P-ISSN: 2709-6254	Journal of Development and Social Sciences	July-Sep 2022, Vol. 3, No. 3
O-ISSN:2709-6262	http://dx.doi.org/10.47205/jdss.2022(3-III)45	[469-478]

Journal of Development and Social Sciences
www.jdss.org.pk

RESEARCH PAPER

The Study of Factors having Effect on Engineering Construction Management: A Case Study of CPEC Pakistan

[1]Umer Farooq* [2]Subhan Ud Din [3]Shahan Mehmood Cheema

1. M.Phil. Scholar, Business & Management Sciences Department, The Superior University, Lahore, Punjab, Pakistan
2. M.Phil. Scholar, Business & Management Sciences Department, The Superior University, Lahore, Punjab, Pakistan
3. Assistant Professor, Business & Management Sciences Department, The Superior University, Lahore, Punjab, Pakistan

***Corresponding Author** umerfarooq4420@gmail.com

ABSTRACT

The China-Pakistan Economic Corridor (CPEC) will not only enhance the strategic cooperation between Beijing and Islamabad, but also open up new avenues of economic development for the people of Baluchistan. This financial entry idea was initially offered by China and Pakistan under Musharraf's administration. Then, Chinese Premier. While there, he discussed the significance of the CPEC project and after that on April 20, 2015, China President Xi Jinping toured to Pakistan and officially launched this CPEC project. In the entire time that Pakistan has existed, the Chinese president has only visited Pakistan twice, the first time being Mr. Hu Jintao in 2006 and the second time being Xi in 2015. In 2014, Xi's toured to Pakistan was cut short because of the country's tenuous political and economic situation. Xi agreed to 51 different courses of action with Pakistan, including plans for the Gwadar port, transportation, and energy. Two of these paths are with South Asian nations. "China-Pakistan Economic Path" has its starting point in the Chinese city of Kashgar and connection points in the Pakistani port of Gwadar. Additionally, the passage is anticipated to link CPEC's northern regions with the South Asian maritime Silk Road. The "Bangladesh-China-India-Myanmar Economic Corridor" is also a lobby in the South Asian nation. According to statistics from the Ministry of Planning, Development and Reform, Baluchistan is estimated to receive $7.1 billion initial investments through the CPEC, ranking second in its share from the total of $46 billion. The CPEC will connect Pakistan to Central Asia via the Eurasian Land Bridge planned under China's "Belt and Road" initiative.

KEYWORDS CPEC, Engineering Construction, Pak-China Relations

Introduction

The 21st Century has so far seen one additional advancement in South Asia's financial and economic sectors. South Asians and one additional district now have more opportunities to form alliances with one another thanks to initiatives like CPEC and OBOR. The parts and obligations of development bosses are especially tantamount in nature all through the world. The designing development the board conspire extension is known to be the soul of the plan by most extreme number examiners (Kramar, 2014). (Rees, 2021) recommended that the designing development the board project probability is the piece of the plan arrangement that includes recording and characterizing the rundown of driven highlights, points, objectives, and targets. So on effort in relations with funds (Senaratne, 2016) labor and time should be placed into the designing development the board project estimated by the venture scope looking like deliverable (Ritzinger, 2015).

The destructive parts of CPEC with regards to designing development the executives have never been given the due thought in writing due to which the review would likewise examine the aberrations of the tasks also. However, in these investigations, the designing

and development of the executives is referred to collectively and not independently for each nation, despite the fact that experts have authored countless articles or news items about the linkages between CPEC, OBOR, and the south Asian countries. The many implications would therefore be covered in this paper. Although this project also involves the neighboring nations of Pakistan and India, there is frequently hostility along their separate borderlines for a variety of reasons, most notably the Kashmir conflict. China has a border with both of these nations, but when compared to India, its relations with Pakistan are far better. Along these lines, India frequently experiences a sense of disassociation. Time delay, financial plan problem too as joblessness should be visible as the issues for development the board projects. Time postponement can lead to lethal issues in more than one venture as the majority of the times; project is trailed by a line of undertakings. Likewise it can straightforwardly or in a roundabout way influence the value of task. Financial plan can increment of lessening as impacted by time obliges. This can be kept away from if legitimate preparation and planning are finished by the accomplished representatives (Ritzinger, 2015).

Literature Review

The CPEC is the far reaching arranging of various sorts of foundation, transportation, energy creation, and free financial zones in Pakistan. China and Pakistan are close friends that support one another both domestically and internationally. The Karakorum Highway (KKH), which connects Kashghar and Islamabad, is where they are joined and have similar geographic boundary lines. The highway, which is also referred to as the Pakistan-China Friendship Highway, is continuously being extended to facilitate travel between the two countries (Ali, 2015). After the CPEC is completed, military & financial cooperation will increase as Pakistan and China's ties become more stable, that will also alter international politics in South Asia. The CPEC project also includes improvements to Gwadar Port that gives China approach to the Indian Sea. China has a significant influence over this project. At some point in the future, the Chinese maritime office in Gwadar Port will develop into an extraordinarily enduring presence in the Indian Ocean (Barber, 2014). A component of the OBOR Initiative upgrade project for Pakistan's financial situation is the CPEC. Additionally, this undertaking not just paces up the co-activity among Pakistan and China yet additionally assumes a fundamental part in the improvement of the entire area. Additionally, the CPEC will offer Uzbekistan, Kazakhstan, Azerbaijan, and Turkmenistan another energy pathway (Irshad, 2015).

Implications for CPEC for Engineering Construction Management

The goal of forging supportive & encouraging ties along Indian subcontinent states is as well present (Aqeel, 2016). China's assurance to the particular states relates to growth & development of the base, power social trade, & growth of workforce. The rising states are mostly found in Indian subcontinent land. In the present part, it is important to thoroughly discuss the effects of the CPEC project on the region of South Asia .The designing development the board is to be considered in every one of the activities completed under CPEC, the significant hallway of OBOR, hence, the conversation about every component is given under.

Dam Building

The Power China Company has completed the errand's planning strategy. These dams have been being improved for a time; one of the dams was finished in 2016. (Aqeel, 2016) The Chinese government built these dams in order to provide Vietnam and Thailand with a certain amount of energy. Additionally, the Chinese government tries to supply energy to South Asian nations via a chain of 72 dams in case they need to take on the "Battery of South Asia" in future. One dam in particular, the Nam Khan 3 hydroelectric project, unlocked the door for residents of the Thai valley. The experts (Aqeel, 2016) have also raised the significant results that the ranchers, who are more numerous in that valley, can seize the

prospects assisting their yields and by doing so, they can obtain the commercial sectors of various Countries gaining their direction for strengthening the interaction among other Indian subcontinent states in the part through the CPEC project. Additionally, the dam is a piece of planning enhancement that CPEC must fully take into account because it will have a significant impact on Pakistan (Khan, 2019).

Time Related Problems

Many projects have been hampered simply by the passing of time. As time is the fundamental part of an extensive variety of work. Deferral problems, however, might arise for a variety of causes. This delay in work completion is risky and dangerous not only for the individual for whom it is being made at this time but also for those who are obligated to complete it. These dangers may include a weakening of the financial market, unnoticed holes in the project design, or foggy factors that may have an impact on the result of an errand (Marsh, 2017).

Employee related Problems

Many activities are dropped or disappointed because of managers essentially. As managers are the foundation of each project, in the event that they are dynamic characters of each task, eventually project can be accomplished all the more proficiently. Moreover, your business endures when there is no clarity and planning prior to beginning a task (Demirkesen, 2015). Then again, inspiration as well as motivation additionally assumes an extraordinary part in making representatives to get include proficiently in their particular tasks and to take care of business really when there is more responsibility or there is need to early comply with the time constraint. Accordingly, bosses ought not to be disregarded as just with them project or objective can be accomplished.

Time Related Problem and Engineering Construction Management Attainment

It is believed a certain time allied problems have a significant effect on the design and development board's ability to move forward, as time delays result in increased money for the task directors or clients to support. Because of the increased costs brought on by delayed projects, issues with project results such as disappointment may arise. In one exploration it was suggested that, "Delays are regularly announced as the reason for a few contentions that influence the various gatherings associated with development projects. To keep away from these struggles and prevail on the conveyance of development projects, workers for hire ought to execute project management processes. Project management incorporates various preparation and controlling cycles that are suggested for conforming to the proprietors' prerequisites connected with project time, cost, quality, and others".

Budget Related Problem and Engineering Construction Management Attainment

It is clear a certain managing costs and expenses before beginning any project is very important. Without an estimate and a pre-plan, it will be difficult to complete the task because there will be no plan for the resources and money needed to start or continue the project. Project managers are prepared to fully understand the course of action objectives throughout the cooperation or task methods as checked and controlled costs prepare them .Preplanning is fundamental as it makes capable the undertaking administrator to look at estimated spending plan and actual spending plan in each progression, so that project director can assess the two budget plans at each progression and can determine the matter assuming there is any issue during the time spent dealing with the expense in the development.

Hypotheses

H1: Time related problem have significant positive effect on ECM for Pakistan under CPEC.

Work of talented and diligent specialists can take the standard of task higher. On the other hand, whether labors are not motivated & devoted, the undertaking can be postponed, increasing the expenditure.

H2: Employee regarding problems have big impact effect on ECM under CPEC.

The project can advance by obstacles and constraints if appropriate placement is made and resources, such as budget and human resources, are distributed elegantly so that no such difficulty is detected. However, if even one piece is allocated incorrectly, it can completely defeat the project's goal.

H3: Budget related problem have significant effect on ECM under CPEC.

Theoretical Framework:

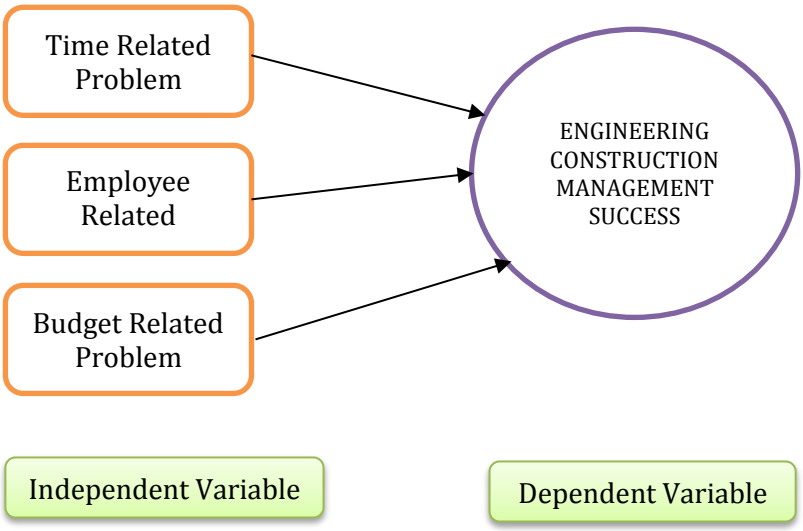

Fig.01 Theoretical framework

Material and Methods

We used a quantitative methodology to collect data from the staff of different CPEC projects throughout Pakistan in order to better grasp the study's goal. The particular workers served as the study's primary defendants, and email was used to contact them. Due to restrictions on travel and domestic lockdowns in Pakistan, we used Google's review platform to gather information for this study online. All respondents were made aware that the data they supplied would be kept private and used exclusively for study. Given that English is the official language of Pakistan and is well understood by its educated people, we encouraged the use of English for the questionnaire. The wording of a specific construct has been slightly changed in relation to CPEC.

Sampling

The convenient sampling technique has been used because it was not difficult to contact respondents utilizing this technique. Furthermore, the creator mentioned the members to finish the questionnaire and flow its connection among individual CPEC representatives. We at first played out a pilot study with 43 reactions, and its discoveries were viewed as solid, along Cronbach's alpha (CA) being more prominent else 0.700. N = 202 because there are 202 participants in the sample.

Research Design

Kothari 2004 characterizes research plan as the design that directs the execution of an examination interaction, and the subsequent investigation of obtained information. It

gives a structure to the age of proof that is fit both to a specific arrangement of rules and to the examination question in which the examiner is intrigued. The scientist proposes to take on a descriptive research design to the study.

Results and Discussion

The segment elements of respondents are analyzed in segment examination. The segment elements, for example, age, orientation and experience were concentrated on in current survey. There is a correlation between test size n and certainty range L and person size N. The findings on the frequency and characteristics of each and every segment attribute in the example are displayed in Table no.01.The N=200 (Samples taken), it infers that the examination has been performed with hard and fast 200 discernments. The findings shown in Table 1 provide a thorough picture of the segment assessment of recent data. By gathering information regarding the respondents' orientation in the survey, the orientation component was evaluated. Large portions of the model were made up of men, with the percentage of men being 74.8 percent and the percentage of women being only 25.2. This is due to the fact that men make up the majority of the professionals working on the CPEC development board in Pakistan. Additionally, more men than women are portrayed in the example. The part was developed enough, and the findings of the current audit show that the age range for this important exam was between 21 and 50 years. This is due to the fact that CPEC advancement the chiefs use experts of essentially every age. However, while 37.6% of respondents in this class pointed out their age by one point, the majority of respondents were mature enough to fall between the ages of 31 and 40. Participants between the ages of 21 and 30 made up 29.7% of the group, while those between the ages of 41 and 50 made up 28.2%.The percentage of responders who were over 50 years old was 4.5%, therefore there weren't many people in this age group. Given that 40.6% of respondents said their experience was between two and five years, and that 39.6% said it was between five and eight years, it is clear from the results of the segment examination against experience that a significant portion of the test has the encounter going taken away 2-8 years. Very few people responded (for example, 8.9%) when the experience was under two years. Given that just ten point four percent of participants listed their background as "more than 8 years," the respondents with experience greater than 8 years were similarly insignificant. Since the degree and representation of these characterizations were high in example of focus as well, the overall fragment assessment reveals that the bulk of experts joining the board under CPEC are men, of average age, with excellent training.

Descriptive statics

In order to examine the appropriateness of information, it is common practice to examine the mean value, lowest value, maximum value, skewness, and kurtosis. This is known as the illustrative inspection. The same evaluation was conducted to determine the normality and sufficiency of the available information, and the results are displayed in Table 2 in comparison to those tests.

Table 1
Demographic Information

Representative	Group	Frequency	Percentage
Gender	Male	150	74.8
	Female	50	25.2
Age	20-30 years old	60	29.7
	30-40 years old	76	37.6
	40-50 years old	57	28.2
	50 years old and above	9	4.5
Experience	1-2 years	18	8.9
	2-5 years	82	40.6

	5-10 years	80	39.6
	More than 10 years	21	10.4

Table 1
Descriptive Statistic

	N Statistics	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Deviation Statistic	Skewness	
						Statistic	Std. Error
ERP	200	1.00	4.80	3.7505	0.81205	-0.086	0.171
BRP	200	1.00	5.00	3.8673	0.90495	-0.266	0.171
TRP	200	1.00	5.00	3.8871	0.93081	-0.300	0.171
ECM Project Success	200	1.00	5.00	2.1139	0.84181	0.528	0.171

Reliability Test

To determine if the factors evaluating a variable are reliable or not, the dependability of the data is evaluated. Cronbach's alpha is a key indicator for evaluating dependability. The Cronbach's alpha measures a component's dependability, and it needs to be equal to or higher than 0.7 to ensure that the component is of consistently high calibre. Through assessment, the value of this marker in relation to all present components was provided. Table no.03 displays the Cronbach's alpha impetus for the success of the ERP, BRP, TRP, and engineering construction management projects.

Table 2
Reliability Test

Variables	No. of objects	Cronbach's alpha value
Employee Related Problems	5	0.908
Time Related Problems	5	0.930
Budget Related Problems	5	0.941
ECM Project Accomplishment	6	0.934

Correlation Test

This test is used to examine how several elements relate to one another, with the Pearson relationship indicator likely serving as the best marker. The correlation data show what kind of link, and how strong a relationship, two factors have with one another. For the most recent data, the Pearson connection test was used to find the qualities for each variable and relationship, along with their critical qualities. Table 4 displays the correlation's impacts after they have occurred.

Table 3
Correlation Test (It is significant at the 0.01 level 2-tailed)

		ERP	BRP	TRP	ECM Project Accomplishment
ERP	Pearson Correlation	1	0.882**	0.853**	-0.854**
	Sign.(2-tailed)		0.000	0.000	0.000
	N	200	200	200	200
BRP	Pearson Correlation	0.882**	1	0.900**	-0.892**
	Sign.(2-tailed)	0.000		0.000	0.000
	N	200	200	200	200

TRP	Pearson Correlation	0.853**	0.900**	1	-0.883**
	Sign.(2-tailed)	0.000	0.000		0.000
	N	200	200	200	200
ECM Project Accomplishment	Pearson Correlation	-0.854**	-0.892**	-0.883**	1
	Sign.(2-tailed)	0.000	0.000	0.000	
	N	200	200	200	200

Regression Analysis

To confirm or deny the current review's hypothesis, the findings were contrasted with the ANOVA, model conclusion, and coefficients. Table 5 outlines the effects of the model's outline and displays the R^2 & the corrected R^2 values for the present version. The ongoing version with free factors for TRP, BRP, and ERP and a dependent variable for ECM project success is fit according to the table of model summary since the altered R^2 value for the present version is 0.836 that is pleasant & satisfactory. It implies that in excess of 50% (for example 83.6%) variety in dependent variable (for example ECM project success) is explained by the independent variables of current review that are TRP, BRP and ERP. Accordingly, the ongoing version is sufficient & suitable for regression. In addition to the conclusion, the ongoing investigation also takes into account the ANOVA results against the most recent data and contributing factors, which are listed in Table no.06.The table of ANOVA portrays the meaning of regression results. For significance of results, the F value ought to be more than F classified or than 4 and importance level ought to be under 0.05. The ongoing ANOVA table is showing that value of F is 342.843, which is >4 and P an incentive for these outcomes is under 0.05 hence, the aftereffects of regression are huge for current model. At long last, the coefficients are found of every relationship remembered for current model. The subsequent upsides of coefficients have been shown in Table 7. The consequences of coefficients show that there is critical negative consequence of ERP on ECM project accomplishment with coefficient size of −0.217. It intends that with one-unit increase in ERP, there is decline of 21.7% in ECM project achievement (P esteem < 0.05). The effect of BRP on ECMPS is additionally negative and critical at P esteem under 0.05. The coefficient size for this effect is −0.355, and that intends that with one percent expansion in BRP, there is 35.5% decline in subordinate variable. TRP likewise showed negative consequence on ECM project accomplishment with critical level.

Table 4
Model Summary {a Predictors: (Constant), ERP, TRP, and BRP}

Model	R	R^2	Adjusted R^2	Std. Error of the Estimation
1	0.916[a]	0.839	0.836	0.34078

Table 5
ANOVA Results

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	119.443	3	39.814	342.843	0.000[b]
	Residual	22.94	198	0.116		
	Total	142.437	201			

Table 6
Coefficients (a Dependent Variable: ECM Project Accomplishment)

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		

1	(Constant)	5.572	0.114		48.796	0.000
	ERP	-0.217	0.066	-0.209	-3.308	0.001
	TRP	-0.355	0.070	-0.382	-5.049	0.000
	BRP	-0.327	0.062	-0.361	-5.293	0.000

The ongoing investigation attempted to find serious issues and challenges in construction management projects that would prevent these CPEC-related undertakings from moving further. The conclusion of ECM projects is adversely affected by TRP. The particular new detections are pretty consistent along the findings of previous studies. likewise proposed the negative relationship of TRP with outcome of development projects. additionally detailed the critical affiliation and reliance between time-related problem and achievement or disappointment of activities. Because of the second theory of present review for example "Employee related problem fundamentally influences the engineering construction management for Pakistan under CPEC", the ongoing discoveries urged the acknowledgment of the particular theory. Through discoveries, it has been explained and advised that there is a crucially detrimental relationship between ERP and the success of ECM projects. It means that the project would likely experience disappointment if there are issues with employees and conflicts inside it. The flow study's conclusions about employee-related problems and their negative effects on task progress are in line with those of other studies. For instance, naouman 2017 outlined the crucial role that ERP plays in the advancement of development projects. The research is also viewed as a supportive report for the current findings because they additionally proposed that there are greater chances for project failure and fewer chances for its success when there are more employee-related concerns in the tasks. Employee conflict should ideally be resolved through collaboration and open communication. The 3rd prediction of the present review, such as "Budget related difficulties have a significant impact on engineering construction management for Pakistan under CPEC," is too acknowledged, & it is discovered a certain BRPs significantly slow down the development of EC tasks. The outcomes of recent study are strongly in line along earlier outcomes. For instance, because they suggested that projects are more likely to be successful when project managers can successfully manage and oversee the cost and spending plan of a task, the study and conclusions are also consistent with current discoveries. The venture administrators ought to fundamentally deal with the expense and spending plan gives actually to improve the achievement chances of activities (Marsh, 2017). Notwithstanding the expense and spending plan the board, the evaluation system is one more effective strategy for handling such problems.

Conclusion

The continuous evaluation focused on identifying concrete evidence of serious construction management problems, analyzing how they affected project success or failure, and offering solutions. The continuous assessment focused on the three major issues of time management, budgetary issues, and employee-related issues. By gathering data from CPEC officials and performing regression analysis on the data collected, it also looked at how these issues affected the progress of engineering construction management projects. Whole of review's hypotheses were confirmed, and the findings showed how detrimental these three problems are to the development of ECM initiatives. This large number of discoveries are in accordance with past studies and results and supported through those discoveries obviously. The ongoing review has critical consequences in hypothetical and practical terms.

Recommendations

In order to produce theoretical conclusions, this study examined the connection between time-related concerns, financial issues, & personnel problems and the advancement of engineering construction organizations in projects of the CPEC of Pakistan and China. It was ended up being feasible. As a result, this study complements past literature by providing fresh data. Outcomes as well demonstrated the advantages of CPEC that

ultimately fuels South Asian aid or derivations from the China-Pakistan Economic Corridor. In terms of proposed strategies, it is building on the findings of this review. Since CPEC has been actively and persistently operating in China and Pakistan, the worry division & Govt. ought to give motivations to innovative work to scientists who might keep on putting their time and abilities in finding more developments in regards to CPEC. It is suggested that the concern division likewise pursue a technique to give motivating forces to innovation move from developed nations to advance the acceptance of high calibre. The governmental authorities will find it useful, such the Pakistani legislature's recent efforts to draw in foreign investors for the CPEC.

References

Ali, G. C. (2015). https://www.cacianalyst.org/publications/analytical-articles/item/13178-china-andpakistan-prepare-to-establish-economic-corridor.html

Aqeel, M. (2016). Impact of China Pakistan economic corridor. *Unpublished degree thesis, BBA International Business. ARCADA*, 106.

Barber, C. E. (2014). The Pakistan China Corridor. *The Diplomat*.

Demirkesen, S. a. (2015). Construction Safety Personnel's Perceptions of Safety Training Practices. *International Journal of Project Management, 33*, 1160-1169

Irshad, M. (2015). One belt and one road: Dose China-Pakistan Economic Corridor benefit for Pakistan's economy? *J. Econ. Sustain, 6, 200–207*.

Khan, S. &. (2019). The China–Pakistan Economic Corridor (CPEC): challenges and prospects. Area Development and Policy. *4(4), 466-473. doi: 10.1080/23792949.2018.1534549*.

Kramar, R. (2014). Beyond strategic human resource management: is sustainable human resource management the next approach? *The international journal of human resource management, 25*, 1069--1089.

Marsh, P. (2017). Contracting for engineering and construction projects.

Rees, G. a. (2021). Strategic human resource management: An international perspective.

Ritzinger, L. (2015). *The China-Pakistan Economic Corridor. Regional* Dynamics and China's Geopolitical Ambitions.

Senaratne, S. A. (2016). Communication in construction: a management perspective through case studies in Sri Lanka. *Architectural Engineering and Design Management, 12*, 3--18.

.