

Attitudes towards Robotic Process Automation

Namtip Wongsomboon* and Sutep Tongngam**

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Abstract

This research consists of three objectives: 1. To study attitudes towards work process automation (RPA) 2. To study the structural equation model of factors affecting attitudes towards work processes automation 3. To study the influence of pathways of adjustment, self-esteem and efficiency of the automated work process on competitive advantage and attitudes towards automated work processes.

With 300 samples and confirmatory component analysis and structural equation modelling being used, the results showed that the factor influencing the attitude towards automated work processes with the highest rank was competitive advantage, followed by operational characteristics, self-esteem, adjustment, and the efficiency of the automated work process, respectively. Secondly, the factor that influence the efficiency of the automated work with the highest rank was operational characteristics, followed by self-esteem, adjustment, and competitive advantage, respectively. Thirdly, the factor influencing the competitive advantage with the highest rank was operational characteristics, followed by self-esteem, and adjustment, respectively. In addition, self-esteem and adjustment influenced operational characteristics significantly.

* Graduate School of Applied Statistics, National Institute of Development Administration
148 Serithai Road, Khlong-Chan, Bangkok, Bangkok 10240, THAILAND.
E-mail: namtippu@gmail.com

** Assistant Professor, Graduate School of Applied Statistics,
National Institute of Development Administration
148 Serithai Road, Khlong-Chan, Bangkok, Bangkok 10240, THAILAND.
E-mail: sutep.t@nida.ac.th

Businesses could adopt these results in their organization in term of human resource management and development to help their employees increase potential of adjustment and self-esteem to be ready for competition. Also, businesses should put the right person to the right job to achieve the high success of using RPA. In addition, RPA training may be another key success factor.

Keywords: Attitude, Robotic Process Automation, Competitive Advantage, Self-esteem

ทัศนคติที่มีต่อกระบวนการทำงานอัตโนมัติ

น้ำทิพย์ วงศ์สมบูรณ์* และ สุเทพ ทองงาม**

รับวันที่ 28 มีนาคม 2566 ส่งแก้ไขวันที่ 30 ตุลาคม 2566 ตอปรับตีพิมพ์วันที่ 2 พฤศจิกายน 2566

บทคัดย่อ

งานวิจัยนี้มีวัตถุประสงค์ ดังนี้ 1. เพื่อศึกษาทัศนคติที่มีต่อกระบวนการทำงานอัตโนมัติ (RPA) 2. เพื่อศึกษาแบบจำลองสมการโครงสร้างของปัจจัยที่ส่งผลต่อทัศนคติที่มีต่อกระบวนการทำงานอัตโนมัติ และ 3. เพื่อศึกษาอิทธิพลของเส้นทางของ การปรับตัว การเห็นคุณค่าในตนเอง และประสิทธิภาพของกระบวนการทำงานอัตโนมัติ ที่ส่งผลต่อความได้เปรียบในการแข่งขัน และทัศนคติต่อกระบวนการทำงานอัตโนมัติ

จากการประมวลผลจากกลุ่มตัวอย่าง 300 ตัวอย่าง ด้วยการวิเคราะห์ห้อยประกอบเชิงยืนยัน และตัวแบบสมการโครงสร้าง พบว่า ปัจจัยที่มีอิทธิพลต่อทัศนคติต่อกระบวนการทำงานอัตโนมัติสูงที่สุด คือ ความได้เปรียบในการแข่งขัน รองลงมา คือ คุณลักษณะการปฏิบัติงาน การเห็นคุณค่าในตนเอง การปรับตัว และประสิทธิภาพกระบวนการทำงานอัตโนมัติ ตามลำดับ ส่วนปัจจัยที่มีอิทธิพลต่อประสิทธิภาพของกระบวนการทำงานอัตโนมัติสูงที่สุด คือ คุณลักษณะการปฏิบัติงาน รองลงมา คือ การเห็นคุณค่าในตนเอง การปรับตัว และความได้เปรียบในการแข่งขัน ตามลำดับ และปัจจัยที่มีอิทธิพลต่อความได้เปรียบในการแข่งขันสูงที่สุด คือ คุณลักษณะการปฏิบัติงาน รองลงมา คือ การเห็นคุณค่าในตนเอง และการปรับตัว ตามลำดับ นอกจากนี้ การเห็นคุณค่าในตนเองและการปรับตัวยังมีอิทธิพลต่อคุณลักษณะการปฏิบัติงานอย่างมีนัยสำคัญอีกด้วย

องค์การและธุรกิจสามารถประยุกต์ใช้ผลการวิจัยครั้งนี้ได้ โดยผ่านการบริหารและพัฒนาทรัพยากรบุคคลในอันที่จะช่วยสร้างศักยภาพในการปรับตัวและการเห็นคุณค่าในตนเองเพื่อพร้อมรับการแข่งขัน การเพิ่มทักษะและมอบหมายงานที่เหมาะสมรวมทั้งการฝึกอบรมการใช้งานกระบวนการทำงานอัตโนมัติก็มีความจำเป็นต่อการเพิ่มประสิทธิภาพของกระบวนการทำงานอัตโนมัติเช่นกัน

คำสำคัญ: ทัศนคติ กระบวนการทำงานอัตโนมัติ ความได้เปรียบการแข่งขัน การเห็นคุณค่าในตนเอง

* คณะสถิติประยุกต์ สถาบันบัณฑิตพัฒนบริหารศาสตร์
เลขที่ 148 ถนนเสรีไทย แขวงคลองจั่น เขตบางกะปิ กรุงเทพฯ 10240
อีเมล: namtippu@gmail.com

** ผู้ช่วยศาสตราจารย์ คณะสถิติประยุกต์ สถาบันบัณฑิตพัฒนบริหารศาสตร์
เลขที่ 148 ถนนเสรีไทย แขวงคลองจั่น เขตบางกะปิ กรุงเทพฯ 10240
อีเมล: sutep.t@nida.ac.th

Introduction and Objectives

Background and Significance of the Problem

At present, the economic and trade competition has intensified due to the changing economic situations and uncertainties. Under the environment of fiercer business competition, including the launch of new products in the market, and the timely response to the demands of the customers, has become a driving force of a company or an organization to place importance on the efforts to seek the guideline to respond to the management of customers relation to be able to compete with business competitors and to ensure business survival. As a result, business has to adapt itself and develop its own capability all the time to create competitive advantage over its competitors (Tanit Sorat, 2006).

Therefore, the increased efficiency in decision-making based on information will reduce the information's error and taps the employees' potential to create maximum value for business to ensure that business will grow and meet the target faster. Technology is thus used to assist in executing work such as AI or IoT, etc. It contributes to more work efficiency, time-saving, and enables employees to have more time to do what is more useful, especially repetitive, routine work, or work that requires time to execute without the need of expertise, or routine work dealing in data management, especially business that requires a lot of documentation which can create burden to an organization. Moreover, work for people in general has constraint in terms of working hours, tiredness from work, and mistakes from work. So, a new form of technology is used for work namely Robotic Process Automation (RPA).

Robotic Process Automation (RPA) is an automatic working procedure, called Bot, that imitates humans. Humans design working procedure and process, called work training, for Bot. Each created Bot will work based on the pre-determined pattern. It makes a lot of work automatic and faster than before (Jorge et al. 2021) with 24 hours a day. Moreover, the mistakes is rare or even none. It reduces the opportunity of leaking business information as the number of employees who have access to the information is reduced. Therefore, RPA has become digital workforce in business replacing humans.

According to the survey, "Adoption of RPA in Asia-Myth or Reality? in 2018 of PwC", it was predicted that the automatic system would be used in working procedure up to over 45%. It also saved 2 trillion USD of labor costs worldwide. It was forecasted

that it may increase the market size of RPA worldwide as high as 5 billion USD by 2024, as well. In Asia-Pacific, it was estimated that the market size of RPA will grow 203%, valued 2.9 billion USD by 2021, as businesses are aware of work efficiency and ability of RPA.

Moreover, RPA is an automatic work that has an important role in an organization's operation. It saves costs and combines working system to reduce time consumption in working procedure. It works two times faster than humans do, reduces burden from working procedure, eliminates mistakes derived from the collection and feeding of information into the system, as well as increases business opportunity. The ability of RPA in the form of digital workforce can replace human workforce. However, human workers are still necessary. A question arises such as using RPA at work will impact to the attitudes of work of the employees in the organization and what are the factors that influence the employees in the organization in willing to use RPA to work efficiently.

Since RPA has a major role in increasing the competitiveness of an organization and enabling activities, procedures, and changes to increase the efficiency of the organization, the attitudes of the employees and operators towards RPA were studied.

Research Objectives

1. To study the attitudes towards Robotic Process Automation (RPA).
2. To study the Structural Equation Model of factors impacting the attitudes towards Robotic Process Automation.
3. To study the influences of the pathways of adjustment, self-esteem, and performance characteristics impacting the competitive advantage and the attitudes towards RPA.

Literature Review and Theories

Concept of Technology Acceptance

Presented by Camarero, Anton & Rodríguez (2013). The acceptance of technology was the explanation of the acceptance and intention to use new technology of people which derived from the fact that the people perceived simple usefulness and benefit from the usage of new technology and they could learn to use new technology by themselves.

The processes of new innovation acceptance presented by Yaowapa Chuprapawan (2004) involved decision-making of consumers relying on supporting communication and consisted of 5 acceptance processes as follows:

1. Awareness: It is the first step leading to acceptance or refusal of new innovation. The fact that people perceive new innovation for the first time is the process of perception only that innovation takes place and really exists but do not yet receive complete information.

2. Interest: People start to take more interest in searching for information and learning about innovation. This behavior involves intention and uses thinking process than perception process. In this process, people will learn more about new innovation. Personality, value, society, or old experiences have impact on the people and on the follow up of news.

3. Evaluation: It is the consideration process. People will consider the acquired information for its strength and weakness to decide if they should experiment on new innovation. This process is different from others in the creation of decision-making to try new ideas. People tend to think that the use of new things poses a risk of uncertainty. The results of this process therefore need reinforcement to ensure that the thing that is decided to be experimented is correct through advice and provision of news to assist in the decision-making.

4. Trial is the process that people experiment on new innovation completely or partly to prove the benefit of the innovation and wait for the decision whether to accept the innovation or not. In this process, people will seek for news specifically on new innovation, the experiment result of which will be crucial to the decision to refuse or accept the new innovation.

5. Adoption is the final process in the acceptance procedure. It is the process that people accept new innovation after trial and continuous implementation. After accepting the innovation, the target group will seek additional news to support their acceptance decision. If the news that they receive later indicates that they should not accept the innovation, the behavior may arise of cancelling the innovation acceptance. But if the news that is received later is good, the acceptance may be renewed.

Concept of Adjustment

When technology is used in an organization, the personnel impacted by the use of technology are forced to make adjustment. Rogers (1974), leading theorist of oneself and theory of client-centered advice, considered adjustment in terms of self-adjustment. He believed that all humans were the center of the experiences around them which changed all the time. It was part of the experience that a person perceived and interacted with others. The assessment of the interaction created self or "Structure of self". It was the perceived self in many aspects such as personality, personal ability, own roles in connection with others and environment, attitudes and values of oneself based on individual experience. It was therefore an important part to determine the differences of individual personality. Each individual would feel and would best understand one's own personal world.

There were 2 types of adjustment:

1. Integrative Adjustment: The adjustment that a person can solve the problem and it makes the person happy, without any remaining frustration, with self-awareness, independence, and self-fulfillment.

2. Non-integrative Adjustment: The adjustment that a person cannot solve the problem but the person knows somewhat how to reduce the tension within oneself. This adjustment requires mental mechanism or self-protective mechanism. The person who cannot adjust oneself will have conflict with new experience, leading to anxiety, frustration, and tension.

The person who can adjust oneself is self-assured, understands and accepts oneself and others, and perceives real experiences. The person will use the experiences and arrange them to be in line of the structure or the personality of oneself without conflict or deviation, and has positive perception and thoughts of oneself.

The person who cannot adjust oneself will have great conflict between the thought of oneself and new experience, leading to tension, anxiety, confusion, uncertainty, loss of one's privacy, and negative thoughts of oneself.

Kasem Chalermthanakijkosol (2000) stated that adjustment at work meant a person's ability to face problems or solve problems to work and reach success.

It consisted of adjustment to work, adjustment to work environment, or adjustment in accordance with and in the same direction as the organization's goals.

Concept of Self-Esteem

The concept of self-esteem is the perception that one has potential, value, and pride in oneself. The person who is aware of self-esteem will be brave to face new challenges with ability for adjustment. The person with low self-esteem will have negative attitude towards oneself, lack of confidence, fear of mistakes, lack of ability to initiate things as the person believes that he or she does not have sufficient ability.

Stephes C. Jones (1982, cited in Chanon Komolmal, 2008) discussed the theory of the feeling of self-esteem. It was the state where an individual wanted to increase the assessment of self-esteem in order to be recognized by others fit for his or her own ability and reality. The individual would be more interested in assessing his/her own feeling than assessment from others. It would be one way of feeling self-esteem.

Concept of Competitive Advantage

In terms of increasing business competition, if an organization has superior qualities to competitors, it will be able to efficiently produce goods or services in response to customers and will certainly bring success to the business. So, the concept of competitive advantage comes into being (Competitive Advantage). Based on the study of Worluck Lalitsasivimol (2016), the variable that could measure competitive advantage must contain efficiency. Efficiency measures the output compared to the costs that are used, ability to execute work that meets the targets and objectives of the organization with quality, innovations including inventions, goods or work procedure that can create value to the organization (Innovation), as well as respond to customers (Responsiveness) of which the goods or services received by customers makes them satisfied, meets the needs, or expectations of customers to forge the highest impression.

Concept of Organization Efficiency

Efficiency is relevant to the use of factors and working procedure with output as indicator. It involves the organization that can operate with the optimum resource utilization, and the least loss. The organization has management system that facilitates production

and services that meet the organization's goal. It has an ability to formulate strategies, sub-strategies, techniques, methods, and smart technology leading to appropriate work methods and smooth working.

Thongchai Santiwong (1990) stated that organization efficiency meant the ability of an organization to fulfill the set goals through optimum resource utilization, maintenance resources, tools and equipment, and not causing tension to members, members were satisfied with the widespread participation of everyone in determining the objectives of the organization, responsible for problems or difficulties, and the overall organization could adapt and develop for further existence.

Concept of Robotic Process Automation (RPA)

Robotic Process Automation (RPA) is software or program that helps construct the robot (Bot) to imitate human behavior. Humans design Process and Workflow of work in the old format with repetition replacing human workforce. It enables work to become automatic, reducing mistakes and increasing efficiency. It can also work 24 hours.

Bruno et al. (2017) stated that Robotic Process Automation (RPA) was a software system with the ability to imitate human behavior of the use of technology platform.

Nuttawut Pongsiri (2018) stated that Robotic Process Automation (RPA) was an automatic computer program that could independently work covering all transactions or partly supervise a procedure. It was appropriate for repetitive or routine work which made work faster and more correct. But it could not completely replace humans.

Methodology

The quantitative research focused on the attitudes towards RPA by surveying employees who have known RPA. Using G*Power, by defining the power value to 0.95, alpha to 0.05, number of variables to 12, and effect size to 0.05, to calculate the size of samples, the number of samples was at least 218. Questionnaires were distributed to more than 300 samples to guarantee that the number of samples was at least 218. Lucky enough, 300 samples were returned and proceeded, and the minimum number of samples achieved. All questions were applied Likert scales from 1 to 5 indicating lowest agree to highest agree.

Conceptual Framework and Research Hypothesis

Based on research objectives and literature review, this research came up with eight variables to construct the Structural Equation Model of factors impacting the attitudes towards Robotic Process Automation with the following details:

1. There were two independent variables namely:
 - Adjustment consisted of frustration, anxiety, tension
 - Self-esteem consisted of awareness of self-esteem, and acceptance and self-respect
2. There were two mediator variables namely:
 - Performance characteristics consisted of security, safety, career advancement, features within work, communication
 - Competitive advantage consisted of efficiency, system quality, innovation, and response
3. There were two dependent variables namely:
 - Efficiency of RPA consisted of satisfaction of work, participation in work, and employee engagement
 - Attitude towards RPA consisted of perceived usefulness, intention to use the system, experience in usage

With these variables, the conceptual framework was created as shown in Figure 1 and 15 hypotheses as following:

Hypothesis 1: Adjustment had positive influence on the performance characteristics.

Hypothesis 2: Adjustment had positive influence on competitive advantage.

Hypothesis 3: Self-esteem had positive influence on performance characteristics.

Hypothesis 4: Self-esteem had positive influence on competitive advantage.

Hypothesis 5: Competitive advantage had positive influence on performance characteristics.

Hypothesis 6: Performance characteristics had positive influence on the efficiency of RPA.

Hypothesis 7: Competitive advantage had positive influence on the efficiency of RPA.

- Hypothesis 8: Competitive advantage had positive influence on the attitudes towards RPA.
- Hypothesis 9: Efficiency of RPA had positive influence on the attitudes towards RPA.
- Hypothesis 10: Adjustment had positive influence on the attitudes towards RPA with performance characteristics and efficiency of RPA as mediator variables.
- Hypothesis 11: Self-esteem had positive influence on the attitudes towards RPA with performance characteristics and efficiency of RPA as mediator variables.
- Hypothesis 12: Adjustment had positive influence on the attitudes towards RPA with competitive advantage and efficiency of RPA as mediator variables.
- Hypothesis 13: Self-esteem had positive influence on the attitudes towards RPA with competitive advantage and efficiency of RPA as mediator variables.
- Hypothesis 14: Performance characteristics had positive influence on the attitudes towards RPA with efficiency of RPA as mediator variable.
- Hypothesis 15: Competitive advantage had positive influence on the attitudes towards RPA with efficiency of RPA as mediator variable.

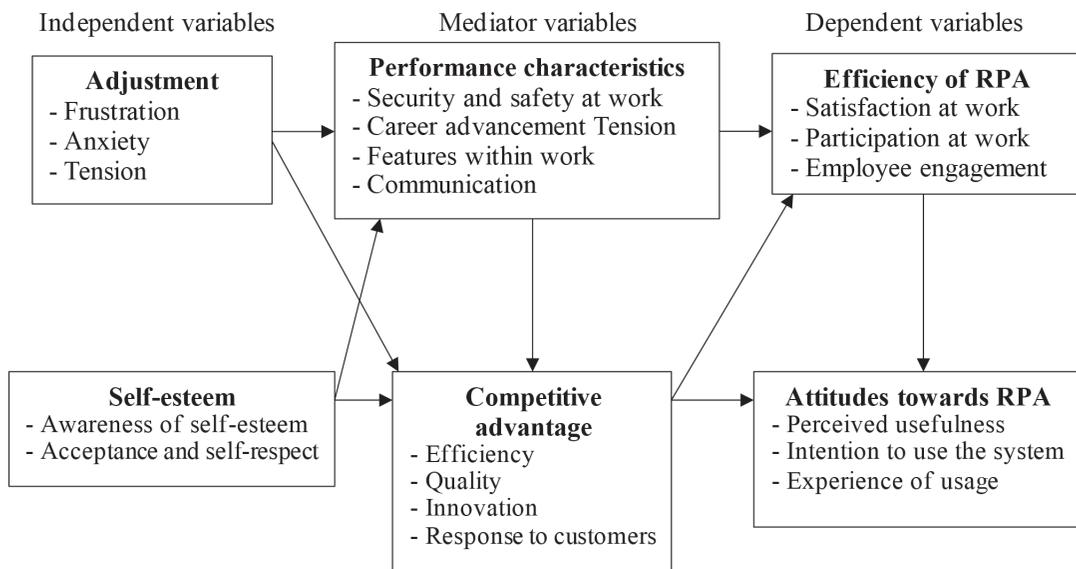


Figure 1: Conceptual Framework

Research Results

The results of the analysis of the general information of 300 samples who were questionnaire respondents, most were female or 214 persons or 71.33%, and 86 male or 28.67%, 201 persons aged 20-30 years old or 67.00%, followed by 64 persons aged 31-40 years old or 21.33%, 19 persons aged 41-50 years old or 6.33%, 11 persons aged less than 20 years old or 3.67%, and 5 persons aged 51-60 years old or 1.67%. Most or 208 persons graduated with B.A. degrees or 69.33%, followed by 71 persons graduated with M.A. degrees or 23.67%, 16 persons lower than B.A. degrees or 5.33%, and 5 persons with Doctoral degrees or 1.67%. Most or 187 persons were private company employees or 62.33%, followed by 40 government officials/government employees or 13.33%, 29 trainees or 9.67%, 24 state enterprise employees or 8.00%, 18 persons in private business or 6.00%, and 2 persons in other occupations or 0.67%.

Most sample or 169 persons had less than 5 years of work experience or 56.33%, followed by 77 persons with 5-10 years of work experience or 25.67%, and 23 persons with 11-15 years and over 20 years of work experience or 7.67%, and 8 persons with 16-20 years of work experience or 2.66%. In terms of position, most or 201 persons were operators or 67.00%, followed by 40 supervisors or 13.34%, 28 managers or 9.33%, 14 trainees or 4.67%, 13 advisors or 4.33%, and others or 4 persons or 1.33%. In terms of average individual monthly income, most or 113 persons with 10,000-20,000 baht or 37.67%, followed by 69 persons with 20,001-30,000 baht or 23.00%, 33 persons with 30,001-40,000 baht or 11.00%, 25 persons with 40,001-50,000 baht or 8.33%, 22 persons with lower than 10,000 baht and with 50,001-60,000 baht or 7.33%, 16 persons with over 60,000 baht or 5.33%. Among them 156 persons or 52.00% had used the Robotic Process Automation (RPA) system and 144 persons or 48.00% had never used the system.

In terms of overall adjustment, it revealed that the questionnaire respondents had opinions at a high level with the mean = 3.95. When divided by each aspect, it revealed that anxiety was at the highest level with the mean = 4.14, followed by tension at a high level with the mean = 3.95, and frustration was at a high level with the mean = 3.81 respectively.

In terms of overall self-esteem, it was found that the questionnaire respondents expressed opinions at a high level with the mean = 4.00. When divided by each aspect,

it revealed that awareness of self-esteem was at the highest level with the mean = 4.0, followed by acceptance and self-respect at a high level with the mean = 3.99 respectively.

Overall performance characteristics revealed that the opinions of the questionnaire respondents were at a high level with the mean of 3.99. When divided into each aspect, it revealed that the features within work were at the highest level with the mean = 4.09, followed by career advancement with the mean = 3.97, security and safety with the mean = 3.96, and communication with the mean = 3.93 respectively.

In terms of overall competitive advantage, it revealed that the questionnaire respondents expressed opinions at a high level or the mean = 4.22. When divided in each aspect, it revealed that system quality was at the highest level or the mean = 4.25, followed by innovation with the mean = 4.24, efficiency with the mean = 4.21, and response with the mean = 4.16 respectively.

In terms of overall efficiency of RPA, it revealed that the questionnaire respondents expressed opinions at a high level with the mean = 4.06. When divided into each aspect, it revealed that employee engagement was at the highest level with the mean = 4.10, followed by satisfaction at work with the mean = 4.09, and participation at work with the mean = 3.99 respectively.

In terms of attitudes towards RPA, it revealed that the questionnaire respondents expressed opinions at a high level or the mean = 4.15. When divided into each aspect, it revealed that intention to use the system was at the highest level with the mean = 4.21, followed by perceived usefulness with the mean = 4.18, and experience of usage with the mean = 4.05 respectively.

Results of Hypothesis Tests

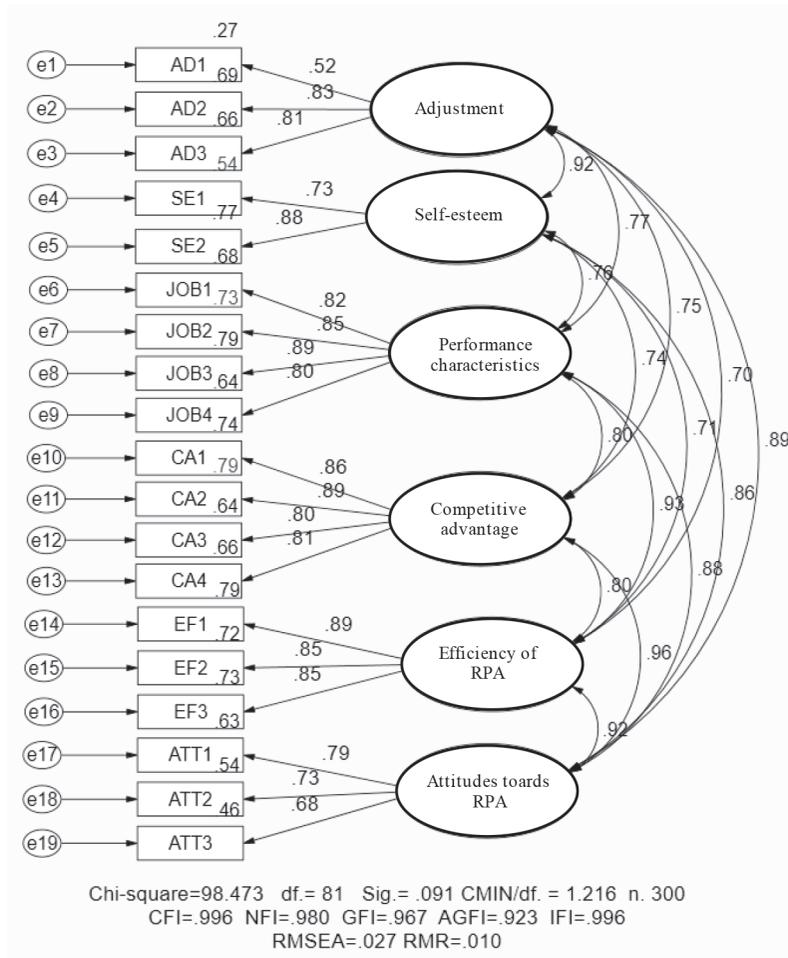


Figure 2: Confirmatory Factor Impacting Overall Attitudes towards RPA

The results of the confirmatory factor analysis of the model of the factors impacting the attitudes towards RPA were congruent with the empirical data at a high level with Chi - Square = 98.473, df = 81.0, Sig. = 0.091 > 0.05, and CMIN/df. = 1.216 < 2.0 with congruence and statistics with Comparative FIT Index (CFI) = 0.996 > 0.90, Goodness of FIT Index (GFI) = 0.967 > 0.90, Adjusted Goodness FIT Index (AGFI) = 0.923 > 0.80, Root Mean Square Error of Approximation (RMSEA) = 0.027 < 0.05, Root Mean Square Residual (RMR) = 0.010 < 0.05, Normed FIT Index (NFI) = 0.973 > 0.90, Incremental FIT Index (IFI) = 0.980 > 0.90, weight of coefficient was between 0.52-0.89 over 0.40, error was

between 0.05-0.16, Multiple Correlation (R²) for each item between 27.0-79.0%, Average Variance Extracted (AVE) between 0.542-0.747, Composite Reliability (CR) between 0.774-0.90, Correlation Coefficient between 0.232-0.777, Range value 2.60-4.00, Minimum value 1.00 and Maximum value 5.00 with the mean between 3.81-4.25 at a high level to the highest level, the standard deviation (S.D.) between 0.56-0.73, variance between 0.31-0.53, skewness between (-0.90) and (-0.01), Kurtosis between (-0.47) and 1.81, Coefficient of Variation (CV) between 13.33-18.60%. The information was appropriately distributed. It showed that overall all the observed variables and the latent variables of the model of the confirmatory factor impacting attitudes towards RPA had reliability as in Figure 2.

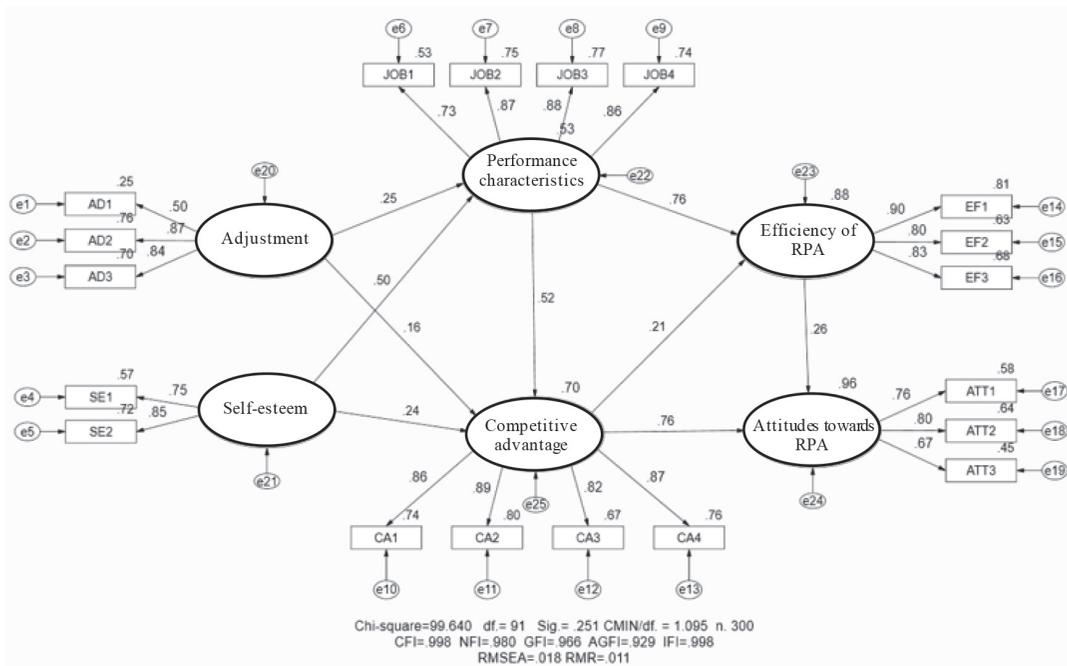


Figure 3: Structural Equation Model of Factors Impacting Attitudes towards RPA

The result of the Structural Equation Modeling of the factors impacting the attitudes towards RPA had the weight coefficient between 0.50-0.90 and Multiple Correlation (R²) between 25.0-81.0%. Based on the analysis of the congruence with the empirical data with the statistical significance at 0.05, Chi-Square = 99.640, df = 91.0, Sig. 0.251 > 0.05, and CMIN/df. = 1.099 < 2.0. It was consistent with the concept of Hair et al. (2006), Bollen

(1989) and Sorbon (1996), Comparative FIT Index (CFI) = 0.998 > 0.90 according to the concept of Hair et al. (2006), Goodness of FIT Index (GFI) = 0.966 > 0.90 according to the concept of Hair et al. (2006) and Mueller (1996), Adjusted Goodness FIT Index (AGFI) = 0.929 > 0.80 according to the concept of Durande-Moreau and Usunier (1999), Root Mean Square Error of Approximation (RMSEA) = 0.018 < 0.05 according to the criteria of Hair et al. (2006), Browne and Cudeck (1993), Normed FIT Index (NFI) = 0.980 > 0.90 according to the concept of Hair et al. (2006) and Diamantopoulos and Siguaw (2000), Incremental FIT Index (IFI) = 0.998 > 0.90 according to the concept of Hair et al. (2006), Root Mean Square Residual (RMR) = 0.011 < 0.05 according to the criteria of Diamantopoulos, Siguaw (2000). It was concluded that the model was congruent with the empirical data according to the level of statistical acceptance as in Figure 3.

Table 1: Results of the Structural Equation Modeling of the Factors Impacting the Attitudes towards RPA

Variables (Path)				λ	SE.	t-value	Sig.	R ²
H1	Performance characteristics	<--	Adjustment	0.25	0.13	2.577	0.010*	53.00%
H2	Advantage	<--	Adjustment	0.16	0.10	2.205	0.027*	70.00%
H3	Performance characteristics	<--	Self-esteem	0.50	0.11	4.556	0.000*	53.00%
H4	Advantage	<--	Self-esteem	0.24	0.09	2.748	0.006*	70.00%
H5	Advantage	<--	Performance characteristics	0.52	0.07	7.507	0.000*	70.00%
H6	Efficiency	<--	Performance characteristics	0.76	0.09	10.290	0.000*	88.00%
H7	Efficiency	<--	Advantage	0.21	0.07	3.419	0.000*	88.00%
H8	Attitude	<--	Advantage	0.76	0.08	8.892	0.000*	96.00%
H9	Attitude	<--	Efficiency	0.26	0.06	3.467	0.000*	96.00%

* With statistical significance at 0.05

As shown in Tables 1 and 2, in terms of the results of the analysis and testing of the Structural Equation Model of the factors impacting the attitudes towards RPA, the variables consisted of adjustment (AD), self-esteem (SE), performance characteristics (JOB), competitive advantage (CA), efficiency of RPA (EF), and attitudes towards RPA (ATT) in total 6 latent variables and 19 observed variables. The results of the analysis revealed that the weight coefficient was between 0.50-0.90 higher than 0.40, Multiple Correlation (R²) was between the variables 25.0-81.0%. In consideration of the regression coefficient of the independent variables of standard score which was the coefficient of determination that identified the direct influence on the path. The results of hypothesis test were summarized as follows:

Hypothesis 1: Adjustment had positive influence on performance characteristics.

Based on the test of hypothesis 1, the regression coefficient = 0.25, error = 0.13, t. - value = 2.577, and Sig. = 0.010 < 0.05. The test result supported the hypothesis H1 or adjustment that had positive influence on performance characteristics and with 53.0% influence on change with the statistical significance at 0.05.

Hypothesis 2: Adjustment had positive influence on competitive advantage.

Based on the test of hypothesis 2, the regression coefficient = 0.16, error = 0.11, t. - value = 2.205, and Sig. = 0.027 < 0.05. The test result supported the hypothesis H2 or adjustment that had positive influence on competitive advantage and with 70.0% influence on change with the statistical significance at 0.05.

Hypothesis 3: Self-esteem had positive influence on performance characteristics.

Based on the test result of the hypothesis 3, the regression coefficient = 0.50, error = 0.11, t. - value = 4.556, and Sig. = 0.000 < 0.05. The test result supported the hypothesis H3 or self-esteem that had positive influence on performance characteristics with 53.0% influence on change with the statistical significance at 0.05.

Hypothesis 4: Self-esteem had positive influence on competitive advantage.

Based on the test result of the hypothesis 4, the regression coefficient = 0.24, error = 0.09, t. - value = 2.748, and Sig. = 0.006 < 0.05. The test result supported the hypothesis H4 or self-esteem that had positive influence on competitive advantage with 70.0% influence on change with the statistical significance at 0.05.

Hypothesis 5: Competitive advantage had positive influence on performance characteristics.

Based on the test result of the hypothesis 5, the regression coefficient = 0.52, error = 0.07, t. - value = 7.507, and Sig. = 0.000 < 0.05.

The test supported the hypothesis H5 or competitive advantage that had positive influence on performance characteristics with 70.0% influence on change with the statistical significance at 0.05.

Hypothesis 6: Performance characteristics had positive influence on efficiency of RPA.

Based on the test of hypothesis 6, the regression coefficient = 0.76, error = 0.09, t. - value = 10.290, and Sig. = 0.000 < 0.05. The test result supported the hypothesis H6 or performance characteristics had positive influence on efficiency of RPA with 88.0% influence on change with the statistical significance at 0.05.

Hypothesis 7: Competitive advantage had positive influence on efficiency of RPA.

The test result of the hypothesis 7, the regression coefficient = 0.21, error = 0.07, t. - value = 3.419, and Sig. = 0.000 < 0.05. The test result supported the hypothesis H7 or competitive advantage that had positive influence on efficiency of RPA with 88.0% influence on change with the statistical significance at 0.05.

Hypothesis 8: Competitive advantage had positive influence on attitudes towards RPA.

The test result supported the hypothesis 8, the regression coefficient = 0.76, error = 0.08, t. - value = 8.892, and Sig. = 0.000 < 0.05. The test result supported the hypothesis H8 or competitive advantage that had positive influence on attitudes towards RPA with 96.0% influence on change with the statistical significance at 0.05.

Hypothesis 9: Efficiency of RPA had positive influence on attitudes towards RPA.

Based on the test of the hypothesis 9, the regression coefficient = 0.26, error = 0.06, t. - value = 3.467, and Sig. = 0.000 < 0.05. The test result supported the hypothesis H9 or efficiency of RPA that had positive influence on attitudes towards RPA with 96.0% influence on change with the statistical significance at 0.05.

Based on the Structural Equation Modeling of the factors impacting the attitudes towards RPA, the variables of adjustment (AD) and self-esteem (SE) were independent variables. The mediator variables included performance characteristics (JOB), and competitive advantage (CA), and efficiency of RPA (EF) which would lead to attitudes towards RPA (ATT). Then, the testing result was presented. It revealed the indirect pathway influence and the results of the hypothesis testing were summarized as follows.

Hypothesis 10: Adjustment had positive influence on attitudes towards RPA with performance characteristics and efficiency of RPA as mediator variables.

The test result supported the hypothesis H10 or adjustment that had positive influence on attitudes of RPA with performance characteristics and efficiency of RPA as mediator variables with the path coefficient totaled 0.05 ($0.25 \times 0.76 \times 0.26$) with the statistical significance at 0.05.

Hypothesis 11: Self-esteem had positive influence on attitudes towards RPA with performance characteristics and efficiency of RPA as mediator variables.

The test result supported the hypothesis H11 or self-esteem that had indirect positive influence on attitudes towards RPA with performance characteristics and efficiency of RPA as mediator variables and with the path coefficient totaled 0.10 ($0.50 \times 0.76 \times 0.26$) with the statistical significance at 0.05.

Hypothesis 12: Adjustment had positive influence on attitudes towards RPA with competitive advantage and efficiency of RPA as mediator variables.

The test result supported the hypothesis H12 or adjustment that had indirect positive influence on attitudes of RPA with competitive advantage and efficiency of RPA as mediator variables and with the path coefficient totaled 0.01 ($0.16 \times 0.21 \times 0.26$) with the statistical significance at 0.05.

Hypothesis 13: Self-esteem had positive influence on attitudes towards RPA with competitive advantage and efficiency of RPA as mediator variables.

The test result supported the hypothesis H13 or self-esteem that had indirect positive influence on attitudes towards RPA with competitive advantage and efficiency of RPA as mediator variables and with the path coefficient totaled 0.01 ($0.24 \times 0.21 \times 0.26$) with the statistical significance at 0.05.

Hypothesis 14: Performance characteristics had positive influence on attitudes towards RPA with efficiency of RPA as mediator variable.

The test result supported the hypothesis H14 or adjustment that had indirect positive influence on attitudes towards RPA with competitive advantage and efficiency of RPA as mediator variables and with the path coefficient totaled 0.20 (0.76x0.26) with the statistical significance at 0.05.

Hypothesis 15: Competitive advantage had positive influence on attitudes towards RPA with efficiency of RPA as mediator variable.

The test result supported the hypothesis H15 or competitive advantage that had indirect positive influence on attitudes towards RPA with competitive advantage and efficiency of RPA as mediator variables and with the path coefficient totaled 0.05 (0.21x0.26) with the statistical significance at 0.05.

Table 2: Results of the Path Analysis of the Structural Equation Model of the Factors Impacting the Attitudes towards Robotic Process Automation

Variables	Influences	JOB	CA	EF	ATT
Adjustment (AD)	Direct	0.25	0.16	-	-
	Indirect	-	0.13	0.25	0.29
	Total	0.25	0.29	0.25	0.29
Self-esteem (SE)	Direct	0.50	0.24	-	-
	Indirect	-	0.26	0.49	0.50
	Total	0.50	0.50	0.49	0.50
Performance Characteristics (JOB)	Direct	-	0.52	0.76	-
	Indirect	-	-	0.11	0.62
	Total	-	0.52	0.87	0.62
Competitive Advantage (CA)	Direct	-	-	0.21	0.76
	Indirect	-	-	-	0.05
	Total	-	-	0.21	0.81
Efficiency of RPA (EF)	Direct	-	-	-	0.26
	Indirect	-	-	-	-
	Total	-	-	-	0.26
R ²		53.0%	70.0%	88.0%	96.0%

The results of the path analysis of the Structural Equation Model of the factors impacting the attitudes towards RPA revealed that the factor that influenced the attitudes towards RPA the highest was competitive advantage with the path coefficient totaled 0.81, followed by performance characteristics with the path coefficient totaled 0.62, self-esteem with the path coefficient totaled 0.50, adjustment with the path coefficient totaled 0.29, efficiency of RPA with the path coefficient totaled 0.26 with 96.0% influence on change. The factor influencing the efficiency of RPA the highest was performance characteristics with the path coefficient totaled 0.87, followed by self-esteem with the path coefficient totaled 0.49, adjustment with the path coefficient totaled 0.25, competitive advantage with the path coefficient totaled 0.21 with 88.0% influence on change. The factor that influenced competitive advantage the highest was performance characteristic with the path coefficient totaled 0.52, followed by self-esteem with the path coefficient totaled 0.50, and adjustment with the path coefficient totaled 0.29 with 70.0% influence on change. Moreover, self-esteem influenced performance characteristics with the path coefficient totaled 0.50, and adjustment influenced performance characteristics with the path coefficient totaled 0.25 with 53.0% influence on change.

Conclusion, Discussion, and Recommendations

Conclusions and Discussions

Based on the study of Attitudes towards Robotic Process Automation (RPA), the results of the analysis were used for the discussion of the research findings as follow:

1. In terms of the results of the analysis of the opinions on the factors impacting the attitudes towards RPA, it revealed that the opinion on adjustment was at a high level, the highest was anxiety, followed by tension, and frustration. In terms of self-esteem, the opinion was at a high level, the highest was awareness of self-esteem, followed by acceptance and self-respect. In terms of performance characteristics, the opinion was at a high level, the highest was features within work, followed by career advancement, security and safety, and communication. In terms of competitive advantage, the opinion was at a high level, the highest was system quality, followed by innovation, efficiency, and response. In terms of the efficiency of RPA, the opinion was at the highest level, the highest was employee engagement, followed by participation at work, satisfaction at work. In terms of the attitudes towards RPA, the opinion was at the highest level,

the highest was the intention to use the system, followed by perceived usefulness and experience in usage respectively.

3. In terms of the objectives to study the influences of the adaptation pathways of self-esteem and efficiency in performing work that impacted competitive advantage and attitudes towards RPA, it revealed that the factors that influenced the attitudes towards RPA the highest was competitive advantage, followed by performance characteristics, self-esteem, adjustment, and efficiency of RPA respectively which was in line with the concept of DeLone and McLean (1992) which stated that the quality of system was data processing according to the production data that reflected correct and efficient system with quality as the indicator of the IT system procedure and impacted the satisfaction of users. The factor that influenced the efficiency of RPA the highest was performance characteristics, followed by self-esteem, adjustment, and competitive advantage. The factor that influenced competitive advantage the highest was performance characteristics, followed by self-esteem, and adjustment. Moreover, self-esteem influenced performance characteristics and adjustment influenced performance characteristics with statistical significance.

4. In terms of the objectives to study the attitudes towards RPA, it was found that adjustment had positive influence on performance characteristics, adjustment had positive influence on competitive advantage, self-esteem had positive influence on performance characteristics, self-esteem had positive influence on competitive advantage, competitive advantage had positive influence on performance characteristics, performance characteristics had positive influence on efficiency of RPA, competitive advantage had positive influence on efficiency of RPA and attitudes towards RPA, efficiency of RPA had positive influence on attitudes towards RPA. Moreover, it was found that performance characteristics and efficiency of RPA were mediator variables. The research findings revealed that adjustment and self-esteem had indirect positive influence on attitudes towards RPA, with performance characteristics and efficiency of RPA were mediator variables, adjustment and self-esteem had indirect positive influence on attitudes towards RPA, with competitive advantage and efficiency of RPA as mediator variables, adjustment and competitive advantage had indirect positive influence on attitudes towards RPA, with competitive advantage and efficiency of RPA were mediator variables with the statistical significance.

Recommendations

1. The research findings revealed that the factor that mostly influenced the attitudes towards RPA was competitive advantage. Therefore, importance should be placed on promoting the personnel in an organization to learn and change their method of work to suit the application of RPA at work in the organization.

2. The research findings revealed that the factor influencing the efficiency of RPA the highest was performance characteristics. Therefore, the organization should place importance on human resource management appropriate to their nature of work, work assignment should be appropriate to the ability and skills, appropriate applications of RPA in accordance with the nature of work in each agency.

3. The research findings revealed that the efficiency of RPA had positive influence on the attitudes towards RPA. Therefore, personnel should be promoted to have knowledge, learning, and special training to increase skills in RPA so that the personnel in an organization understand and have good attitudes towards the application of RPA in the organization.

Recommendations for Future Research

1. The next research should study the comparison of the Structural Equation Model with the attitudes towards RPA, divided by the group of personnel in each type of business with differences in environment and qualification for the maximum benefit of the development and promotion of the RPA.

2. The next research should use latent variable or covariate for example, knowledge and understanding of the use of RPA, acceptance of technology, quality of RPA system should be applied to the model of the attitudes towards RPA in order that the study findings would know the variables that have impact or the covariate that influences the communication so that the study findings will benefit the development of research and the enhancement of the research relevant to the development of the models with more diversities.

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