Local residents’ attitude towards road and transport infrastructure (a case of China Pakistan economic corridor)

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Abstract

Purpose – Road and transportation has a significant role in the prosperity, economic growth and development of a region. The main purpose of this study is to conduct an in-depth analysis of local residents’ attitude towards road and transport infrastructure (China–Pakistan economic corridor, CPEC) and the wider economic, social, cultural and environmental impact on local people.

Design/methodology/approach – Data were collected using a questionnaire survey from the local people. Factor analysis and structural equation modelling approach were used to test the relation between the observed and latent variables.

Findings – The result discovered that road infrastructure has significant socio-economic and cultural impacts that significantly affect the local people support for CPEC development. It also revealed that more promotion and awareness regarding benefits of the project for dwellers lead to more support of the local residents in the study area.

Practical implications – Information provided by this study will help policymakers to gain local resident support for the project and make policies accordingly for the future projects.

Originality/value – This study investigated the attitude and support of the local people based on the road infrastructure’s social, economic, cultural and environmental impact, which has never been examined in the existing literature.

Keywords Support, impact, development, China–Pakistan economic corridor

Paper type Research paper

1. Introduction

Transport infrastructures play a key role in the socio-economic development and prosperity of a region. Understanding the host community response towards road and public
infrastructure development that affect them is necessary in getting local residence support for project development. Road and transportation impacts have been studied extensively by transport researchers in the recent era (Grootaert and Calvo, 2002; Agbelie, 2013; Fischer, 1999; Stone et al., 2010; Beyazit, 2015; Porter, 2014; Amekudzi et al., 2009; Khandker et al., 2009; Kasraian et al., 2016; Ikioda, 2016; Ali et al., 2017a, 2016). Road and transportation has the ability to strengthen regional development, economic growth and improvement in living standards of the local people. The existing literature has investigated different impacts, including social impact (Cramphorn and Davies, 2004; Geurs et al., 2008; Windle and Crumb, 1999; Ali et al., 2017b; Grootaert and Calvo, 2002) economic impacts (Ali et al., 2016; Asomani-Boateng et al., 2015; Moore, 2012; Ali et al., 2017b) and environmental impacts (Fischer, 1999; Carrier et al., 2016; Strogen et al., 2016; WHO, 2000). These studies explored that road and transportation effects the local dwellers. These impacts can change the perception of the local people regarding transport infrastructure project development. Transport infrastructure provides many opportunities for the host community, as recent studies by Asomani-Boateng et al. (2015) and Ali et al. (2017a) revealed that road and transportation has a noteworthy social and economic impact on residents of the area. Road and transportation improves the living standard of the native dwellers and is considered as a plan for the development and improvement of the region (Ramachandran and Linde, 2011; Ali et al., 2017a, 2017b). Road and transportation is a project that is very beneficial for the locals and is always supported by the local people. However, in case of China–Pakistan economic corridor (CPEC), some people are against the project, which motivates the authors for the current study.

Literature has examined the perception and attitude of the local people towards road and infrastructure development, as attitude and support of the local dwellers significantly affect a project (Chen, 2000). It is noted that tourism literature has extensively investigated the host community support for tourism development (McGehee and Andereck, 2004; Nunkoo and So, 2015; Perdue et al., 1990; Stylidis et al., 2014; Woo et al., 2015; Ko and Stewart, 2002). To examine the perception of the local people for road and transport infrastructure development project, the model of Yoon et al. (2001) was adopted in the current study. The main objective of the current study is to gauge the perception of the local people regarding CPEC development. This study is an attempt to find reasons and facts on empirical basis behind it. Transport researchers and policymakers have agreed that road and transportation has a significant socio-economic impact on local residents. Understanding the attitude of the host community towards road and transport development projects is necessary, which may affect their reactions for support of project (Yoon et al., 2001). It is obvious from existing literature that the social impact of transport (Cramphorn and Davies, 2004; Geurs et al., 2008; Windle and Crumb, 1999; Ali et al., 2017b; Grootaert and Calvo, 2002), economic impacts (Ali et al., 2016; Asomani-Boateng et al., 2015; Moore, 2012; Ali et al., 2017b) and environmental impacts (Fischer, 1999; Carrier et al., 2016; Strogen et al., 2016; WHO, 2000) have been studied earlier, whereas host community support for road and transport infrastructure development has never been investigated earlier, and the current study fill this gap in the existing literature.

The current study examined the attitude and perception of the local people regarding the development of CPEC. We claim that this would be the first study that investigates the environmental, cultural, economic and social consequence of road and transportation on the local residents, and based on these factors, this study measures support for CPEC development.
The rest of the study is organized as follows: Section 2 briefly discusses CPEC, Section 3 explains the theoretical background, Section 4 elaborates the road and transportation impacts studies, followed by methods and technique used for conducting this study. Section 5 states the results of the study. Section 6 provides discussion, and Section 7 concludes the paper.

2. China–Pakistan economic corridor
The existing study is about CPEC, a project of connectivity between China and Pakistan through 2,700 km road and railway line that links Chinese western autonomous region Kashghar, Xinjiang province, and Pakistani southwestern part Gawadar, Baluchistan province. This project is called the fate changer for the whole region, particularly for Pakistan (Haider and Haider, 2015; Qureshi, 2015; Adeel et al., 2017). CPEC was officially inaugurated by Chinese President Xi Jinping in Pakistan in April 2015 with a total worth of US$46bn (Ali et al., 2017a; Adeel et al., 2017). Currently, China imports 83 per cent oil from the world, out of which 77 per cent was imported through sea route by Strait of Malacca (Shaikh et al., 2016), along with 60 per cent other daily shipment (Shi, 2004). Strait of Malacca is the world’s busiest sea shipping channel under the American authority, which become a dilemma for Chinese trade, and China considers it as a strategic weakness. The shipping operations can stop in case of any unusual events (Ali et al., 2017a). Moreover, the presence of Indian naval force and their naval exercises in the Arabian Sea interrupt Chinese shipping (Shaikh et al., 2016). CPEC will be the alternate shortest safe and benign route for Chinese trade, which minimizes about 12,500 km sea route to 2,700 km inland route (Ali et al., 2016, 2017a), which will save a high proportion of shipping cost and time (Shaikh et al., 2016).

CPEC will enhance the broken economy of Pakistan, it will create thousands of opportunities for the local people and will improve their living standard by generating different jobs and economic opportunities. CPEC will overcome the current energy crises in Pakistan and will help to eliminate poverty and develop the economy by providing sustainable setup and access to different amenities of life such as education, health, markets and banking with reasonable fare (Ali et al., 2017a). CPEC will have a significant socio-economic impact on the common people (Ali et al., 2016). However, it is witnessed that in many parts of Pakistan, specifically in Khyber Pakhtunkhwa (KPK) and Baluchistan, some people are against the CPEC project because of some political interest which are demolishing the project, which is a challenge for the development of CPEC (Hussain, 2016; Abid and Ashfaq, 2015). While the KPK Government has also some reservations on the route of CPEC with the central government, CPEC is considered as a channel towards prosperity and development of Pakistan.

3. Theoretical background
The theoretical background of the current work is derived from the existing literature, which extensively examines the perception of the common people (Sinclair-Maragh et al., 2015; Hillery et al., 2001; Andereck et al., 2005; Vargas-Sa´nchez et al., 2011; Woo et al., 2015; Stylidis et al., 2014; Yoon et al., 2001). The existing literature revealed that the perception of the people change with benefits. Road and transportation has a significant role in the development of a region (Chandra and Vadali, 2014). Transport corridor plays an important role in the economy and prosperity of any country. Extensive literature on social, economic, cultural and environmental impacts of road and transportation on local people is present. Earlier studies have studied the impact of road and transportation, including social (Cramphorn and Davies, 2004; Geurs et al., 2008; Windle and Cramb, 1999; Ali et al., 2017b; Grootaert and Calvo, 2002) economic (Ali et al., 2016; Asomani-Boateng et al., 2015;
Moore, 2012; Ali et al., 2017b) and environmental impacts (Fischer, 1999; Carrier et al., 2016; Strogen et al., 2016; WHO, 2000). In other words, the impacts of road and transportation on local residents have been studied; however, their support for road and transport infrastructure has never been examined earlier. Therefore, the most suitable model of Yoon et al. (2001) was adopted in the current study to check the attitude of the local people towards CPEC development. The current model divides the impact of road and transportation into four different parts to investigate the structural relationship among the dimension of perceived impact, total impact and support for the development of the CPEC project.

The social exchange theory has been underpinned in the current study, which proclaimed that local people contribute to and are benefitted by road and transportation. If the local residents believe that the project is not fruitful for the area, they will oppose the project, otherwise they will welcome it. The local support is necessary for the development of a project; the more the local support, the more the project will be beneficial for the development and prosperity of the area. In this study, we use the perceived social, economic, cultural and environmental impact, and each factor affects the total impact in different directions and magnitude, whereas the total impact is directly affected by the support for CPEC development. In terms of transportation social exchange theory, the residents have to join the activities and accept such infrastructure development that promotes the area, which is more beneficial than the cost for the host community.

4. Road and transportation impacts studies
Earlier studies have examined the local people attitude in framework of social exchange theory (Turner, 1986) by observing how the host community weighs the projected cost benefits. Social exchange theory recommends that host community personnel have to contribute and support the infrastructure development in the area. The literature shows that the significance of road and transportation infrastructure is more than the cost and therefore is encouraged and support everywhere. Existing studies have shown that perceived environmental, cultural, economic and social impacts change the perception of the people and their mind to contribute and support the road and transport infrastructure, such as CPEC.

4.1 Support for road and transport infrastructure development
Road and transportation is essential for the development and prosperity and very significant for an area’s successful long-term and fruitful effect. The local residents’ support and willingness is very necessary for these infrastructure development projects. Mostly, the resident support depends on the benefit; if it is believed that road and transportation is more beneficial than its cost, it will be supported, otherwise it will be opposed, and the user may face different problems from the local people. People are using most safe and reliable public services therefore its is essential to know the perceived total impact of road and transportation development project and their dimensions.

4.2 Perceived total impacts
Existing literature has investigated the impact of road and transportation on the local residents. Road and transportation has a complex phenomenon and has different impacts on the local people of the area. Road and transportation has both affirmative and adverse influence on the local people of the area. Previous studies suggested that the perception of local people can change with the cost and benefit factor of the local people of area (Almeida Garcia et al., 2015; Woo et al., 2015; Andereck et al., 2005; Stylidis et al., 2014). Similarly, the
current study believes that road and transportation impact can change the perception of the local people based on positive and adverse effects. In this way, this study proposed that:

\[ H1. \] Perceived total impact has a direct positive effect on support for CPEC development.

### 4.3 Dimension of the perceived impacts

Economic impacts are an essential part and outcome of any transport project (Banister and Berechman, 2000; Owen, 1959; Stone et al., 2010). It can be defined as any change that may be positive or negative in earning, preference, well-being and behaviour, which alter the living style and livelihood of an individual and a group of individuals. Road and transportation plays a pivotal role in the development and economic growth of the region, as it crafts job opportunities, increases agricultural productivity, creates opportunities for large-scale businesses such as provision of industries and provides opportunities to establish small-scale businesses such as different vehicles’ workshop, petrol pump, managing agricultural food and agricultural items, supply of food and non-food items and hotel and restaurants, which is a pathway toward development and prosperity of the area (Strogen et al., 2016; Asomani-Boateng et al., 2015; Lim, 2009; Lim and Yang, 2007). Many researchers have studied the economic impacts of road and transportation and found that people living along roads and transportation are affected directly or indirectly (Tanga et al., 2014). Transport infrastructure contributes in mitigating poverty and improves the living standard of the common people. Improvement and construction of road and establishment of better transportation affect productivity of food and create many types of businesses and marketing activities for production and services (Palei, 2015; Asomani-Boateng et al., 2015; Dillon et al., 2011; Dercon et al., 2009; Geurs et al., 2008; Karst and Geurs, 2009; Geurs and Van Wee, 2008; Annema et al., 2007; Forkenbrock et al., 2001; Jacoby, 2000; Fischer, 1999; Stevenson and Mark, 1995). Economic impact is the main cause of support for any project; the more the benefit, the high would be the support for the project. Therefore, we can say that road and transportation’s economic impact can change the perception and support of the host community, and it is proposed that:

\[ H2. \] There is a direct positive relationship between perceived economic impacts and total impact.

The social impact can be defined as the factors which may be negative or positive that change the behaviour, emotions, well-being and living style of a person or group of individuals (Geurs et al., 2008; Wu et al., 2017; Rafiq and Weiwei, 2017). Transportation and transport infrastructure have many social and cultural impacts on the local people of the area. Earlier studies have found that road and transportation has positive impacts on the host communities, as it provides access to standard education, which mitigates the poverty and ignorance in the area, boosting the economy of the local residents and improving their living style (Asomani-Boateng et al., 2015; Ali et al., 2017a). It offers opportunities for local dwellers to avail excellent health facilities and improve their health by access to visit a nearby health-care centre in the town and cities (Asomani-Boateng et al., 2015). Similarly, access to banking, market and many other basic amenities of life improve the lifestyle of the local people of the area. Road and transportation maximizes people-to-people contact and cultural events that provide a chance to meet with their friends and relatives (Asomani-Boateng et al., 2015; Ali et al., 2016; Geurs et al., 2008, Stevenson and Mark, 1995; Cramphorn and Davies, 2004; Sharma and R, 2006). Road and transportation has a significant impact on the culture of the area, as it gives an identity to the culture of the particular area with access
of tourists to archaeological sites and historic monuments through these road and transportation projects. It is obvious from the literature that road and transportation has a significant social and cultural impact on the host community that may change the perception of the local people regarding support for the road and transport infrastructure development. Therefore, this study hypothesized that:

**H3.** There is a direct positive relationship between perceived social impacts and total impact.

**H4.** There is a direct positive relationship between perceived cultural impacts and total impact.

Road and transportation has a significant negative effect on the environment of the area, as the existing literature has exposed that road and transport negatively affects the environment. Transportation produces carbon, makes noise and mitigates natural environment, congestion and traffic in the region, which causes stress, frustration and diseases of lung, heart and many other body parts. Moreover, road and transportation creates a safety issue for the people living in ribbon areas (Carrier et al., 2016; Sörensen et al., 2013; Walker, 2012; Bluhm et al., 2007; Seto et al., 2007; Babisch, 2006; Uhrström and Skönberg, 2004; Evans et al., 2001; Passchier-Vermeer and Passchier, 2000; Fischer, 1999), although there are some significant positive impacts for the local residents, such as the establishment of a park and entertainment spots, which are a part of the project. For the support of road and transport infrastructure development, if the local people believe that road and transportation is more valuable than its cost, they will welcome it; otherwise, they will not support their development. The aforementioned literature shows that road and transportation effects the host community and may influence the support of the host community towards the development of road and transport infrastructure.

**H5.** There is a direct negative relationship between perceived environmental impacts and total impact.

The proposed model of the current study consists of four exogenous variables, namely, social, cultural, economic and environmental impacts, which may affect the endogenous variable of total impact, which directly affects support for the development of CPEC, as shown in Figure 1.

5. Methodology

5.1 Study area and data collection

To accomplish the objective of the study, this study was conducted in seven districts of Hazara division in KPK province, Pakistan, to find the local residents’ perception about CPEC development. A total of 470 questionnaires were administered to the local people, including labour, university and college professors, teachers, university students and official staff, who are local residents of the area aged more than 18 years. We collected 406 filled questionnaires, representing a response rate of 86.38 per cent, out of which 400 valid questionnaires (68.7 per cent male and 31.7 per cent female) were included in this study. A sample size between 30 and 500 should be selected for generalization and proper presentation of the study (Sekaran, 2006).

5.2 Scale and measurement of the variables

Perceived impact of CPEC was measured through 26 items stating both the significant and cost of the CPEC adapted from a study by Yoon et al. (2001). The wordings of the items were
changed according to requirement and objective of the study. The dependent variable support for CPEC development was adapted from the study by McGehee and Andereck (2004), Yoon et al. (2001) and Jurowski (1994). The scale for support was measured through five-point Likert scales (1 = strongly oppose and 5 = strongly support). The variable “total impact” consists of two items adapted from a study by Yoon et al. (2001). Item 1 is measured through a scale with 1 = strongly disagree and 5 = strongly agree, and the Item 2 is measured through a scale with 1 = very negative and 5 = very positive. For finding the response of the respondents, five-point or seven-point Likert scales are the most commonly use procedures (Cheng and Chen, 2015; Naresh and Mark, 2006), and there is no such variation among the two (Dawes, 2008). However, a five-point scale is less complex and easy to use (Cheng and Chen, 2015; Dawes, 2008), whereas seven-point Likert scales confuse the respondents because of their complexity (Cheng and Chen, 2015). Therefore, five-point Likert scales were used in the current study.

5.3 Pre-study
Pre-study was conducted to check the validity and reliability of the adapted questionnaire and to address issues such as length of questions and respondents’ ability to understand the questions. For the pre-study, 39 questionnaires were filled in the study area to check the internal consistency, reliability, clarity and simplicity of the scale. The validity and reliability analysis was conducted using Cronbach’s alpha, mean and standard deviation of the pre-tested data. It was found that the reliability analysis passes the threshold value of 0.7 (Hair et al., 2010).

5.4 Data analysis and tools
Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) was used to test the validity and reliability of the questionnaire and to make factors based on their correlations, and the structural equation modelling (SEM) approach was used to test relationship between the latent and observed variables. Statistical programme for social sciences version 20 and analysis moment of structure (AMOS) version 20 were used in the study.

6. Result
To achieve the objective of the study, a SEM two-step procedure was used as suggested by Sethi and King (1994) and Anderson and Gerbing (1988). Reliability analysis was performed
to check the stability and internal consistency of the items through Cronbach’s alpha, which is the best and broadly used approach for gauging reliability (Lu et al., 2007). Reliability test was performed on all indicators of the study; Cronbach’s alpha was found to be 0.94, and reliability in social sciences was 0.7, which are acceptable (Hair et al., 2010). Furthermore, reliability analyses were performed for each construct, as shown in Table III. EFA was performed to make factors using maximum likelihood method with promax rotation. Six factors were identified, which explained a total variance of 69.13 per cent. The Bartlett’s test of sphericity was significant at $p < 0.000$ and Kaiser–Meyer–Olkin measure of sampling adequacy exhibited a good sample size of 0.909. The finding indicated that variables are uncorrelated and fit for factor analysis (George, 2011; George and Mallery, 2006), as shown in Table I.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Factor and indicators</th>
<th>PM</th>
<th>SL</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic impact</td>
<td>CPEC will create more jobs for the area (Eco1)</td>
<td>0.804</td>
<td>0.840</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>CPEC will make the economy strong (Eco2)</td>
<td>0.834</td>
<td>0.883</td>
<td>0.045</td>
</tr>
<tr>
<td></td>
<td>CPEC lead to more investment in the area (Eco3)</td>
<td>0.933</td>
<td>0.877</td>
<td>0.047</td>
</tr>
<tr>
<td></td>
<td>CPEC will improve living standard of the native people (Eco4)</td>
<td>0.961</td>
<td>0.883</td>
<td>0.045</td>
</tr>
<tr>
<td></td>
<td>CPEC will increase goods and services prices (Eco5)</td>
<td>0.883</td>
<td>0.850</td>
<td>0.048</td>
</tr>
<tr>
<td></td>
<td>CPEC will create economic profits and businesses for native people (Eco6)</td>
<td>0.750</td>
<td>0.783</td>
<td>0.050</td>
</tr>
<tr>
<td>Social impact</td>
<td>More revenue will be added in the local economy (Eco7)</td>
<td>0.666</td>
<td>0.710</td>
<td>0.051</td>
</tr>
<tr>
<td></td>
<td>CPEC will change our valuable traditional and culture (Soc1)</td>
<td>0.921</td>
<td>0.863</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>People along the CPEC route will be suffered (Soc2)</td>
<td>0.785</td>
<td>0.793</td>
<td>0.050</td>
</tr>
<tr>
<td></td>
<td>CPEC will increase crime rate (Soc3)</td>
<td>0.682</td>
<td>0.767</td>
<td>0.052</td>
</tr>
<tr>
<td></td>
<td>CPEC will sabotage everything in the area (Soc4)</td>
<td>0.810</td>
<td>0.799</td>
<td>0.053</td>
</tr>
<tr>
<td>Cultural impact</td>
<td>CPEC will stimulate many types of cultural events and activates (Cul1)</td>
<td>0.883</td>
<td>0.877</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>CPEC will increase more cultural exchange among nonlocal and locals (Cul2)</td>
<td>0.836</td>
<td>0.849</td>
<td>0.043</td>
</tr>
<tr>
<td></td>
<td>Transport has positive impacts on cultural identity of the area (Cul3)</td>
<td>0.886</td>
<td>0.893</td>
<td>0.038</td>
</tr>
<tr>
<td>Environmental impact</td>
<td>Construction of road, industries and hotels facilities will be destroyed the natural environment (Env1)</td>
<td>0.830</td>
<td>0.827</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>CPEC will provide recreational facilities in the area for the native people (Env2)</td>
<td>0.928</td>
<td>0.924</td>
<td>0.043</td>
</tr>
<tr>
<td></td>
<td>CPEC will make congestion, noise and pollution (Env3)</td>
<td>0.837</td>
<td>0.852</td>
<td>0.047</td>
</tr>
<tr>
<td>Total impact</td>
<td>How do you perceive the complete effectiveness of CPEC development in the area (Tot2)</td>
<td>0.636</td>
<td>0.791</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Do you agree or disagree that the significance of CPEC is greater than the costs for the local residents (Tot3)</td>
<td>0.863</td>
<td>0.802</td>
<td>0.081</td>
</tr>
<tr>
<td>Support for CPEC</td>
<td>CPEC should develop (Supp1)</td>
<td>0.868</td>
<td>0.762</td>
<td>–</td>
</tr>
<tr>
<td>development</td>
<td>CPEC attract more people to the area (Supp2)</td>
<td>0.969</td>
<td>0.819</td>
<td>0.047</td>
</tr>
<tr>
<td></td>
<td>CPEC will play an important role for the area economy (Supp3)</td>
<td>0.737</td>
<td>0.793</td>
<td>0.069</td>
</tr>
<tr>
<td></td>
<td>Development of CPEC is vital to the area (Supp4)</td>
<td>0.753</td>
<td>0.852</td>
<td>0.065</td>
</tr>
<tr>
<td></td>
<td>Supporting services development (travel agency, hotel, restaurants, entertainment, etc. (Supp5)</td>
<td>0.546</td>
<td>0.732</td>
<td>0.067</td>
</tr>
</tbody>
</table>

Notes: – represents a parameter fixed at 1.0 in the original solution, PM = pattern matrix, SL = standardized loading, SE = standard error.
6.1 Measurement model
CFA was performed to check the validity and unidimensionality of the scale (Kou et al., 2016) and to follow the work Joreskog and Sorbom (1993), Churchill (1979), Peter (1979, 1981) and Lu et al. (2007). Unacceptable items having a coefficient value below 0.3 were removed from further analysis to improve the validity and reliability (Joreskog, 1993; Lu et al., 2007; Ford et al., 1986). CFA was performed on 29 items (8 for economic impact, 6 for social impact, 4 for cultural impact, 4 for environmental impact, 3 for total impact and 5 for supporting CPEC development). Five items were removed from the analysis on the basis of low standardized loading, modification indices and error variance. We retained a total 24 indicators with six constructs in the CFA, as shown in Table II. The model fitness was examined, and good result are observed: $\chi^2$/df = 1.73 (< 3 (Bollen, 1989)), goodness of fit index (GFI) = 0.92, normed fit index (NFI) = 0.94, incremental fit index (IFI) = 0.97, comparative fit index (CFI) = 0.97, Tucker–Lewis fit index (TLI) = 0.97, relative fit index (RFI) = 0.93 and root mean square error of approximation (RMSEA) = 0.04, as shown in Table IV. All the model fitness indicators are above the threshold value recommended by Hu and Bentler (1999).

The discriminant validity and convergent validity were checked by observing standardized factor loading, Cronbach’s alpha, composite reliability and average variance extracted (AVE). The $t$-values of each indicator are significant at a significance level of $p < 0.001$ (Hair et al., 1998; Lu et al., 2007). Moreover, all the standardized factor loading was above the recommended value 0.7, indicating convergent validity (Anderson and Gerbing, 1988). Construct reliability was analyzed to check the internal consistency and was found to be good: economic impact, 0.94; cultural impact, 0.90; environmental impact, 0.89; social impact, 0.87; total impact, 0.77; and support for CPEC developmental, 0.90, as summarized in Table III. These values exceed the suggested level of 0.70 (Hair et al., 1998). AVE ranging from 0.62 to 0.76 exceed the suggested value of 0.5, as shown in Table II. It is summarized that all the results pass the critical values suggested by Hu and Bentler (1999) and Thompson (2004). Thus, the items are appropriate for assessing factors. Thus, six main constructs were identified for the model and were analyzed through SEM in the next step.

<table>
<thead>
<tr>
<th>Impacts</th>
<th>CR</th>
<th>AVE</th>
<th>Economic</th>
<th>Support</th>
<th>Social</th>
<th>Environment</th>
<th>Cultural</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic</td>
<td>0.94</td>
<td>0.70</td>
<td>0.837</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support</td>
<td>0.89</td>
<td>0.62</td>
<td>0.573</td>
<td>0.793</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>0.88</td>
<td>0.65</td>
<td>0.374</td>
<td>0.307</td>
<td>0.806</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environment</td>
<td>0.90</td>
<td>0.75</td>
<td>0.246</td>
<td>0.233</td>
<td>0.364</td>
<td>0.869</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cultural</td>
<td>0.90</td>
<td>0.76</td>
<td>0.458</td>
<td>0.444</td>
<td>0.528</td>
<td>0.215</td>
<td>0.873</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>0.77</td>
<td>0.63</td>
<td>0.572</td>
<td>0.686</td>
<td>0.417</td>
<td>0.205</td>
<td>0.476</td>
<td>0.797</td>
</tr>
</tbody>
</table>

Table II.
AVE, composite reliability and inter-factor correlation

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
<th>Cronbach's alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic impact</td>
<td>4.03</td>
<td>0.60</td>
<td>0.94</td>
</tr>
<tr>
<td>Social impact</td>
<td>2.93</td>
<td>0.78</td>
<td>0.87</td>
</tr>
<tr>
<td>Cultural impact</td>
<td>3.59</td>
<td>0.80</td>
<td>0.90</td>
</tr>
<tr>
<td>Environmental impact</td>
<td>2.28</td>
<td>0.82</td>
<td>0.89</td>
</tr>
<tr>
<td>Total impact</td>
<td>4.05</td>
<td>0.55</td>
<td>0.77</td>
</tr>
<tr>
<td>Support for CPEC development</td>
<td>3.82</td>
<td>0.61</td>
<td>0.90</td>
</tr>
</tbody>
</table>

Table III.
Descriptive statics and Cronbach’s alpha
6.2 Structure equation modelling
The main aim behind this study is to observe the relationship among social impact, cultural impact, economic impact, environmental impact, total impact and support for the development of CPEC. SEM with maximum likelihood method estimation was performed (Hair et al., 2006) among six constructs with five direct paths. The overall model estimation fitness was found good, as evidenced by normed $\chi^2$/df = 1.80 [critical value <3 (Bollen, 1989)], GFI = 0.91, RMR = 0.02, RMSEA = 0.04, NFI = 0.94, PNFI = 0.814, CFI = 0.97, IFI = 0.97, TLI = 0.96 and RFI = 0.93; all values exceed the recommended values (Hair et al., 1998), as shown in Table IV. The model has been accepted as we have good fit and $R^2$. Moreover, the model explains 56 per cent variance in support for CPEC development, and 48 per cent variance is explained in total impact. The proposed hypothesis was tested in the next step.

6.3 Testing of hypothesis
The data were analyzed with the goodness of fit, standardized coefficient value and $p$-value quantified through AMOS. The hypothesis has been tested according to the model of the study. $H1$ supports our hypothesis, as evidenced by $H1 = \text{completely standardized } = 0.746$, $t$-values = 11.24 and $p$-value < 0.001; in other words, its means that perceived total impact has a very strong positive effect on support for CPEC development. $H2 = \text{completely standardized } = 0.479$, $t$-values = 8.07 and $p$-value ≤ 0.001; it means that economic impacts have a direct positive effect on total impact, which support our hypothesis. $H3 = \text{completely standardized } = 0.113$ and $t$-values = 1.82 and $p$-value < 0.01. In other words, we can say that social impact has a direct positive effect on total impact. $H4 = \text{completely standardized } = 0.232$ and $t$-values = 3.72 and $p$-value < 0.001; in other words, it means that road and transportation has a positive cultural impact toward total impact. $H5 = \text{completely standardized } = 0.028$, $t$-values = 0.551 and $p$-value > 0.05. It means that there is no relation between environmental impact and total impact, as shown in Table V.

<table>
<thead>
<tr>
<th>Model</th>
<th>Absolute fit measures</th>
<th>Incremental fit measures</th>
<th>Parsimonious fit measures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\chi^2$/df</td>
<td>SRMR</td>
<td>RMSEA</td>
</tr>
<tr>
<td>Measurement</td>
<td>1.73</td>
<td>0.03</td>
<td>0.04</td>
</tr>
<tr>
<td>SEM</td>
<td>1.80</td>
<td>0.04</td>
<td>0.04</td>
</tr>
</tbody>
</table>

**Notes:** $\chi^2 =$ chi-square, RMSEA = root mean square error of approximation, CFI = comparative fit index, NFI = normed fit index, IFI = incremental fit index, PNFI = parsimonious normed fit index

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Standardized coefficient</th>
<th>$t$-value</th>
<th>$p$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>$H1$: Perceived Total impact → support for the CPEC development</td>
<td>0.746</td>
<td>11.24</td>
<td>***</td>
</tr>
<tr>
<td>$H2$: Perceived Economic impacts → total impact</td>
<td>0.479</td>
<td>8.07</td>
<td>***</td>
</tr>
<tr>
<td>$H3$: Perceived Social impacts → total impact</td>
<td>0.113</td>
<td>1.82</td>
<td>0.06*</td>
</tr>
<tr>
<td>$H4$: Perceived cultural impacts → total impact</td>
<td>0.232</td>
<td>3.72</td>
<td>***</td>
</tr>
<tr>
<td>$H5$: Perceived environmental impacts → total impact</td>
<td>0.028</td>
<td>0.551</td>
<td>ns</td>
</tr>
</tbody>
</table>

**Notes:** ***$p$-value < 0.001, *$p$-value < 0.01 and ns = not significant

Table IV. Comparison between theoretical and revised model values

Table V. Hypothesis testing
7. Discussion

Road and transportation plays a significant role in the development of an area. This study proves that transportation has a positive impact on the local people of the area. It has been explored in the current study that the most important contribution of road and transport corridor is economic consequence. Road and transportation generates a lot of jobs opportunities, boosts the economy of the area and increases local residents' income and different economic activities, particularly in small businesses for the local residents, which eliminates poverty and improves the living standard of the local people. Our findings are parallel with previous literature (Asomani-Boateng et al., 2015; Lucas, 2006; Nelson et al., 2017; Ali et al., 2016). A positive association was explored between social impacts and total impacts. Our results are support by previous literature (Tanga et al., 2014; Geurs et al., 2008; Asomani-Boateng et al., 2015). Our findings suggest that road and transportation projects such as CPEC affect the local residents of the area. Road and transportation connects the people of the area and is considered as one of the main sources that provide easy and low-cost access to market, banking, quality education, excellent health facilities (particularly for the rural areas) and other basic amenities that play an important role in prosperity, development and improvement of the living standard.

Moreover, the finding of this study exposed that perceived cultural impact has a direct positive impact on the total impacts of the road and transportation. This study revealed that road and transport development improves the cultural event and activities in the area, which improves cultural exchange and gives identity to the culture of the area. CPEC will improve the culture of the area and give identity to the Pakistani culture, as it will connect the whole region, so people from a different culture will come and will experience Pakistani culture. Many cultural events will be exhibited in the area, and some people will adopt the culture of the area.

Furthermore, the current study explored that road and transport has some effect on the natural environment, as many new industries, traffic and hotels affect the natural environment and make noise, congestion and air pollution in the area, which is in line with the literature (McDonald, 2007; WHO, 2000). The people of the study area stated that CPEC will make congestion, noise and pollution in the area. However, CPEC will also develop a recreational park in the area for the local residents. The total impact has a direct strong positive significant effect on support for CPEC development.

This strong effect indicates that local residents' perception regarding the total impact is positive, and the local people perceived that the project is more fruitful than the cost in the study area, as it is very beneficial for the area regarding social, cultural and economic consequences. Based on the result, we can say that the people of the region welcome and support the project. Thus, it is concluded that more benefit for the local residents, more will be support from the local residents. CPEC will make millions of job opportunities and generate different economic activities, thus reducing unemployment and minimizing poverty ratio and improving the living standard of Pakistanis. CPEC will also contribute and boost the economy of the country, leading to prosperity and development.

8. Conclusion

The primary objective of this study was to analyze the local people's perception and support for CPEC development and its relation with CPEC's social, cultural, economic and environmental impacts. Based on literature, a five-path planned model was adopted. The findings of this research offer an important contribution to the present literature, clarifying local people perception towards support for CPEC development, which has never been investigated earlier. Moreover, this work delivers helpful evidence for the support of CPEC.
development based on social, economic, cultural and environmental impacts. Specifically, this research contributes to the existing literature by observing support of the local residents for road and transportation project development (CPEC). This study used social, cultural, economic and environmental impacts of road and transportation as a predictor for the support of locals for road and transportation project development, which has never been studied before. Support of the local residents is very important for the development of any project. EFA, CFA and SEM approach were applied on data collected from the residents of seven districts of Hazara division, KPK province, Pakistan.

The result of the current study explored that based on the collected data, CPEC will be very significant for the local residents of Pakistan and will affect their lives socially, culturally and economically. The local people perceived that CPEC will be very influential in terms of economy, as it will generate thousands of jobs in the area, start local small- and large-scale businesses, which will boost the economy of the area and will improve the living standard of the local people. It is expected that road and transportation will generate employment opportunities, which will reduce unemployment and minimize poverty. This will decrease social problem and improve living standard. Moreover, it will provide access to education, health-care centres, banking, etc. to the local dwellers of Pakistan, which will lead to development and prosperity in Pakistan. It is concluded that the local people of Pakistan support the development project and are willing to avail the opportunities of CPEC.

The result and information offered by this research are beneficial to get support for the CPEC development in the area. This study exposed that economic and cultural benefits are the most important factors for CPEC support, the more information provided to the local people, more support gained from the residents of the area. More promotions of the economic and cultural consequences, more will be the support from the area. Moreover, this study shows negligible social and environmental impacts, so the government authorities and transport policy makers should focus and adopt preservative strategies for the road and transportation impacts to get maximum support for the project. The information provided by this research helps and informs the local people of Pakistan, particularly in many areas of KPK and Baluchistan province, of the impact of road and transportation, specifically CPEC, which will create many opportunities in the area and will lead the country towards prosperity and development.

This study is limited to the seven districts of Hazara division in KPK province, Pakistan. Future researchers should choose areas from different parts and different projects to show some variation and strength in finding impacts on local residents. Future researchers may find other indicators that affect the local support for road and transportation project.

References


Moore, K. (2012), The Road To The Highlands: The Socioeconomic Impacts of The Roads Into And Around The Kelabit Highlands of Sarawak.


**Further reading**


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