









is a topic that needs to be explored a lot to make it easier for all stakeholders in designing buildings [28].

BIM with GIS integration is also a popular research topic. The use of GIS in mapping the location of buildings and the building area's environment is needed [31]. Thus, to find the right place and design according to the BIM application is very easy for practitioners. Research that deals specifically with applications related to traditional Malay house architecture were conducted by [18]. This study presents a useful platform for promoting adaptive reuse for heritage and conservation purposes through effective planning using BIM and its simulation tools. However, the research that was reviewed did not discuss the object or case study in the form of a traditional Malay house. This shows the lack of IT-Architecture research in the Malay architectural context.

### C. Discussions

The literature searches on journal and conference databases show an increase in the number of topics discussed from year to year. This shows a positive trend due to the increasing number of research, specifically in Malay architecture. Based on the number of topics from each journal and conference database, it can be seen that the keyword search results in ScienceDirect still produce a large number of papers but are not specific. This is quite contrary to IEEE, where the search results are few, but many research papers are relevant to the topic.

Based on the keywords search, the keyword "IT applications and BIM" contributed the most literature search. However, this is contrary to the keyword "IT and traditional Malay architecture," which was the last search result. This proves that the Malay traditional architecture still needs to be explored more deeply because there is still a lack of literature on this topic. The topics listed in the above research (Table 2) offer a variety of research opportunities.

The topic of BIM and AR in the case of traditional Malay houses is a topic that has a significant contribution. This is because there has been no specific research on the integration of AR and GIS with BIM applications. Integrating AR, VR, and GIS with BIM will undoubtedly fulfill the needs of architectural practitioners. The use of AR can realistically depict the interior and exterior of a traditional Malay house. This can be useful for practitioners, academics, and people working in tourism.

Meanwhile, the GIS application in a traditional Malay house can provide a map of the location of a traditional Malay house using the location barcode. This location map makes it easier for travelers to access cultural assets scattered in various regions. Data mining, cloud storage, databases, and big data can provide ornamental references for architects in building modern houses but still provide traditional elements.

However, based on a discussion of IT-Architecture research opportunities, research that discusses IT in the context of Malay architecture is still insufficient. It is exciting to explore IT in Malay Architecture because Malay architecture with an IT approach still needs to be studied further. This will support new research in the Malay architectural context to level up through the IT approach (e.g., database and data dictionary of Malay house). The existence of an IT approach will enable Malay architectural research to be compared with other cultural houses such as the Chinese

house, Arabic house, Indian house, and others. Finally, an IT approach will also play a significant role in digitizing data to preserve Malay culture.

## IV. CONCLUSIONS

The writing of this systematic literature review paper has been conducted through a systematic literature review research methodology. A review of IT-Architecture's topic is obtained, especially on the topic of the Malay Architectural Context. After going through the quality assessment process, only 37 papers were obtained that were relevant to the topic of IT-Architecture. Based on the classification paper, 11 topics could be future research. The combinations of BIM and VR/AR, BIM and GIS, BIM application, and technology are exciting topics to be explored further. However, based on literature searches, IT, and Malay architecture is still insufficient. Therefore, the topic of IT and Malay architecture still needs to be studied again in the future.

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