**Abstract**

The research discusses the Robotic Process Automation (RPA) implementation in banking sector of South Asian countries such as India and Pakistan. It evaluates the how Robotic Process Automation (RPA) creates new employment opportunities and terminates the existing traditional employment opportunities in banking sector of South Asian countries. Business process automation can be achieved through Robotic Process Automation (RPA). That means in modern business world most of the business organizations are expecting to automate the business process and reduce the human resource environment to execute the business practices in order to reduce the human resource hiring cost and ensure the operation process efficiency as well. The research discuss how banking sector use Robotic Process Automation (RPA) in order to enhance the operational process efficiency and effectiveness. It is essential to consider the implications of external environmental factors such as changes in technological environment and implications from social environmental factors in plan in the Robotic Process Automation (RPA) related initiatives within the organization. Robotic process automation involves with providing the business intelligence reports to take the business decisions. Business intelligence data is considered as an asset to banking industry due to service and product development process of banks is based on the business intelligence data on customers’ behaviors and transaction pattern. Based on that bank can understand the problems and issues of people and provide the solutions for those issues and problems to develop optimum product and service portfolio.

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# 01. Introduction

## Rationale

In modern business world, most of the bankers use Robotic Process Automation (RPA) to enhance the business process efficiency and effectiveness. It is considered the banking sector to evaluate the relationship between Robotic Process Automation (RPA) and employment opportunities (Aguirre S, 2017). With respect to the implementation of Robotic Process Automation (RPA), internal control framework of the organizations has been automated and strategic decision making process has become more comprehensive. The research discusses how development and expansion in Robotic Process Automation (RPA) involves with creating employment opportunities to job market of banking sectors and strategically approaches which can be utilized to change the human resource management strategies of banks in order to match the human resource management practices based on the requirements from Robotic Process Automation (RPA) initiatives (Aguirre S, 2017).

## Scope

The research discusses the Robotic Process Automation (RPA) implementation in banking sector of South Asian countries such as India and Pakistan. It evaluates the how Robotic Process Automation (RPA) creates new employment opportunities and terminates the existing traditional employment opportunities in banking sector of South Asian countries (AutomationEdge, 2019). Robotic Process Automation (RPA) is a technology which can be used to automate the business processes in terms of application interpretations, transaction processing, data mining, email automation etc. (Ayehu, 2015). Operational efficiency and effectiveness of business organizations have been increased with respect to the utilization of Robotic Process Automation (RPA) related applications. In addition to that most of the business organizations are moving to automated internal control practices from manual internal control practices (John Wiley & Sons, 2018). With respect to the increase of market demand for Robotic Process Automation (RPA) applications, new employment opportunities have been created for Robotic Process Automation (RPA) and it has become more competitive (Hofmann et al, 2019).

## 1.3 Research problem

The research focuses on two aspects such as creating new employment opportunities and Robotic Process Automation (RPA) implementations in banking sector. It involves with identifying the new employment opportunities which are creating due to the expansion of Robotic Process Automation (RPA) and how business organization should plan and execute the human resource management processes to capture and acquire right employees at right time to fulfill the employment requirements relating to Robotic Process Automation (RPA) (AutomationEdge, 2019). In addition to that it evaluates the financial and non-financial benefits for Robotic Process Automation (RPA) related employment opportunities and how organization culture and working environment should be changed to compatible for Robotic Process Automation (RPA) related employees (Business Insider, 2020). In Sri Lanka there is no proper process to practice Robotic Process Automation (RPA) for banking sector operations. This research evaluates how Robotic Process Automation (RPA) creates new employment opportunities in banking sector in Sri Lanka and impact to the existing employments due to Robotic Process Automation (RPA) implementation (AutomationEdge, 2019).

## 1.4 Aims and objectives

Research aims and objectives are determined with the expectation of identifying the nature and types of new employment opportunities create with respect to the development of Robotic Process Automation (RPA), evaluate the positive and negative implications of Robotic Process Automation (RPA) implementation and implications towards human resource management strategies due to the expansion Robotic Process Automation (RPA) within the business organizations.

The aims and objectives of the research are;

* Evaluate the relationship between Robotic Process Automation (RPA) employment opportunities
* Evaluate Robotic Process Automation (RPA) initiatives introduced in banking sector.
* Evaluate how Robotic Process Automation (RPA) impact on employee declaring and new opportunities.
* Critically evaluate relationship between Robotic Process Automation (RPA) declaring and new opportunities in banking sector.
* Identify the negative implications of Robotic Process Automation (RPA).

## 1.5 Research questions

The questions of the research are;

* What is the relationship between Robotic Process Automation (RPA) employment opportunities
* What is the Robotic Process Automation (RPA) initiatives introduced in banking sector?
* What is Robotic Process Automation (RPA) impact on employee declaring and new opportunities?
* What is the relationship between Robotic Process Automation (RPA) declaring and new opportunities in banking sector?
* What are the negative implications of Robotic Process Automation (RPA).

## 1.6 Theoretical underpinning

**What is Robotic Process Automation (RPA)?**

Robotic Process Automation (RPA) involves with automating the tasks of human in order to ensure the operation process efficiency (S Anagnoste, 2018). In modern business world, most of the business organizations are moving to Robotic Process Automation (RPA) to ensure the operation process completeness and reduce the human intervention to the business processes.

**How Robotic Process Automation (RPA) uses in banking sector**

In banking sector, Robotic Process Automation (RPA) uses in order to extract the customers’ data on business intelligence to take the appropriate business decisions considering the data from Robotic Process Automation (RPA) (S Anagnoste, 2018). Further banking transactions have been automated to reduce the customers’ waiting time and ensure the security of the banking transactions.

**New employment opportunities due to development of Process Automation (RPA)**

Job market demand for software development industrial people has been increased due to popularity of Robotic Process Automation (RPA) among the business organizations. Robotic Process Automation (RPA) has created new employment opportunities for Information Computer Technology (ICT) sector (Somayya et al, 2019). The main employment opportunities are program developer, project manager, business analyst, solution architect, consultant etc. (S Anagnoste, 2018) Program developer main involves with developing and UI/UX designing functions and project manager role is critical to perform intermediary role between client and developing team (Ben et al¸ 2018). Business analysts evaluate the financial attractiveness and resource capabilities of the project. Other employment opportunities are related to support services such system penetration audit, cyber security and risk management etc. (Reddy et al, 2019).

**Importance of Robotic Process Automation (RPA) to banking sector**

Robotic Process Automation (RPA) creates advantages to banking sector business organizations to understand the behaviors and expectations of the customers (Somayya et al, 2019). In addition to that it provides the business intelligence data to develop the optimum product and service portfolio to attract the customers and ensure the customer satisfaction by fulfilling unsatisfied customers’ requirements (Somayya et al, 2019). In addition to that bankers use Robotic Process Automation (RPA) to reduce the human involvement to the operational activities to avoid the risk of human errors and enhance the efficiency of the operational practices (Somayya et al, 2019).

**Negative implications of Robotic Process Automation (RPA) to business organizations**

The main problem of Robotic Process Automation (RPA) is risk of cyber security. That means data which are generated from Robotic Process Automation (RPA) process are stored in cloud servers (S Anagnoste, 2018). Due to the massive development of information technology industry, it will create the risk of unauthorized access to the data of Robotic Process Automation (RPA). In addition to that Robotic Process Automation (RPA) involves with reducing the human involvement and it will cause to increase the unemployment for other occupations (S Anagnoste, 2018).

## 1.7 Methods of analysis

The research is conducted as a systematic review. It is used secondary research data to gather sufficient and appropriate research data. The main secondary research data source is high quality journals and articles. In selecting the journals and articles, it is expected to review and evaluate the reliability of secondary research data gathering sources. Journals and articles are selected to evaluate the significance of using Robotic Process Automation (RPA) to business organizations and impacts to human resource management strategies due to the implementation of Robotic Process Automation (RPA) related practices within the organization (Moira & Brid, 2017). In addition to that it is evaluate the job market behaviors and implications over Robotic Process Automation (RPA) related employment opportunities such as types of jobs, compensation scales, market demand, working hours, performance evaluation etc. It is given more priority to qualitative research data to arrive research conclusion and recommendations over relationship between Robotic Process Automation (RPA) and employment opportunities in job market (Kevin et al, 2018). The research is conducted based on the interpretations of systematic review due to, systematic review approach ensures the transparency of conclusion generating approaches and it reduces the risks of bias (Moira & Brid, 2017). In this research, thematic analysis is used to evaluate the qualitative research data. It is usually applied to a set of texts, such as interview transcripts. The researcher closely examines the data to identify common themes, topics, ideas and patterns of meaning that come up repeatedly (Moira & Brid, 2017).

## 1.8 Outline

The research evaluates the importance of Robotics process automation to banking sector in different perspective (S Anagnoste, 2018). The main goal of Robotics process automation process is to replace repetitive and boring clerical task performed by humans, with a virtual workforce. RPA does not require the development of code, nor does it require direct access to the code or database of the applications. Research outlines are as follows;

* Understand the recent expansions and developments of Robotic Process Automation (RPA) related job market.
* Understand the factors which impact to create the new employment opportunities in Robotic Process Automation (RPA) related job market.
* Evaluate the changes to traditional human resource management strategies and update the strategic human resource management strategies to acquire Robotic Process Automation (RPA) related employees.
* Determine the financial and non-financial benefits for Robotic Process Automation (RPA) related employment opportunities.
* Identify the types of new employment opportunities which are created due to the expansion of Robotic Process Automation (RPA).

# 02. Literature review

## What is Robotic Process Automation (RPA)?

Robotic Process Automation (RPA) is used by most of the business organizations in order to enhance the business process efficiency and effectiveness. Result of implement in Robotic Process Automation (RPA)within the organization it will produce the human resource environment to execute the business processes and function and it will reduce the risk of occurring human errors and mistakes during the business operation process. In addition to that Robotic Process Automation (RPA) has been integrated to ICT controls in order to automate the business practices within the organization by reducing the manual business processes (Aguirre S, 2017).

Business process automation can be achieved through Robotic Process Automation (RPA). That means in modern business world most of the business organizations are expecting to automate the business process and reduce the human resource environment to execute the business practices in order to reduce the human resource hiring cost and ensure the operation process efficiency as well. In addition to that business organizations ensure the business intelligence related activities through Robotic Process Automation (RPA) (Delahunt, 2017). That means, business organization gets the required data to take the strategic and functional decisions from property automation process in order to evaluate and implement the business intelligence related techniques and approaches (Delahunt, 2017).

In addition to that the new trend of working environment is remote working opportunity to provide the different kind of employees who can access to workplace from remote places. Robotic Process Automation (RPA) related approaches and methodologies can be used to link people who are working in remote places and it will reduce the business administration cause which needs to be considered in order to manage the business premises related administration expenses (Srikanth, 2011). Most of the internal control framework purpose of business organizations is planning to move towards automated business practices from manual business processes. Robotic Process Automation (RPA) system provides better ground environment to implement automatic internal control processes within the organization and evaluate the internal control effectiveness of those automated control system (Sons, 2018).

In addition to that Robotic Process Automation (RPA) can be used to conduct the ICT audits to evaluate the efficiency and effectiveness of automated internal controls within the business organization and provide optimum solutions to fill the gaps between Expectations and outcome from automated internal control processes. Business environment factors are highly dynamic and business organization should take the right decisions at right time based on the real time business scenarios (Aguirre S, 2017). Robotic Process Automation (RPA) system can be applied to take the real-time decisions to the business organization considering the real changes in the business environment factors. In addition to that it is essential to monitor the business organization performance to take the right business decisions. In order to monitor the performance of the business organization Robotic Process Automation (RPA) system can be used to provide the real-time variance analysis comparing expected outcome and actual outcome of the business operations (Aguirre S, 2017). In overall perspective with increases to market demand for Robotic Process Automation (RPA) system job market for ICT industry has been expanded massively. ICT industrial unemployment ratio have been decreased over the period of time with respect to new job opportunities creations due to the expansion of Robotic Process Automation (RPA) system within most of the business organizations (Ayehu, 2015).

## How Robotic Process Automation (RPA) uses in banking sector

Banking industrial organizations use Robotic Process Automation (RPA) technician approaches in order to enhance the efficiency and effectiveness of overall banking activities. customer relationship management system of most of the banks are integrated with Robotic Process Automation (RPA) in order to identify the real requirements and expectations of the customers and provide those information to service development department of the bank in order to change service features and specification to ensure the high level of customer satisfaction by fulfilling the customer requirements (Chandler S, 2017). In addition to that business intelligence is one of the major factors of bank industry in order to take the business decisions based on the business intelligence data. Robotic Process Automation (RPA) system is used to get the business intelligence data to take the strategic and functional decisions of the business organization in order to ensure the business sustainability and maintain the business growth perspectives (Chandler S, 2017). Robotic Process Automation (RPA) implementations in banking sector involves with identifying the new employment opportunities which are creating due to the expansion of Robotic Process Automation (RPA) and how business organization should plan and execute the human resource management processes to capture and acquire right employees at right time to fulfill the employment requirements relating to Robotic Process Automation (RPA) (Sons, 2018).

Recently most of the banks are moving to e banking services. E banking service promotes the virtual cash to the customers instead of carrying physical cash for the banking transactions. Most of the bands are used in Robotic Process Automation (RPA) system to monitor the E-Banking system of the banks in order to identify the frauds and internal control issues of e-banking system (Srikanth, 2011). In modern business world most of the business organizations are doing their business activities through E-Commerce platforms. As a result of that it is essential to integrate the payment gateway in order to get the online payments to the products and services (Whitaker, 2010). As a result of that most of the banks are providing payment gateway facilities to people with the integration of Robotic Process Automation (RPA) system in order to monitor and guide the business organizations to integrate the payment gateway system to their E-Commerce platforms. In order to reduce the operational cost of bank operations activities most of the bank us are promoting self-banking concept to avoid the rush in different branches of the bank (Burgess, p. 2011).

In order to monitor and manage the banking activities it is used in Robotic Process Automation (RPA) system in order to integrate the accounts and loan facilities of the customers to ensure the effectiveness and efficiency of self-banking process (Bidwell, 2012). Artificial intelligence tools have been integrated with Robotic Process Automation (RPA) to provide the virtual assistance to customers in order to execute the cell Bank in activities and monitor the accounts details in real time basis. the primary objective of introducing Robotic Process Automation (RPA) system to banking industry is reduce the operational burden to the bank and provide excellent banking experience to the customers by reducing the time and cost. In addition to that promotional activities an originator based on the interpretations and implications of Robotic Process Automation (RPA) system in order to identify the real requirements of the customers and recognize the target market to achieve the business goals and objectives (Whitaker, 2010).

## New employment opportunities due to development of Robotic Process Automation (RPA)

With respect to the expansions of business activities and complexity of the business operation business organization demands automated business solution in order to ensure the efficiency of business operations and reduce the risk of human errors. As a result of that Robotic Process Automation (RPA) systems were introduced to the market in order to provide the expectations get of the business organization in order to ensure the proper implementation of automation business practices (Quote from Burnett, 2015). As a result of that new job opportunities in ICT industry is created through Robotic Process Automation (RPA) development and it reduce the unemployment ratio in ICT industry. When consider the new job opportunities created to market with respect to the Robotic Process Automation (RPA) it creates the market demand for database engineers (McKeen, 2011).

Database engineers involving tube manage the database of the business organizations and integrate with Cloud Servers in order to ensure the security of data bases. As a result of that most of the people tend to join with database engineering educational causes with respect to the rapid increases of market demand to database engineer. In addition to that most of the ICT students tend to follow the network engineering causes due to increases of market demand for network engineers with respect to the expansion of property process automation system in the business industry (Sako, 2010). In addition to that software developers get opportunities to create new job opportunities as a result of expansion in property process automation to develop the automated software to integrate with Robotic Process Automation (RPA) methodologies. Robotic Process Automation (RPA) has created new employment opportunities for Information Computer Technology (ICT) sector (S Anagnoste, 2018). The main employment opportunities are program developer, project manager, business analyst, solution architect, consultant etc. Program developer main involves with developing and UI designing functions and project manager role is critical to perform intermediary role between client and developing team (Ben et al¸ 2018). Business analysts evaluate the financial attractiveness and resource capabilities of the project.

Most of the business organization uses Robotic Process Automation (RPA) system to execute the sales and marketing strategies as well. Compare to offline market in e marketing techniques are using by the business organization in order to ensure the efficiency and effectiveness of sales and marketing process (Somayya M., 2019). With respect to the increasing of market demand for E marketing solutions it created new job opportunities for E marketers in order to execute the online marketing activities of the business organizations (McKeen, 2011). With respect to the expansion of property process automation system most of the business data are stored in Cloud Servers. As a result of that it increase the market demand for a security auditors and cyber security protect us who can manage risk of cyber security of the business system to avoid the unexpected damages and operation issues due to cyber risk. In addition to that UI designers increase their values with respect to the increases in market demand. UI designers involved with developing user-friendly interface to the system to ensure the efficiency and effectiveness of proper automatic system process (Luo, 2012).

## Importance of Robotic Process Automation (RPA) to banking sector

Robotic Process Automation (RPA) system generates advantages to bankers in terms of different perspectives. The main benefit is Robotic Process Automation (RPA) system in has the business process efficiency and effectiveness and avoid the risk involves with providing in business services which lead to high level of customer satisfaction. In addition to that Robotic Process Automation (RPA) system promotes the automated business practices and it will eliminate the risk of Human Resource errors due to manual business activities (Kevin C Moffitt, 2018). In addition to that Robotic Process Automation (RPA) system evaluates the performance of Human Resource based on the automated performance evaluation tools and techniques in order to compare the actual outcome with expected outcome. As a result of business process automation through property process automation system business organization can eliminate the involvement human resource within the organization and it can be used to reduce the employee management cost and employee hiring cost (Insider, 2019).

In modern banking industry customer relationship management is considered as one of the critical success factor in order to sustain in the industry. Customer relationship management process can be automated with the support of Robotic Process Automation (RPA) system in order to identify the real expectations of the customers and develop the service packages to fulfill the required expectations of the customers from the banks (Hofmann, 2019). Robotic Process Automation (RPA) related approaches and methodologies can be used to link people who are working in remote places and it will reduce the business administration cause which needs to be considered in order to manage the business premises related administration expenses. Most of the internal control framework purpose of business organizations is planning to move towards automated business practices from manual business processes (Aguirre S, 2017). In addition to that Robotic Process Automation (RPA) system can be used to execute the cost effective marketing strategies to online marketing platforms in order to reach large number of customer base within limited period of time.

In addition to that Robotic Process Automation (RPA) system can be used to avoid the unethical interference of management personals to the business decisions making process and business operations by automating business activities and reducing the manual business processes within the organizations (Srikanth, 2011). In addition to that business intelligence practices can be implemented easily considering the implications of Robotic Process Automation (RPA) system to the business organization.

## Negative implications of Robotic Process Automation (RPA) to business organizations

It is important to evaluate the negative implications of Robotic Process Automation (RPA) in order to integrate the business activities with property process automation initiatives. The main negative implication is cyber security risk (Sons, 2018). That means Robotic Process Automation (RPA) system store the data in Cloud Servers. as a result of that there are risk of cyber-attacks with respect to the unauthorized access of organizations data and based on those data competitive business firms can manipulate the business decisions and impact to the business organization from external business environmental factors (Stewart, 2010).

In addition to that as a result of business process automation with respect to the development of Robotic Process Automation (RPA) system business organizations tend to reduce the employment that is doing the manual business processes. The main problem of Robotic Process Automation (RPA) is risk of cyber security. That means data which are generated from Robotic Process Automation (RPA) process are stored in cloud servers (S Anagnoste, 2018). Due to the massive development of information technology industry, it will create the risk of unauthorized access to the data of Robotic Process Automation (RPA). In addition to that Robotic Process Automation (RPA) involves with reducing the human involvement and it will cause to increase the unemployment for other occupations (S Anagnoste, 2018).

As a result of that it will be a reason to increase the unemployment ratio of the economy for the other employments. Business organization should take human resource management strategies with respect to the implications of Robotic Process Automation (RPA) system considering the unethical impact to the economy as a result of reducing the human resource with respect to the introducing Robotic Process Automation (RPA) system which is capable of automating business activities (Srikanth, 2011). In addition to that it is essential to invest in a significant amount of financial resources and non-financial resources to implement the Robotic Process Automation (RPA) system. As a result of that it is difficult to implement Robotic Process Automation (RPA) system to all the business organization due to lack of adequate financial and non-financial resources within the internal business environment. In addition to that administration cost of business organization will be increase as a result of higher maintenance cost for the Robotic Process Automation (RPA) system (Casale, 2014).

In addition to that organization have to incur higher human resource acquisition cost to acquire the internal human research who are capable of dealing with a Robotic Process Automation (RPA) systems to manage and control the overall system based activities. in addition to that Robotic Process Automation (RPA) system involves with automate in the bank in activities and it is essential to provide adequate varnish to the customers how to use automated banking services and it takes significant period of time to get the expected adaptability of the customers towards the Robotic Process Automation (RPA) system related services.

# 03. Analysis

## Scope

The research evaluates the how Robotic Process Automation (RPA) creates new employment opportunities and terminates the existing traditional employment opportunities in banking sector of South Asian countries. Robotic Process Automation (RPA) is a technology which can be used to automate the business processes in terms of application interpretations, transaction processing, data mining, email automation etc. (AutomationEdge, 2019). Operational efficiency and effectiveness of business organizations have been increased with respect to the utilization of Robotic Process Automation (RPA) related applications. In addition to that most of the business organizations are moving to automated internal control practices from manual internal control practices

## Search process

|  |  |
| --- | --- |
| Search criterion | Values |
| Database | * Research Gate * Google scholar |
| Database search services used | * Emerald insight Research database * Google scholar data base |
| Source type | * Journals and articles |
| Search terms (keywords) | * Robotic Process Automation * Banking Industrial automation * E-banking * ICT new employments |
| Search expanders | * Sorted by most recent |

## Quality evaluation of the search items

In order to perform thematic analysis, it is selected 27 articles from Emerald and 6 articles from other sources and removed 11 articles due to the duplication of content. Then perform screening by topic, abstract and table of content for 17 articles and 5 records were excluded. Further 22 articles were reviewed for full text evaluation for relevant and 4 articles were selected for qualitative synthesizing and 3 articles were selected for qualitative analysis.

## Descriptive summary

|  |  |  |
| --- | --- | --- |
| Author | Theme | Key findings |
| (Whitaker, 2010)  (Bidwell, 2012) | Banks promote the e-banking concept to ensure the banking process efficiency and ensure the accuracy of the transaction. | * E-banking facilities have been integrated with Robotic Process Automation (RPA) to ensure the functional efficiency and effectiveness. * Manage and monitor the performance of e-banking related activities, banks use robotic process automation related initiates to ensure the security of transactions, manage the transaction data. |
| (Ayehu, 2015)  (Bidwell, 2012) | Demand for ICT industrial jobs has been increased due to automation trend of business operations including the banking sector. | * Robotic Process Automation (RPA) system in has the business process efficiency and effectiveness and avoid the risk involves with providing in business services which lead to high level of customer satisfaction. * Modern business world most of the business organizations are expecting to automate the business process and reduce the human resource environment to execute the business practices in order to reduce the human resource hiring cost and ensure the operation process efficiency. |
| (Stewart, 2010)  (Hofmann, 2019) | Banks use Robotic Process Automation to automate the banking activities and enhance the operational efficiency and effectiveness. | * Customer relationship management process can be automated with the support of Robotic Process Automation (RPA) system in order to identify the real expectations of the customers * Develop the service packages to fulfill the required expectations of the customers from the banks. |
| (Ben V., 2018) | Cyber security risk has been increased with respect to implementing Robotic Process Automation system. | * There are risk of cyber-attacks with respect to the unauthorized access of organizations data and based on those data competitive business firms can manipulate the business decisions and impact to the business organization from external business environmental factors. |
| (Casale, 2014) | Unemployment ratio for other employees who were doing manual business processes has been increased due to business process automation through Robotic Process Automation. | * Increase the unemployment ratio of the economy for the other employments. Business organization should take human resource management strategies with respect to the implications of Robotic Process Automation (RPA) system considering the unethical impact to the economy as a result of reducing the human resource with respect to the introducing Robotic Process Automation (RPA) system |

## Thematic analysis

Thematic analysis is used to evaluate the relationship between qualitative research data and develop the discussion to evaluate the research objectives. Thematic analysis involves with determining the themes to gather the qualitative research data referring to articles, journals etc. to describe the implications of research objectives. In this research following themes are defined;

* Banks promote the e-banking concept to ensure the banking process efficiency and ensure the accuracy of the transaction.
* Demand for ICT industrial jobs has been increased due to automation trend of business operations including the banking sector.
* Banks use Robotic Process Automation to automate the banking activities and enhance the operational efficiency and effectiveness.
* Cyber security risk has been increased with respect to implementing Robotic Process Automation system.
* Unemployment ratio for other employees who were doing manual business processes has been increased due to business process automation through Robotic Process Automation.

Banking industry in South Asia is highly competitive and banks are attempting to ensure the service uniqueness and differentiation to attract more customers and retain the existing customers. In order to differentiate the banking services, e-banking concept has been introduced with the support of robotic process automation. In order to manage and monitor the performance of e-banking related activities, banks use robotic process automation related initiates to ensure the security of transactions, manage the transaction data, provide remote access to bank accounts etc. and demand for ICT industrial job opportunities were increased from banking industry over the period of time.

Robotic process automation involves with providing the business intelligence reports to take the business decisions. Business intelligence data is considered as an asset to banking industry due to service and product development process of banks is based on the business intelligence data on customers’ behaviors and transaction pattern. Based on that bank can understand the problems and issues of people and provide the solutions for those issues and problems to develop optimum product and service portfolio. As a result of market demand for data analysts was boomed over the period of time. In most of the European countries, data analysts are considered as most demanding and highest paying employment. The main reason for that is accuracy and completeness of data analysis determines the accuracy of the business decisions.

In addition to that it is essential to consider the adverse implications of introducing robotic process automation to banking industry. In addition to that as a result of business process automation with respect to the development of Robotic Process Automation (RPA) system business organizations tend to reduce the employment that is doing the manual business processes. It will be a reason to lose the job opportunities for the employees who were doing manual business processes due to removing the excess employees with respect to the business process automation.

# 04. Discussion

The purpose of this research is to understand the recent expansions and developments of Robotic Process Automation (RPA) related job market, understand the factors which impact to create the new employment opportunities in Robotic Process Automation (RPA) related job market, evaluate the changes to traditional human resource management strategies and update the strategic human resource management strategies to acquire Robotic Process Automation (RPA) related employees, determine the financial and non-financial benefits for Robotic Process Automation (RPA) related employment opportunities and identify the types of new employment opportunities which are created due to the expansion of Robotic Process Automation (RPA) (AutomationEdge, 2019).

Robotic process automation improves the process in various ways such as (Ben V., 2018):

* Timely completion of review,
* Faster and simplified process,
* Increase the efficiency,
* Descriptive statistics and reporting analytics,
* Save time for supervisors and human resource,
* Increased employee productivity and performance,
* Improve the consistency of reviews that stick to pre-defined evaluation metrics,
* Restricted access to confidential data ensures the security,
* Allows for fair and transparent evaluation,
* Cost saving.

Banks should have proper plan to integrate the functional activities in order to use those integrated functional activities to achieve the goals and objectives of robotic process automation. In order to ensure the proper integration between functional management activities of the bank it is recommended to implement enterprises resource planning system which identify the non-value added activities of the business process and ensure the proper coordination and integration between each functional management activities (McKeen, 2011). As a result of that Bank can ensure the integration of functional activities and take the integrated business decisions considering the all the functions of the back in order to identify and implement optimum robotic process automation initiatives (Ayehu, 2015).

Key management people of the bank have significant responsibility to ensure the effective implementation and efficient execution of robotic process automation related practices and techniques. that means management people of the bank should have proper understanding about how to implement proper robotic process automation system and how to get the maximum contribution and support from human resource within the bank in order to develop employee oriented robotic process automation mechanism (Luo, 2012). For that purpose management of the business organization should have understanding about importance of robotic process automation system and how it creates the benefits to both employee and employer. Robotic Process Automation (RPA) provides better mechanism and environment to automate the existing business processes (Reddy, 2019). As a result of that business organization should have proper mechanism to integrate the existing business processes and functions with Robotic Process Automation (RPA) related initiatives. That means introducing Robotic Process Automation (RPA) to the business organization is a restructure change. That means at the initial stage of robotic process automation there are some practical problems due to unexpected changes to existing business practices and operational processes (S Anagnoste, 2018). Therefore bank should have proper mechanism to integrate the existing business processes with robotic process automation system related processes.

One of the most important things is getting the maximum contribution and support from the employees in order to develop the robotic process automation system within the bank. That means organization should gather ideas and views of existing human resource of the bank in order to plan the robotic process automation initiatives (AutomationEdge, 2019). The main reason for that is employees have proper understanding about existing operational and nonoperational problems of the business organization and it will be help to develop optimum robotic process automation system to find the solution for those operational and nonoperational issues within the organization. In addition to that it will help to enhance the employee satisfaction level and ensure that activity of employees towards robotic process automation system (Srikanth, 2011). As mentioned above, the main risk relating to robotic process automation system is cyber security risk. As a result of that there's a risk of unauthorized access to data servers and manipulate data which can be impact to the correct business decisions. In order to mitigate the risk of unauthorized access to data of the robotic process automation system it is recommended to obtain the daily data backups and start in internal server to ensure the low risk of cyber security attacks. It is essential to expand the scope and responsibilities of ICT department of the bank in order to ensure the proper data security through daily backup’s process.

However there are some negative implications of development in Robotic Process Automation (RPA) management related activities. The main consideration is it increases the unemployment ratio for other job opportunities which are integrated with manual business practices (Sons, 2018). As a result of that indirectly unemployment ratio of employment sectors was increased due to the expansion of a robotic automation process.

The research discuss how banking sector use Robotic Process Automation (RPA) in order to enhance the operational process efficiency and effectiveness. It is essential to consider the implications of external environmental factors such as changes in technological environment and implications from social environmental factors in plan in the Robotic Process Automation (RPA) related initiatives within the organization (Sons, 2018). For that purpose bank should have proper external environment review mechanism to identify the possible implications from external environment factors to ensure the successful of Robotic Process Automation (RPA) of the banks. In addition to that it is required to change the Robotic Process Automation (RPA) related approaches and strategies with respect to the changes in external environment factors (Delahunt, 2017).

It is noted that though the policy promotes sharing and open access to research data in a timely manner, the interpretation of the policy varies across programs/divisions. Policy specifically mentions archival in suitable repository of curated data within 12 months of within 6 months of data whichever is sooner; however, this was not consistently enforced across programs/divisions. It was noted that in some cases data archiving in repository is being done only when the staff leaves or when data is published (Sons, 2018).. There was no consistent mechanism to require research staff to archive data during and within the operation lifecycle. It is recommended to enforce the time frame mentioned in the policy. Program/division should develop suitable procedure and mechanism to ensure implementation of data archival and sharing, include timely sharing and archiving of data as part of the operation work plan and performance outputs and include in the implementation guideline and enforce the data sharing and archival as defined in the data management policy at Program/Division (Delahunt, 2017).

With respect to the development in Robotic Process Automation (RPA) new job opportunities were introduced to the market and it was helped to expand the job market for ICT industry. As discussed in above sections development and expansion of Robotic Process Automation (RPA) was help to create new job opportunities to ICT industry and it was help to improve the performance of ICT education system. In overall perspective most of the business organization tend to demand ICT industrial expertise who has competencies and skills to manage the robotic automation systems (Sons, 2018). The existing procedures to ensure that system packages licensed or systems development services procured will meet unit’s requirements are applicable only to the procurement of financial and administrative systems. There is no assurance that the same quality assurance process is deployed in the automation of functions in areas of bank other than finance and administration (Sons, 2018).

In addition to that it is recommended to consider the implications for internal environment factors in planning and execute in the robotic automation process. That means banks should evaluate whether it has adequate financial resources to ensure the successful implementation of Robotic Process Automation (RPA) within the organization and existence of a skilled human resource to manage and monitor the performance of robotic automation process (Hofmann, 2019). For that purpose it is recommended to conduct a comprehensive internal environment analysis to have a broad understanding in above behavior of internal environment factors and how business organization should use those internal environment factors in order to ensure the successful implementation of robotic automation process (Sons, 2018). Robotic Process Automation (RPA) should collaborate on the development of the banks communication strategy in order to ensure that IT driven possibilities are explored and utilized to meet the requirements of the communication strategy. One of the areas for necessary collaboration is on the strategy for and management of the intranet and extranet. In relation to Robotic Process Automation (RPA) should be responsible for technical backup while the Robotic Process Automation (RPA) should be responsible for the management as a critical communication enabler (Delahunt, 2017).

It is recommended that ICT Division study the costs and benefits of moving to a workflow-based automated process. The benefits include improved cycle times for processing approvals; ability to build in data completeness and accuracy controls into the forms; and ability to automatically highlight and require explanation of requests outside policy parameters. In considering whether automation would be cost-beneficial, the bank should also consider doing this as part of a broader travel management information system. Guidelines over maintenance of system documentations should be established to ensure that it is kept up to date for any changes made on the system. This can be aligned with the change control processes that need to be established. Update the existing documentation to ensure that recent changes are included. Also, technical and process documents should be created for those areas not yet documented. It is advised that a list of topics should be kept to ensure that all areas have corresponding documentations available. Also, current Builder for Procurement should ensure that documentation is complete and updated. Unable to establish ICT Security management function

Information System policies and procedures have not been formally defined or developed.  
It is noted that anti-virus software is currently not used on desktop PC's and the network server virus scanner is run only once a week. Formal Information System policies and procedures help to ensure the consistent application of company policy and adequate safeguarding of the company's information assets. The introduction of virus' can have a severe impact on data integrity and at a minimum be quite inconvenient to correct once "infected."  
The Company should define and develop written Information Systems policies and procedures. These should address, at minimum, the following:

* Management's policy for information security and confidentiality, including a statement that information including E-mail is corporate asset.
* Responsibilities for various user and Information Systems group to apply and enforce management's policy.
* Procedures for adding new user and temporary employee access, if any; for removing terminated employee access; and for changing access privileges when job functions change.
* Physical security responsibilities and physical access control standards.
* Procedures defining Change Management with application development.
* Procedures for Computer Operations processing, including backups and error reporting.
* Procedures for Network Administration, including monitoring, and acceptable usage by company employees.

ICT Unit monitors upgrades/patches that need to be implemented on servers and client computers through advisories/blogs from various security portals and from Microsoft’s WSUS. Updates on servers have been timely deployed. However, on desktops and laptops, end users have options to put on hold implementation of system updates. It is noted that users’ generally accepts/allows the automatic installation of system updates. There were a few users with high volume of uninstalled system updates (Sons, 2018). Currently there is no process in place to call the attention of these users or their respective supervisors on the possible risks of non-implementation of system updates, particularly critical/security risks, e.g. Microsoft virus protection, outlook spam/junk mail detection. Information Technology Services Information Technology Services has no formalized BCP or Disaster Recovery Plan (DRP). Information technology Services has been successful over recent years in replacing legacy systems that provide for greater reliability, diversity and resilience (Delahunt, 2017). This achievement deserves due credit and in a practical sense should be lauded. A cautionary word is that whilst this IT implementation remains an ongoing development process, it has developed without a proper DRP specific to the implementation (McKeen, 2011).

In addition, some users within bank is clearly not familiar with the technology and cannot take advantage of it. This is a limitation on business continuity resilience if normal users cannot undertake (or are unwilling to undertake) personal responsibility to back up data in the ‘cloud’ or other data-protected arrangements Information Technology Services has developed. Information Technology Services requires both a BCP and a DRP to support its internal ‘customers’ (OUs) and external stakeholders (Srikanth, 2011). No organization in today’s environment can survive without an effective and resilient information technology infrastructure. Information Technology Services must have these in place and be able to demonstrate them as a feature and benefit of assurance to key stakeholders.

The System Development Life Cycle standards of robotic process automation consist of a solitary flowchart with no supporting narrative, and a procedure describing how to submit a User Request Form. Reference is made on the chart to various documents by their abbreviated names but there is no explanation as to what the acronyms mean, and what purpose the documents serve. It is also noted that the chart doesn’t provide for integration testing, or training in the use of the new system. There also appears to be no option for considering the use of prototyping and/or Rapid Application Development (RAD) (Delahunt, 2017). RPA management responds that the standard may not in fact reflect how systems are developed in banks. Actual development might in fact be closer to a RAD model than the posted standard. The IT strategic plan provides the organization a way of technical enhancement, growth and optimizing the existing resources for future challenges while fulfilling all future requirements in terms of people, process and technology (Whitaker, 2010). Thus, when developing the robotic process automation strategic plan, it is advised to consider the following:

* Vision, Mission and objectives should be stated clearly. Further, IT strategic and operational plan needs to be monitored for ongoing congruency with overall corporate business plans.
* Perform risk assessments on each project phase in order to ascertain challenges that management may encounter during the planning and implementation stages of this plan. It also helps in analyzing the resource, vendor involvement and financial aid required during each phase of the plan.
* Define the IT strategic plan roadmap by incorporating phase and sub-phase milestones with start date and completion date (Sako, 2010).
* Data protection and Information security should always be a primary focus area in any IT strategic plan. Scientists and researchers across the world work in bank, trusting bank keeps their confidential research reports, personal documents etc. in their database (Somayya M., 2019). Therefore, various global Regulatory compliance such as General data protection regulation (GDPR), ISO etc. may ask the organization to keep the data secure and vulnerable free from external threats such as hacking, malware, theft, data leakage etc.
* Bank should consider use of robotics technologies in their research, data collection and data analysis.

# 05. Conclusion

Employees are not able, with the current robotic process automation system, to access real-time information on the budget status of their functions for such items as travel and consultancies and thus the total spending status of their projects. At banks, input to the robotic process automation system is made by batch processing which delays posting. Also, the system is not web-enabled to allow outreach locations to input transactions directly. Their transactions have a lag time of at least one month before hitting the system. Many of the employees interviewed stated as having to maintain their own spreadsheets to keep up to date track of their operational expenditure. Further bank’s strategic plan for its robotic process automation infrastructure and systems is generally embodied on the annual performance contract and performance appraisal of the Head of ICT Unit which covers mainly the robotic process automation initiatives and work plan of the unit for the year (Delahunt, 2017). The bank has not formally established a robotic process automation strategic plan that is continuously aligned with the bank’s goals and business direction. The plan should likewise define the ICT requirements to ensure the interoperability and timely deployment of systems acquired.

# 06. Recommendations

It is recommended that the company develop a documented disaster recovery plan for robotic process automation which would provide specific instructions to allow for continued operations at an off-site location in the event of an emergency (Stewart, 2010). The plan should include at a minimum the following:

1. Criteria for declaring a disaster (what events and/or how long operations can continue without the system).
2. Responsibilities of employees affected by the emergency.
3. Inventory of hardware, software, data and program backups, and documentation.
4. Procedures to conduct operations until the system are restored.
5. Procedures to develop communications with a remote site or establish office space at a remote site.
6. The plan should be tested periodically, updated when appropriate, and distributed to key employees. A copy of the plan should also be stored off-site.

Establish a formal medium-term/strategic robotic process automation planning process and develop robotic process automation plans (Luo, 2012). The plan should take into consideration management mandate and business objectives, robotic process automation operations as it currently stands an analysis of the current organization (strengths and weaknesses), road maps and action plans for achieving robotic process automation goal (Srikanth, 2011). The medium term/strategic planning should include input from Management and key stakeholders, including research units, and should cover budget/funding sources, legal and regulatory requirements. The progress of the robotic process automation plan should be regularly reviewed and monitored as well as the following aspects (S Anagnoste, 2018):

* Robotic process automation plan remains aligned with the overall business objective,
* Prioritization of robotic process automation initiatives and projects plans are appropriate, and;
* Issues encountered and action plans to address these issues.

It is recommended to continue both manual operational practices and automated operational practices which are integrated with Robotic Process Automation (RPA) until existing employees of the business entity is familiar with Robotic Process Automation (RPA) related approaches and practices (McKeen, 2011). As a result of that existing employees can understand benefits and advantages of use in Robotic Process Automation (RPA) for the day-to-day operational activities and existing employees will be familiarized with Robotic Process Automation (RPA) related initiatives (Sons, 2018). As a result of that organization can manage the negative implications from existing employees due to the changes in existing operational process and get the maximum support and contribution from employees to ensure the successful implementation of Robotic Process Automation (RPA) within the bank. Robotic Process Automation (RPA) system is used to get the business intelligence data to take the strategic and functional decisions of the business organization in order to ensure the business sustainability and maintain the business growth perspectives (Delahunt, 2017). Robotic Process Automation (RPA) implementations in banking sector involves with identifying the new employment opportunities which are creating due to the expansion of Robotic Process Automation (RPA) and how business organization should plan and execute the human resource management processes to capture and acquire right employees at right time to fulfill the employment requirements relating to Robotic Process Automation (RPA) (Luo, 2012)

In addition to that it is recommended to plan and implement Robotic Process Automation (RPA) related strategies and features considering the expectations and ideas of target market customers. The primary objective of introducing Robotic Process Automation (RPA) for the bank should be in hands in the operational efficiency in order to deliver effective service to the customers and ensure the customer satisfaction (Sako, 2010). For that purpose it is essential to consider the ideas and views of the customers with regards to existing manual business practices and address those gaps in Robotic Process Automation (RPA) related activities to ensure the customer satisfaction and enhance the service efficiency (Lacity, 2011). As a result of that organization can ensure the customer oriented Robotic Process Automation (RPA) within the organization and it will help to promote the e banking facilities to the customers. Another negative implication of introducing Robotic Process Automation (RPA) to banks is cyber security risk to the data. In addition to that there is a risk of authorize access to online banking system which are executed through Robotic Process Automation (RPA) related Strategies and approaches. In order to mitigate the cyber security risk and avoid the unauthorized access to robotic process automation system it is recommended to conduct ICT audits periodically to identify the gaps which create the cyber security risk to the business entity (McKeen, 2011). In addition to that it is essential to educate the ICT department of the bank to make sure people who are in ICT department have adequate knowledge and understand in about how to deal with Robotic Process Automation (RPA) and how to manage the issues and problems related to robotic automation process (Somayya M., 2019).

It is recommended that Information Systems Department continue its development of a long-term and short-term strategic information systems plan that is consistent with the organization’s overall strategic planning process. This plan should take into account the needs of all user groups, the current systems environment and a vision of the future for Robotic Process Automation (RPA) (Somayya M., 2019). A strategic technology plan should include the following:

* Assessment of the existing information systems
* Review of the Company’s business objectives, functions and issues
* Identification of the application systems required to support the Company’s business activities
* Definition of the Company’s information systems and technology position (including the evaluation of current and planned applications and hardware from both a business and technical viewpoint)
* Performance of a “gap” analysis to identify the Company’s information systems needs
* Development of an overall strategic direction (“vision”) for information systems
* Development of an information systems strategic plan to identify and implement projects that meet the overall strategic direction.

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