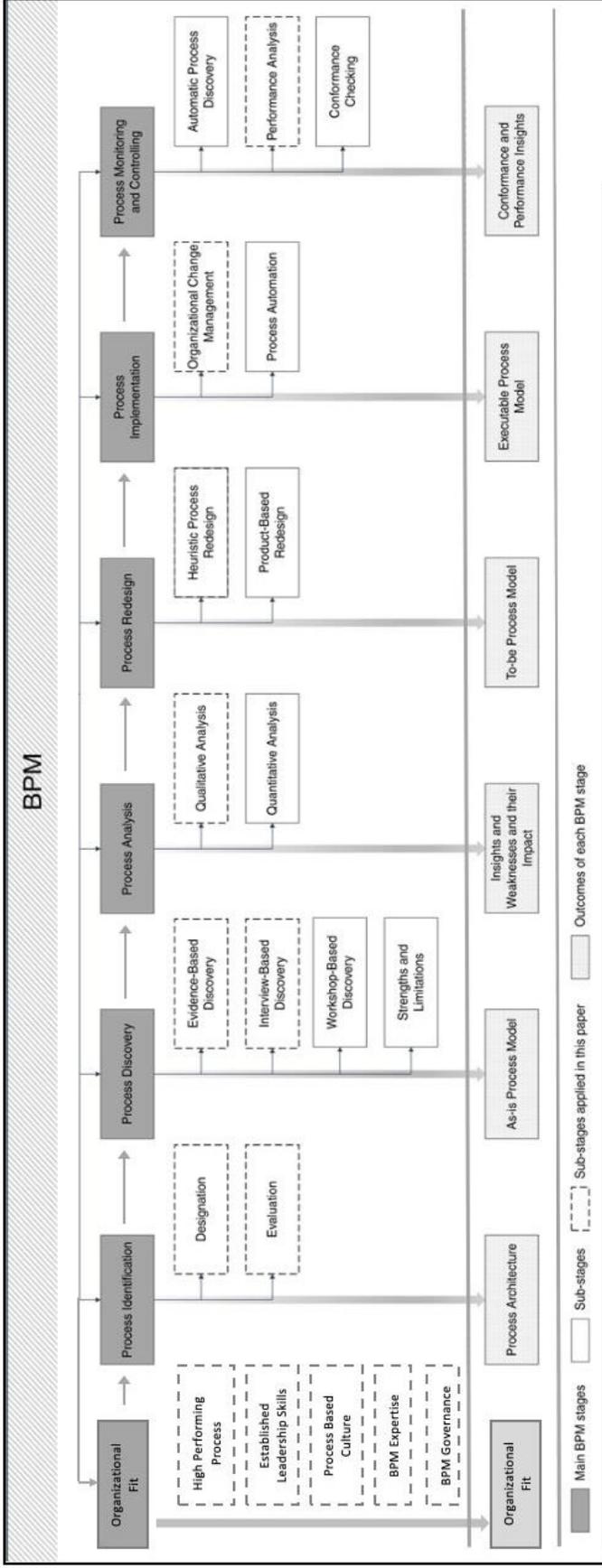


Figure 25. BPM Phases Model Including Organizational Fit. Adapted from Haddad et al. 2016

## SECTION 3: GENERAL DISCUSSION

### Section 3 Aims

- **Summarize significant findings from research presented in this paper**
- **Discuss implications of the research**
- **Discuss limitations of the research and possible future research.**

Section 3 compiles the findings from the literature reviews as well as the case study presented in this thesis, with the objective of understanding the results attained and identifying any inconsistencies. This section will first summarize the significant findings that were identified in the literature review and the case study, specifically in relation to the three research objectives:

- To explore the conceptual framework of BPM in relation to other process improvement strategies.
- To explore and identify the current methodologies for applying BPM.
- To evaluate the application of BPM in a case study to determine the effectiveness of the BPM methodology.

This section will then discuss the significant implications of the research presented. Lastly, this section will discuss the limitations of the research conducted, and propose possible future research.

## CHAPTER 8

### GENERAL DISCUSSIONS

The general discussion is divided into three sections: summary of significant findings, implications of research, limitations of the research and possible future directions.

#### **Summary of Significant Findings**

In the last 20 years, research pertaining to the conceptual framework and application of BPM has been limited. The majority of research has focused on the technical field of BPM, such as Business Process Modeling or Business Process Management Systems. Based on this research gap, this thesis set out to address the following research objectives:

1. To explore the conceptual framework of Business Process Management (BPM) in relation to other process improvement strategies.
2. To explore and identify the current methodologies for applying BPM.
3. To evaluate the application of BPM in a case study to determine the effectiveness of the BPM methodology.

**Objective 1: To explore the conceptual framework of BPM in relation to other process improvement strategies.**

Prior to this research there was no clear evaluation of the potential evolution of BPM, nor was there research specifically addressing the potential relationship between prior process improvement strategies such as TQM, BPI and BPR. Therefore it was unclear if BPM was a topic that evolved from prior process improvement strategies, or if it was a new idea.

Upon reviewing the fundamental characteristics and objectives of the four concepts reviewed (BPM, BPR, BPI and TQM), the similarities of these concepts became obvious. As noted in Table 14, the research presented in this thesis identified that the fundamental characteristics of BPM stemmed from the fundamental characteristics of BPI, BPR and TQM. An important note is that all five characteristics for BPM have been adopted from at least one of the prior process improvement concepts, with the highest association being with BPI and TQM.

Table 14  
Comparison of Fundamental Characteristics of BPM, BPR, BPI and TQM

Fundamental Characteristics	BPM	BPR	BPI	TQM
	Employee Engagement	Focused on Customers' needs	Employee Engagement	Employee Engagement
	Cross-Functional Organizational Structure	Cross-Functional structure	Process evaluation in relation to whole organization	Analysis of Internal Requirements and External Environment
	Systematic Process Review	End-to-end process review	Systematic Process Review	Process Focused
	Performance Measurements	Redesign core processes	Performance Measurements	Performance Measurements
	Continuous Improvement	Improve operational processes	One-Time Improvement	Continuous Improvement

Note: Data for Fundamental Characteristics for BPM from DeToro & McCabe (1997), Zairi (1997), and Lee & Dale (1998), for BPR from Hammer & Champy (1993), for BPI from Davenport (1993) and Grove & Kettinger (1998) and for TQM from Chou & Owen (1989) and Zairi (1997).

Similarly, when reviewing the fundamental objectives of each of the four process improvement concepts, similarities and trends were identified. As noted in Table 15, of the five fundamental objectives of BPM, four of them were similar to at least one of the other process improvement strategies, with the highest association being with BPI. These include: greater process efficiency, shorter turn-around time, cost savings, and higher customer and team satisfaction.

Table 15  
Comparison of Fundamental Objectives of BPM, BPR, BPI and TQM

Fundamental Objectives	BPM	BPR	BPI	TQM
	Greater process efficiency	Faster processing times	Faster Processing times	Shortened process cycle time
	Shorter turn-around time	Increased productivity	Increased productivity/ speed of service	Increased flexibility
	Cost savings	Reduced costs	Reduced operating costs	Lower costs
	Organizational transparency	End-to-end process redesign	Faster customer responsiveness	Faster customer responsiveness
	Higher customer and team satisfaction	Removal of process waste	Higher customer satisfaction	Waste reduction

Note: Data for Fundamental Objectives of BPM from Zairi (1997), for BPR from Childe & Bennet (1994), for BPI from Tannock (2013) and for TQM from Becker (1993)

Consequently, as shown in Table 16, when comparing the shortcomings of each process improvement concept, it appears that BPM has overcome the primary shortcomings of the prior process improvement concepts, however faces its own issue in regards to successful implementation.

Table 16  
Concept Shortcomings for BPM, BPR, BPI and TQM

Concept Shortcomings	BPM	BPR	BPI	TQM
	Difficult to implement often due to organizational culture	Does not address continuous improvement	Does not evaluate overall organizational quality	Lack of definition/ modeling of a process
		Does not account for external factors	Limited scope	Does not address organizational culture/ structure, or process ownership
Focuses too much on the complete process redesign		Only does one-time process improvement	Lack of process improvement strategy	

Note: Data for Concept Shortcomings for BPM from Hung (2006), for BPR from Hammer & Champy (1993), for BPI from Davenport (1993) and Grove & Kettinger (1998), and for TQM from Dooley & Mahmoodi (1996) Knights & McCabe (1999) and Zairi (1997).

**Objective 2: To explore and identify the current methodologies for applying BPM.**

Chapter 4 researched whether or not BPM follows a standard methodology or lifecycle to ensure the proper execution of process improvement. The research identified six main studies that evaluated the BPM methodology: Elzinga et al. (1995), Netjes et al. (2006), zur Muehlen & Ting-yi Ho (2006), Kannengiesser (2008), Houy et al. (2010) and Dumas et al. (2013). A summary of these methodologies is represented in Table 17.

*Table 17  
Comparison of Lifecycles from Various Researchers*

Elzinga et al. (1995)	Netjes et al. (2006)	zur Muehlen & Ting-Yi Ho (2006)	Kannengiesser (2008)	Houy et al. (2010)	Dumas et al. (2013)
Process Selection	Design	Goal Specification/ Environmental Analysis	Formulation	Strategy Development	Process Identification
Process Description	Configuration	Process Design	Synthesis	Definition/ Modeling of Process	Process Discovery
Process Quantification	Execution	Process Implementation	Analysis	Implementation of Processes	Process Analysis
Process Improvement	Control	Process Enactment	Evaluation	Execution of Processes	Process Redesign
Process Implementation	Diagnosis	Process Monitoring	Documentation	Monitoring/ Controlling of Process Execution	Process Implementation
		Process Evaluation	Reformulation	Optimization/ Continuous Improvement of Processes	Process Monitoring and Controlling

*Note: Data from Elzinga et al. (1995) and Netjes, Reijers, & van der Aalst (2006) and zur Muehlen & Ting-Yi Hu (2006) and Kannengiesser (2008) and Houy et al. (2010) and Dumas et al. (2013).*

In 1995, Elzinga et al. (1995) suggested that the order of activities for BPM consists of process selection, process description, process quantification (classifying a process through numerical scale), process improvement and process implementation. In 2006, Netjes et al.

(2006) argued that BPM systems, which are the technological applications of BPM, followed a set lifecycle, specifically that there are 5 stages: design, configuration, execution, control and diagnosis. In 2006, zur Muehlen & Ting-Yi Ho, (2006) also proposed a new methodology which consisted of 6 main traits: goal specification and environmental analysis, process design, process implementation, process enactment, process monitoring, and process evaluation. In 2008, Kannengiesser (2008) suggested that BPM must utilize 2 strategies which would run asynchronously: Concept design, and Realisation Design. Each design addressed 6 main features in a BPM lifecycle: formulation, synthesis, analysis, evaluation, documentation and reformulation. In 2010, a study conducted by Houy et al. (2010) proposed six activities for BPM: strategy development, definition/modeling of a process, implementation of process, monitoring and controlling of process execution, and optimization/ continuous improvement of processes. These activities were then evaluated by Loos et al. (2010), and a detailed structure for BPM was outlined that could be applied in any field, and is easily replicable. The most recent methodology reviewed was from Dumas et al. (2013), where they simplified the Houy et al. (2010) model and proposed 6 activities which were more process focused including: process identification, process discovery, process analysis, process redesign, process implementation, process monitoring and controlling.

When researching the methodologies, it was noted that an organization must have specific organizational characteristics to be successful during the implementation phase, thus Chapter 5 researched the organizational characteristics required to successfully implement BPM. This chapter identified Hammer's (2010) observation that an organization must have 5 main characteristics to successfully implement BPM: High-performance processes, strong

leadership skills, a process-oriented culture, a BPM governance, and employees with BPM Expertise. Based on the research, an organizational profile can be created that could be used to evaluate if an organization could support BPM applications. This profile would include the following organizational characteristics:

- **High-performing Processes** – Organizational processes consisting of: process designs, process metrics, process performers, process infrastructures and process owners.
- **Leadership Skills** – Organizational leadership demonstrates cognitive intelligence, spiritual intelligence, emotional intelligence and behavioural skills.
- **Process Based Culture** – Organizational culture consists of the following characteristics: flat or horizontal organizational structure, an organization wide understanding of BPM, clear process ownership and documentation, specific performance measurement, and continuous inspection and improvement of processes.
- **BPM Governance** – Clear definitions of the roles and responsibilities for employees across all levels of the organization.
- **BPM Expertise** – Staff that understand BPM, and the use of BPM to facilitate process changes based on performance measures.

**Objective 3: To evaluate the application of BPM in a case study to determine the effectiveness of the BPM methodology.**

Chapter 7 utilized the BPM methodology proposed by Dumas et al. (2013) to evaluate the processes in a Continuing Studies environment within a Post-Secondary Institution. This

case study was limited to the theoretical application of BPM, as the full implementation of the strategy could not be undertaken as part of this thesis. The utilization of this BPM methodology resulted in the creation of a series of charts and process maps, including:

- **Process Architecture:** During the process identification phase a process architecture was created defining the organizations core business functions, sub-business functions, product types, and which sub-functions were completed for each product type. Within the process architecture two primary processes were identified that were currently being practiced: F2F Process (including course development and delivery) and Online Course Process (including course development and delivery).
- **As-Is Process Tasks and Process Maps:** During the process discovery phase, the two primary processes identified in the Process Architecture were evaluated to develop the As-Is Process. This including identifying the process tasks (core business function, sub-business function, key business activities and activity owner) and the process map (a flow chart identifying activity owners and tasks in relation to one another).
- **5 Why Analysis:** In the process analysis stage, a “5 Why Analysis” was conducted, identifying potential faults on the current processes. This resulted in the identification that both processes are missing course development opportunities, are duplicating work, and there is reduced employee motivation. The founding cause for this was identified that the processes are separate from each other, thus do not share operating budgets, and do not have inter-relationships between the processes. The second thing the analysis determined

was the Online process had an unequal distribution of the workload due to a lack of staff, and lack of funding for new staff.

- **Heuristic Redesign Proposed Changes and To-Be Process:** During the process redesign phase, the information gathered in the “5 Why Analysis” was utilized to conduct a Heuristic evaluation, looking at the flow level, task level, and process level of the As-Is process. This resulted in 5 proposed Heuristic changes including:
  - Process Standardization and Specialization: Consolidating the Face-to-Face Process into one, while separating the Course Delivery and the Course Development Core Business Functions into separate processes.
  - Resource Optimization: Centralizing strategic management activities under one Manager, the CS Manager, to free up the Online Managers time.
  - Resource Optimization: Assign duplicate tasks to Coordinators, freeing up the Online Managers time.
  - Task Composition: Merge the evaluation of Face-to-Face and Online course development to reduce duplication of work.

Based on these proposed changes, two To-Be Process were proposed: Course Development and Course Delivery.

- **Evaluation of Organizational Traits:** Since this thesis did not include the actual implementation of the To-Be Processes, an evaluation of Hammer’s (2010) organizational traits for successful implementation of BPM were compared with Continuing Studies. This included the evaluation of 5 key areas:

High Performing Processes, Leadership Skills, Process Based Culture, BPM Governance, and BPM Expertise. It was identified in this phase that Continuing Studies did not meet the suggested organizational traits for successful implementation, thus, they may have difficulty successfully implementing the proposed changes.

### **Implications of the Research**

The main objective of this study was to explore the conceptual framework of BPM and determine the effectiveness of its methodology. This was done through the evaluation of BPM in relation to other process improvement strategies, the exploration of existing BPM methodologies, and the theoretical implementation of one of those BPM methodologies.

Subsequently, there were multiple implications resulting from this research, including the identification that the fundamental characteristics and objectives of BPM, BPR, BPI and TQM are similar in nature. This suggests that the theory of BPM may have been a continuous improvement of prior process improvement strategies. It is also important to note that this research summarised that each of the process improvement strategies have their own unique shortcomings. BPM appears to have addressed the majority of the prior process improvement strategies shortcomings, however still faces difficulty with implementation.

Secondly, based on the research conducted, an assumption can be made that there is no current standard methodology utilized by BPM practitioners. In the last 25 years, there have been 6 major BPM methodologies that have been suggested, each with their own unique

structure, design and faults. The most recent peer-reviewed methodology proposed by Dumas et al. (2013) has not been accepted as the standard methodology for BPM. Since there is no standard methodology, research into the effectiveness of implementing BPM can be skewed due to the lack of comparable data.

A third implication from this study is derived from the theoretical implementation of the BPM methodology proposed by Dumas et al. (2013). Upon conducting a case study utilizing the steps suggested in the BPM methodology, it was identified that the To-Be processes developed would potentially not be successfully implemented due to the organizational culture not aligning with the suggested organizational traits and culture needed for successful implementation. This information was found during the fifth stage of the BPM methodology, after considerable work and time was committed to identify current processes, analyzing these processes and redesigning them. If the organizations culture and organizational traits were evaluated prior to identifying the current processes, it is possible it would have been identified that this organization was not a proper fit for BPM in its current state. It is the recommendation of this thesis the the Dumas et al. (2013) methodology be amended to evaluate organizational fit, specifically Hammer's (2010) organizational traits needed for successful implementation, prior to beginning the BPM methodology

### **Limitations of the Research and Future Research**

The primary limitation of this research is the incomplete execution of the full BPM methodology, due to the limitations regarding implementing the proposed process changes within the department. This led to the evaluation of the Continuing Studies organizational

traits in comparison to the traits required for successful BPM implementation. If the proposed To-Be processes were to be implemented within the department, and subsequently monitored, more information regarding the successful or unsuccessful implementation of the process could be gathered. Due to the scope of this thesis, and the inability to implement new processes within the case study, a full execution of the BPM methodology was not achievable. However, further research into what an actual implementation would have looked like would provide a broader perspective on the successfulness of BPM.

An additional limitation of this research includes the lack of previous studies evaluating the implementation of BPM, specifically in a not for profit organization. Current research focuses on the systems level (IT) implementation of BPM, whereas this thesis focused on the conceptual framework and methodologies for applying BPM from an organizational perspective in comparison to a systems perspective such as Business Process Management System (BPMS). Additional case studies were not available at this time, however as the field of BPM becomes more widely researched, additional resources may become available for future studies. Although this is a limitation to the study, it also reinforces that this study has contributed to the field by providing a case study that can be used for future research activities.

Based on the implications of this study, future research could be conducted in the following areas:

- Evaluation of the evolution of BPM based on the shortcomings of prior process improvement strategies.

- Evaluation of the organizational traits successful for implementing prior process improvement strategies in comparison with those needed to implement BPM.
- Evaluation of the Dumas et al. (2013) BPM methodology, with potential changes to when an organizations culture and structure is assessed.
- A full implementation of the Dumas et al. (2013) BPM methodology to identify effectiveness of implementation and monitoring.

In conclusion, this research identified that there is a relationship between BPM, and prior process improvement strategies BPR, BPI and TQM. It identified that BPM is still evolving as a concept, and that there is no current standardized methodology for implementing BPM. Lastly, the research suggests that the most recently accepted methodology for BPM may still have areas for improvement, specifically the adaptation of the model to include the evaluation of organizational fit, specifically the organizational culture and characteristics, prior to engaging in the process identification phase. Overall this thesis advances our understanding of the conceptual framework for BPM and its potential applications within a not-for profit environment.

## **Appendix A - Unstructured Interview Topics**

To gather information required for this thesis, a series of unstructured interviews were conducted with the managers. These discussions covered the following topics:

- What are the core business functions in Continuing Studies (CS)?
  - What are the sub functions and key business activities, who is responsible for these activities?
- What are your primary products or offerings?
- Which processes do you have documented?
- What are the current issues you are facing?
- Why might you be facing these issues?
- What changes would you like to see?
- What are your metrics for monitoring processes?
- What is the current leadership situation?
- What type of organizational culture does your department and organization have?
- What is the governance structure in CS?
- What level of expertise does your team have in BPM?

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