

Classify the factors of Project Selection for SMEs System

G. Arunlatha and M. Mazhilarasan

School of Computing Science, Vels Institute of Science, Technology & Advanced Studies, India.

Article Information

Received : 06 Sep 2023
Revised : 14 Sep 2023
Accepted : 10 Sep 2023
Published : 16 Oct 2023

Corresponding Author:

R. G. Arunlatha

Abstract—Project selection for small and medium enterprises (SMEs). There are a variety of tangible and intangible factors which impact on the decision-making, and lead organizations to choose the right project. This study focuses on 11 factors, i.e. cultural, process, knowledge of business, knowledge of work, education, experience, risk awareness, governance, selection of players, preconceptions and timeframe. The influence of these factors was determined by answering five questions which are, RQ1: Do contributors have a vision about the best practice? RQ2: What is the variance among the current practice and the best practice? RQ3: How does this vision match with what is the best practice? RQ4: Are there important factors to achieve ideal project selection? RQ5: Will these set of questions be set as a base for the decision for the achievement of ideal project selection? These factors are tested through a comprehensive questionnaire which was distributed to SME organizations. About 12 companies responded with 166 participants in total. The results were then analysed using SPSS and the outcome is in the form of a correlation for the above mentioned factors. It was found that those factors significantly influenced the manager in their project selection. Moreover, each factor has several correlations with others; however, these are different in terms of the correlation values. As the result, the authors were able to classify the factors accordingly with relation to the correlation value level.

Keywords: *Project, Influencing Factors, Risk Analysis, Risk Awareness.*

Copyright © 2023: G. Arunlatha and M. Mazhilarasan, This is an open access distribution, and reproduction in any medium, provided Access article distributed under the Creative Commons Attribution License the original work is properly cited License, which permits unrestricted use.

Citation: G. Arunlatha and M. Mazhilarasan, “Classify the factors of Project Selection for SMEs System”, Journal of Science, Computing and Engineering Research, 6(9), 7-11, October 2023.

I. INTRODUCTION

This paper will concentrate on the selection criteria which lead organizations to choose the correct project, particularly in the IT division of SMEs or IT SMEs. Scientists have characterized a project as an arrangement of a planned issue. Each area in any firm has specific capacities to play out its business and fulfill its objectives. Parts of projects are pivotal in the business policy for organizations. In wording a project's objectives, they can be set up to satisfy any area in the measurements of business, for example, an improvement, modification, campaign, issue solving et cetera. The projects' periods are distinctive and based upon the projects' scopes (Ngoc Se, 2010). In contrast, a project is an impermanent endeavour to make a unique product, service, or result. A project may, furthermore, get to be dismissed, if the customer (support, client or champion) would like to cancel the project. A project can include a solitary individual or various individuals, a solitary organizational unit, or numerous organizational units from different organizations (PMI, 2013). Also, "project management is the procedure of the utilization of knowledge, skills and tools to project exercises to meet project necessities" (PMI, 2004). Each project demands a specific mix of these techniques and tools organized to the assignment condition and lifecycle of the project. The planning, monitoring and control of all parts of a project and the inspiration of each one of those included in it is needed to accomplish the project goals on time and cost, quality and execution (Roger, 1999). High- performing organizations are showing that sticking to the demonstrated project,

programme, and portfolio management practices decrease costs, dangers or risks and enhances the achievement rates of tasks and projects. This can happen by the contribution of various factors (Mark, PMI, 2015). The key duty of the project director is to effectively finish the project goals by adjusting the contending requests for time, scope, quality and cost (PMI, 2004). Project directors/managers require key abilities other than those that are simply specialized to lead and convey their project effectively (William, 2000). The part of the project manager is to complete the work by meeting the needs of the supporter. This is finished by organizing the resources (both human and capital) in a way that will yield the most important outcomes (Isaac, 2014). This review will be fascinating in actualizing the achievement figures terms of project management for IT

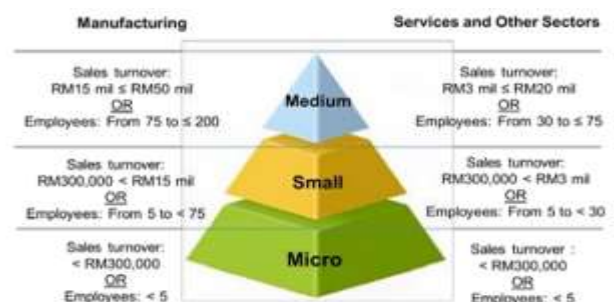


Figure 1. Definition of SMEs Category

areas in Malaysian SMEs in light of the fact that it underscores the significance of consolidating the critical factors of project management into IT projects in SMEs. This review will attempt to explore best practices and how they can be connected to the SMEs. Project management and project selection have progressively turned out to be amongst the overwhelming factors influencing each part of business improvement everywhere throughout the world. As of late, numerous SMEs in various nations are conveying and running projects for formative and benefit purposes (Idisemi Apulu, 2012).

II. PROBLEM STATEMENT

public or private, large or small and service or product and any type of organization, in terms of poor project management. The problem statement shows that issues arise through: lack of knowledge in any field or no experience, lack of communication, lack of risk analysis, unqualified employees, lack of skills, lack of adequate planning or breakdowns in communication and not following the standard project management processes. These lead organizations to fail and not achieve success in terms of budget, time and cost. Therefore, non-completion of projects on time as well as budget, with the project wasting valuable time, means that the company does not accomplish its strategies, which is a product of failed decision-making. In contrast, applying the critical success factors and, moreover, the correct methods and techniques, might lead the firm to select the right project and accomplish its goals (Meridith, 2008; Jennifer, 2012). Figure 1 shows the classification of SMEs in Malaysia (SME Corp. Malaysia, 2017).

III. METHODOLOGY

The study approach utilized two surveys with the first being ‘qualitative’ and involving in-depth interviews with experienced informants. Subsequent thematic analysis of the interview content allowed research questions RQ1 to RQ4 to be addressed, and the identification of factors for further study in the questionnaire survey. The questionnaire survey, which was completed by the same respondents in the interview and others, therefore exhibited similarities to the Delphi method. Explanation and analysis of the data from the questionnaires allowed research question RQ5 to be addressed. The total sample which was used in this paper is 166 respondents from 12 different companies. As this paper focuses on the questionnaire survey, the outputs were the last question (which is RQ5), also other outcomes and recommendations are drawn from this study. RQ5: Are there popular contributors to the achievement of ideal project selection? The study framework is shown diagrammatically in Figure 2. This figure gives the relation between the the first forth research aims, the scope of the literature review and the coherent research questions. Therefore, the research questions are drawn to match the research aims

IV. RESULTS AND DISCUSSIONS

Culture correlation The culture factor is correlated with process. Culture, as well, has a moderate correlation with education (.31); this reveals that education is considered as one factor in the Malaysian context through SMEs. Process correlation Process has a correlation with almost every other factor except risk management. Process correlation with knowledge of business (.371) is moderately significant, but it shows that process is tightly connected to knowledge of business, without the business knowledge the process cannot be carried out. The position is similar with education (-.188), but in a different direction. However, the correlation is very low and in the opposite direction. There is a process correlation with governance (.237), which means that governance is essential to control process to meet the goals of the project. Knowledge of business correlation This is correlated to culture and process, which was discussed previously. It is logically correlated with knowledge (.316). The respondents who rated knowledge of business highly also rated knowledge highly as well. Interestingly, knowledge of business is not correlated with education. It is correlated with risk awareness (.169); this is rational because knowledge of business is always alert to the risks related to the projects. Correlation for Knowledge This factor seems the less correlated factor. Knowledge is correlated with risk awareness (.36). This might be explained by the idea that knowledge helps in being aware of the risks to the project. The same applies to governance, preconception and timeframe. Correlation for Education Education seems to raise the awareness of risks, and makes leaders select players more carefully. Correlation for Experience Experience is found to be important, but with selection of players and preconception, there are many other factors that are more important than experience in Malaysian SMEs. Details of the results are tabulated in table 1

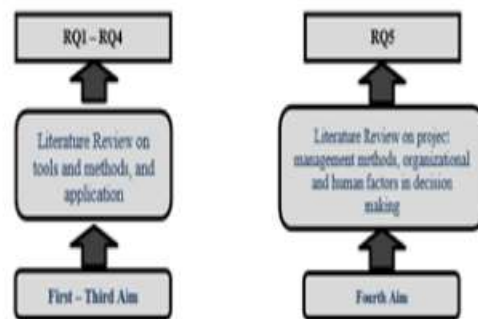


Figure 2. Flowchart of the conducted study

Table 1. Overview of the Critical Factors from the point of view of quantitative analysis

		Cltur	Pros.	Knldg. B.	Knowl. d.	Educ.	Expn.	Risk.	Gov.	Sel. Pn.	Prcn. c.
Culture	Pearso	1									
	Sig.										
	N	16									
Process	Pears		1								
	o	.339									
	Sig.	.00									
Knowledge of business	Pears			1							
	o	.01	.37								
	Sig.	.86	.00								
Knowledge	Pears				1						
	o	.06	.06	.316							
	Sig.	.41	.38	.000							
	Pears					1					
	o	.06	.06	.316							
	Sig.	.41	.38	.000							
	Pears						1				
	o	.06	.06	.316							
	Sig.	.41	.38	.000							
	Pears							1			
	o	.06	.06	.316							
	Sig.	.41	.38	.000							
	Pears								1		
	o	.06	.06	.316							
	Sig.	.41	.38	.000							
	Pears									1	
	o	.06	.06	.316							
	Sig.	.41	.38	.000							

V. CONCLUSION

The knowledge of business and knowledge of the decision-makers are essential to determine the practice followed. There is a strong relationship between the eleven factors for decision- making. However, governance was the core of the inter-relationship, which has 9 links with other factors, then experience, and culture is the second most significant with 8 links. Moreover, process, education, risk awareness, preconception, knowledge of business and work and selection of players were found to have 7 links. Meanwhile, the timeframe is less inter-related and has only 6 links. This is in contrast to other studies, which prioritize culture. In this context, the company should prioritize firstly, governance, experience and culture. Then secondly should come process, education, risk awareness, preconception, knowledge of business and work and selection of players. Finally, it should prioritize timeframe

REFERENCES

[1]. P. Nirmala, T. Manimegalai, J. R. Arunkumar, S. Vimala, G. Vinoth Rajkumar, Raja Raju, "A Mechanism for Detecting the Intruder in the Network through a Stacking Dilated CNN Model", *Wireless Communications and Mobile Computing*, vol. 2022, Article ID 1955009, 13 pages, 2022. <https://doi.org/10.1155/2022/1955009>.

[2]. J.R.Arunkumar, Dr.E.Muthukumar,"A Novel Method to Improve AODV Protocol for WSN" *Journal of Engineering Sciences*" Volume 3, Issue 1, Jul 2012. ISSN NO: 0377-9254

[3]. J. R. Arunkumar, S. Velmurugan, B. Chinnaiah, G. Charulatha, M. Ramkumar Prabhu et al., "Logistic regression with elliptical curve cryptography to establish secure iot," *Computer Systems Science and Engineering*, vol. 45, no.3, pp. 2635–2645, 2023.

[4]. P. K. Devi, D. Arulanantham, C. Kalaivanan, N. Gomathi, J. R. Arunkumar and G. Ramkumar, "An Secure and Low Energy Consumption based Intelligent Street Light Managing System using LoRa Network," 2022 6th International Conference on Electronics, Communication and Aerospace Technology, Coimbatore, India, 2022, pp. 638-645, doi: 10.1109/ICECA55336.2022.10009408.

[5]. Prathima Chilukuri , J.R. Arun Kumar , R. Anusuya , M. Ramkumar Prabhu. "Auto Encoders and Decoders Techniques

of Convolutional Neural Network Approach for Image Denoising In Deep Learning" *Journal of Pharmaceutical Negative Results*, 13(4), 1036–1040. <https://doi.org/10.47750/pnr.2022.13.04.142> ,November 4, 2022.

[6]. R. Yugha, V. Vinodhini, J. R. Arunkumar, K. Varalakshmi, G. Karthikeyan and G. Ramkumar, "An Automated Glaucoma Detection from Fundus Images based on Deep Learning Network," 2022 Sixth International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud) (I-SMAC), Dharan, Nepal, 2022, pp. 757-763, doi: 10.1109/I-SMAC55078.2022.9987254.

[7]. E. Thenmozhi, A. Karunakaran, J. R. Arunkumar, V. Chinnammal, C. Kalaivanan and G. Anitha, "An Efficient Object Detection and Classification from Restored Thermal Images based on Mask RCNN," 2022 Sixth International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud) (I-SMAC), Dharan, Nepal, 2022, pp. 639-645, doi: 10.1109/I-SMAC55078.2022.9987422.

[8]. L. Saravanan, W. Nancy, K. P. Chandran, D. Vijayanandh, J. R. Arunkumar and R. T. Prabhu, "A Novel Approach for a Smart Early Flood Detection and Awareness System using IoT," 2022 8th International Conference on Smart Structures and Systems (ICSSS), Chennai, India, 2022, pp. 1-4, doi: 10.1109/ICSSS54381.2022.9782286.

[9]. S. Bharathi, A. Balaji, D. Irene. J, C. Kalaivanan and R. Anusuya, "An Efficient Liver Disease Prediction based on Deep Convolutional Neural Network using Biopsy Images," 2022 3rd International Conference on Smart Electronics and Communication (ICOSEC), Trichy, India, 2022, pp. 1141-1147, doi: 10.1109/ICOSEC54921.2022.9951870.

[10]. Prathima, C. H., Anusuya, R., & Prabhu, M. R. K. (2022). Comprehensive Design Analysis of Digital Marketing in Agriculture Sector. *International Journal of Early Childhood Special Education*, 14(5), 2022.

[11]. Atul Kumar Dwivedi, Deepali Virmani, Anusuya Ramasamy, Purnendu Bikash Acharjee, Mohit Tiwari" Modelling And Analysis Of Artificial Intelligence Approaches In Enhancing The Speech Recognition For Effective Multi-Functional Machine Learning Platform – A Multi Regression Modelling Approach " *Journal of Engineering Research - ICMET Special Issue*, 2022-04-06.

[12]. M.Ramkumar Prabhu, A.Rajalingam, J.R.Arunkumar, Dr.R.Anusuya" Microstrip Patch Antenna Using Combined Slots for Bandwidth Enhancement and Size", *Journal of Engineering Sciences*, Vol 11, Issue 1, Jan, 2020, ISSN NO: 0377-9254.

[13]. Anusuya Ramasamy, Abel Adane Changare" Hybrid Fuzzy Knowledge Based Prediction Model for the Software Development and Maintenance Quality in Software Engineering Approach" *International Journal of Innovative Technology and Exploring Engineering (IJITEE)*, ISSN: 2278-3075, Volume-9 Issue-10, August 2020.

[14]. J.R.Arunkumar," Chaotic African Buffalo Optimization Based Efficient Key Mechanism in Categorized Sensor Networks:, *International Journal of Engineering and Advanced Technology (IJEAT)*, ISSN: 2249 – 8958, Volume-9 Issue-3, February, 2020.

[15]. R. Anusuya, M. Ramkumar Prabhu, Ch. Prathima, J. R. Arun Kumar" Detection of TCP, UDP and ICMP DDOS attacks in SDN Using Machine Learning approach" *Journal of Survey in Fisheries Sciences*, Vol. 10 No. 4S (2023): Special Issue 4.

- [16]. M. Ramkumar Prabhu, A. Rajalingam, J. R. Arunkumar, R. Anusuya, "Microstrip Patch Antenna Using Combined Slots For Bandwidth Enhancement And Size" *Journal of Engineering Sciences (JES)*, Vol 11, Issue 1, Jan / 2020, ISSN NO: 0377-9254.
- [17]. M. Ramkumar Prabhu, J. R. Arunkumar, A. Rajalingam, R. Anusuya "A Modified Square Patch Antenna with Rhombus slot for High bandwidth" *International Journal of Innovative Technology and Exploring Engineering (IJITEE)* ISSN: 2278-3075, Volume-8 Issue-9, July 2019.
- [18]. Revanesh, M., Gundal, S.S., Arunkumar, J.R. Arunkumar et al. Artificial neural networks-based improved Levenberg–Marquardt neural network for energy efficiency and anomaly detection in WSN. *Wireless Netw* (2023). <https://doi.org/10.1007/s11276-023-03297-6>.
- [19]. I. Chandra, K. V. Karthikeyan, R. V, S. K, M. Tamilselvi and J. R. Arunkumar, "A Robust and Efficient Computational Offloading and Task Scheduling Model in Mobile Cloud Computing," 2023 International Conference on Artificial Intelligence and Knowledge Discovery in Concurrent Engineering (ICECONF), Chennai, India, 2023, pp. 1-8, doi: 10.1109/ICECONF57129.2023.10084293.
- [20]. Jangam Raghunath, S Kiran, G Siva Nageswara Rao, JR Arun Kumar, R Anasuya, C Siva Kumar," A MACHINE LEARNING TECHNIQUE TO DETECT BEHAVIOR BASED MALWARE", *Semiconductor Optoelectronics*, Vol. 42 No. 1 (2023), 1268-1278
- [21]. Dr. J. R. Arunkumar. "Enhanced Dynamic Authorized Secured Protocol for Wireless Sensor Networks," *Journal of Science, Computing and Engineering Research*, 1(1), 07-11, Mar-Apr 2020.
- [22]. Anitha Gopalan, O. Vignesh, R. Anusuya, K. P. Senthilkumar, V. S. Nishok, T. Helan Vidhya, Florin Wilfred," Reconstructing the Photoacoustic Image with High Quality using the Deep Neural Network Model", *Contrast Media & Molecular Imaging*, Volume 2023 | Article ID 1172473 | <https://doi.org/10.1155/2023/1172473>.
- [23]. R. Anusuya, N. Anusha, V. Sujatha, R. Radhika and S. Iniyan, "Machine Learning based Landslide Detection System," 2023 7th International Conference on Computing Methodologies and Communication (ICCMC), Erode, India, 2023, pp. 319-323, doi: 10.1109/ICCMC56507.2023.10084226.
- [24]. S. Sivakumar, R. Anusuya, V. Nagaraju, L. P. Narendruni and R. Thamizhamuthu, "QoS Based Efficient Link and Consistent Routing in Wireless Sensor Network," 2023 International Conference on Intelligent and Innovative Technologies in Computing, Electrical and Electronics (IITCEE), Bengaluru, India, 2023, pp. 1241-1246, doi: 10.1109/IITCEE57236.2023.10091080.
- [25]. I. Chandra, G. Sowmiya, G. Charulatha, S. D, S. Gomathi and R. Anusuya, "An efficient Intelligent Systems for Low-Power Consumption Zigbee-Based Wearable Device for Voice Data Transmission," 2023 International Conference on Artificial Intelligence and Knowledge Discovery in Concurrent Engineering (ICECONF), Chennai, India, 2023, pp. 1-7, doi: 10.1109/ICECONF57129.2023.10083856.
- [26]. R. Meena, T. Kavitha, A. K. S, D. M. Mathew, R. Anusuya and G. Karthik, "Extracting Behavioral Characteristics of College Students Using Data Mining on Big Data," 2023 International Conference on Artificial Intelligence and Knowledge Discovery in Concurrent Engineering (ICECONF), Chennai, India, 2023, pp. 1-7, doi: 10.1109/ICECONF57129.2023.10084276.
- [27]. G. Karthikeyan, D. T. G, R. Anusuya, K. K. G, J. T and R. T. Prabu, "Real-Time Sidewalk Crack Identification and Classification based on Convolutional Neural Network using Thermal Images," 2022 International Conference on Automation, Computing and Renewable Systems (ICACRS), Pudukkottai, India, 2022, pp. 1266-1274, doi: 10.1109/ICACRS55517.2022.10029202.
- [28]. S. Bharathi, A. Balaji, D. Irene. J, C. Kalaivanan and R. Anusuya, "An Efficient Liver Disease Prediction based on Deep Convolutional Neural Network using Biopsy Images," 2022 3rd International Conference on Smart Electronics and Communication (ICOSEC), Trichy, India, 2022, pp. 1141-1147, doi: 10.1109/ICOSEC54921.2022.9951870.
- [29]. Dr. R. Anusuya. —Stacking Dilated CNN Authorized Secured Protocol for IoT Security, —*Journal of Science, Computing and Engineering Research*, 1(1), 01-07, May- June 2022.