



## The Role of Public Libraries in the Development of Smart Cities and Communities:

*Results from a National Local Government Survey*

---

# The Role of Public Libraries in the Development of Smart Cities and Communities:

## *Results from a National Local Government Survey*

### **Authors**

Xiaoyi Zhao-Yerden  
J. Ramon Gil-Garcia  
Mila Gascó-Hernández  
G. Brian Burke

### **For More Information**

Center for Technology in  
Government, University at  
Albany (CTG UAlbany)  
UAB 120  
1400 Washington Avenue  
Albany, NY 12222  
P: 518.442.3892  
F: 518.442.3886  
[ctginfo@albany.edu](mailto:ctginfo@albany.edu)  
[www.ctg.albany.edu](http://www.ctg.albany.edu)

This project was supported by IMLS Grant No. LG-96-17-0144-17 awarded by the Institute of Museum and Library Services.

The opinions, findings, and conclusions or recommendations expressed in this publication are those of the authors and do not necessarily reflect the views of the Institute of Museum and Library Services.

©2021 The Research Foundation of State University of New York

## Table of Contents

Executive Summary .....	4
1. Introduction .....	7
2. Demographic Information of Survey Respondents .....	8
3. Characteristics of Local Governments.....	8
4. Local Governments' Perceptions of the Smart City/Community Concept.....	11
5. The Role of Public Libraries in the Development of Smart Communities .....	14
6. Public Libraries' Current Participation in the Development of Smart Communities ...	15
6.1. Program and Services.....	16
6.2. Benefits.....	16
6.3. Costs and Challenges .....	19
6.4. Success Factors .....	20
7. Public Libraries' Future Participation in the Development of Smart Communities .....	21
7.1. Programs and Services.....	21
7.2. Strategies.....	22
7.3. Potential Benefits .....	23
7.4. Potential Costs and Challenges .....	25
8. Initial Implications .....	27
Acknowledgements .....	29
About CTG UAlbany and About this Project.....	30
Appendix I. Survey Methodology, Sample and Response.....	31

## Executive Summary

This report summarizes the results of a national survey of local governments that aimed to understand their perceptions of smart cities and communities<sup>1</sup>, notably the role of public libraries in the development of smart communities as well as the benefits, costs, challenges, success factors and expected future contribution of public libraries to the development of smart communities.

This survey is part of the Center for Technology in Government's (CTG UAlbany) research project, "Enabling Smart, Inclusive, and Connected Communities: The Role of Public Libraries"<sup>2</sup>, implemented in partnership with the American Library Association (ALA)'s Center for the Future of Libraries and funded by the Institute of Museum and Library Services (Grant No. LG-96-17-0144-17).

The survey explores how local governments understand the concept of smart city/community and their perceptions of the present and future contribution of public libraries to the development of smart communities. It was designed based on a review of existing literature, a current practice report and four case studies conducted by the CTG UAlbany research team. This report summarizes the responses of 167 local government professionals who participated in our survey in 2020.

In terms of characteristics of the local government survey respondents, the top 3 participants were town managers, IT directors and chief information officers (CIOs). On average, they had 10.5 years of work experience. More than 36% of the local governments were serving communities with less than 5,000 residents<sup>3</sup>. About one third of the local governments had an annual budget between USD10 million to 50 million. Over half of the local governments have their public libraries as part of their government structures. About 25% of local governments have allocated 1% of their budgets to support the development of their public libraries.

### Characteristics of Survey Respondents and Local Governments

#### Respondents:

- Position (Top 3): town manager (21.02%), IT director (17.20%) and Chief information officer (8.92%)
- Average years of work experience: 10.5 years

#### Local governments (Top 1 choice):

- Type of local governments: city local government (48.23%)
- Population served: <5000 (36.22%)
- Annual budget: 10-50 million (31.36%)
- Relationship with public libraries: public libraries are part of local government structures (50.77%)
- Percentage of budget for public libraries: 1% (24.27%)

<sup>1</sup> For the rest of the document, the term "smart community" will be used and will be inclusive of both cities and other communities.

<sup>2</sup> Project website: <https://www.ctg.albany.edu/projects/imls2017/>

<sup>3</sup> In general, we provide the response to each question with the highest frequency in the survey.

In terms of the concept of smart city/community, more than 60% of the local governments think that the development of smart communities relies on intensive use of technology (67%), and their ultimate goal is to make the community more connected (75%) and improve residents' quality of life (69%). The majority of the local governments (78%) do not have an official smart city/community plan to guide the smart community development. In most of the communities, besides local governments, the participation of other community partners in smart community development is very limited. In addition, on a scale of 1 (not smart at all) to 10 (extremely smart), over half of the local governments (61%) gave a score of 4 or lower than 4 on the level of smartness of their communities.

Most local governments (97%) think public libraries can play an important role in different aspects that contribute to the development of smart communities, but the specific role that public libraries may play varies across the local governments surveyed.

Among the local governments in our survey, more than 60% indicated that the public libraries in their areas have not been formally involved in smart city initiatives in their communities. Public libraries are providing different programs

### The Concept of Smart City/Community

#### Definition (Top 3):

- Invests in making the community connected (75%)
- Improves residents' quality of life (68.55%)
- Intensively uses of technology (66.94%)

#### Official smart city/community plan (Top 1):

Cities/communities do not have an official smart city/community plan (77.12%)

#### The number of community partners involved in smart city development (Top 1):

- Other government agency: 0 (38.33%)
- Non-profit organization: 0 (57.41%)
- Businesses: 0 (57.41%)
- Academic institutions: 0 (42.86%)
- Other: 0 (82.76%)

Level of communities' smartness:  $\leq 4$  (60.14%)

### Public Libraries in Developing Smart Communities (Top 1)

#### The role:

- They help improve residents' digital literacy and skills and enable them to better utilize technology for better decision making and life quality improvement. (76.83%)

#### Participation:

Involvement in smart city initiatives:

- Public libraries have not been formally involved in smart city initiatives in my city/community. (63.41%)

Programs and services:

- Free access to high-speed Internet, public access computers and advanced technology (e.g., 3D printers, laser cutters, vinyl plotters, computer numerical control (CNC) routers, etc.). (90%)

#### Benefits:

- For residents: Free access to high-speed Internet and different kinds of technologies. (90.28%)
- For the community: Bridging the digital divide with open and free access and training of technologies for all community members. (64.29%)
- For public libraries: Staying relevant. (70.77%)

Costs: Buying and updating technology. (82.86%)

Challenges: Limited budget. (80.28%)

Success factors: Public libraries provide a welcoming environment that helps with resident engagement. (76.81%)



and services as a result of their formal and informal participation in the development of smart communities. Free access to high-speed Internet, public access computers and advanced technology are the most mentioned programs and services by 90% of the local governments. In the perspective of local governments, public library participation in the development of smart communities brings benefits to residents, the community and to public libraries themselves. The most mentioned benefit for residents is that they can enjoy free access to high-speed Internet and different kinds of technologies (91%) and therefore increase digital inclusion. The most mentioned benefit for public libraries is helping them staying relevant (71%). The most mentioned benefit for the community is bridging the digital divide with open and free access and training of technologies for all community members (65%). Local governments also mention that public libraries incur in costs and face various challenges when they participate in the development of smart communities. Buying and updating technologies is the most mentioned cost by 83% of the local governments, and limited budget is the most mentioned challenge by 81% of the local governments. The majority of respondents (77%) think that providing a welcoming environment that helps with resident engagement is the key success factor for public libraries' participation in the development of communities.

Local governments have great expectations for the future participation of public libraries in the development of smart communities. Providing free computer training and classes at various levels is the most mentioned potential future program (81%). Public libraries actively applying for funding to support innovation in designing and delivering new programs and services is the most mentioned strategy to contribute to the future development of smart communities (74%).

Local governments state that in the future, the greater involvement of public libraries in the development of smart communities is expected to bring more benefits than the aforementioned ones, such as increased community engagement and satisfaction about public libraries through diverse programs and services (84%), satisfying community needs through all kinds of programs and services

### Future of Public Libraries in Developing Smart Communities (Top 1)

**Future participation:** Free computer training and classes at various levels (e.g., basic: set up your smart phone, medium: accomplish a task online; advanced: create models using 3D printer, etc.). (80.56%)

**Strategies:** Actively apply for funding to support innovation in designing and delivering new programs and services. (73.24%)

**Potential benefits**

- For residents: Increased community engagement and satisfaction through diverse programs and services. (83.82%)
- For the community: Satisfying community needs through all kinds of programs and services. (79.41%)
- For public libraries: Staying relevant. (88.24%)

**Potential costs:** Buying and updating technology. (81.16%)

**Potential challenges:** Limited budget. (86.76%)

(80%), and helping public libraries staying relevant (89%). In the future, public libraries are also expected to incur in different costs and challenges when contributing to the development of smart communities. Buying and updating technologies is the most mentioned potential cost by 82% of local governments, while limited budget is the most mentioned potential challenge by 87% of the local governments.

## 1. Introduction

This survey is part of the Center for Technology in Government's (CTG UAlbany) research project "Enabling Smart, Inclusive, and Connected Communities: The Role of Public Libraries", implemented in partnership with the American Library Association (ALA)'s Center for the Future of Libraries and funded by the Institute of Museum and Library Services. The survey aims to better understand how local governments view the role of public libraries in the development of smart communities, as well as the benefits, costs, challenges, success factors and expected future contribution of public libraries to the development of smart communities.

This report provides a descriptive analysis of the survey responses as well as a qualitative analysis of the respondents' comments. The survey was administered in two rounds. In the first round, the local government survey was distributed to 4,581<sup>4</sup> local government leaders and IT professionals across the United States through SurveyMonkey email invitations between September 16 and October 30, 2020. In the second round, which took place between November 10 and December 18, 2020, we shared the survey link with local government associations across the United States and asked them to share it with their local government members on our behalf (See Appendix I for detail).

The CTG UAlbany research team used the survey results as one of the inputs to design an Opportunity Agenda and Roadmap Report as well as a Libraries in Smart Cities and Communities Toolbox, which have the goal of supporting public libraries in their efforts to become key players in the development of smart communities. The survey results may also help other organizations and city stakeholders to better understand the role that their public libraries are playing -- or can play -- to contribute to the development of smart communities, and hopefully include them as active participants in the implementation of their smart city/community initiatives. These results may also be of interest to researchers and practitioners involved in similar initiatives.

---

<sup>4</sup> Among this, 360 email addresses are invalid and have been replaced with updated email addresses, the survey invitations were sent through direct emails.

## 2. Demographic Information of Survey Respondents

In this section, we summarize the respondents' demographic information, including their position and years of working experience.

As Figure 1 shows, the survey was filled by staff in several positions in the different local governments of our sample: town managers (21.02%), IT directors (17.20%) and chief information officers (8.92%). The rest of the respondents were mainly clerks and leaders of local governments, such as the mayor, the financial director and the city manager.

Among the respondents, the average work experience is about 10.5 years, and more than one third (37%) of the respondents have between one and five years of employment. In terms of longevity, 17.53% of the respondents have been working at their current position for more than 20 years, whereas 5.19% of them have been in their current position for less than one year.

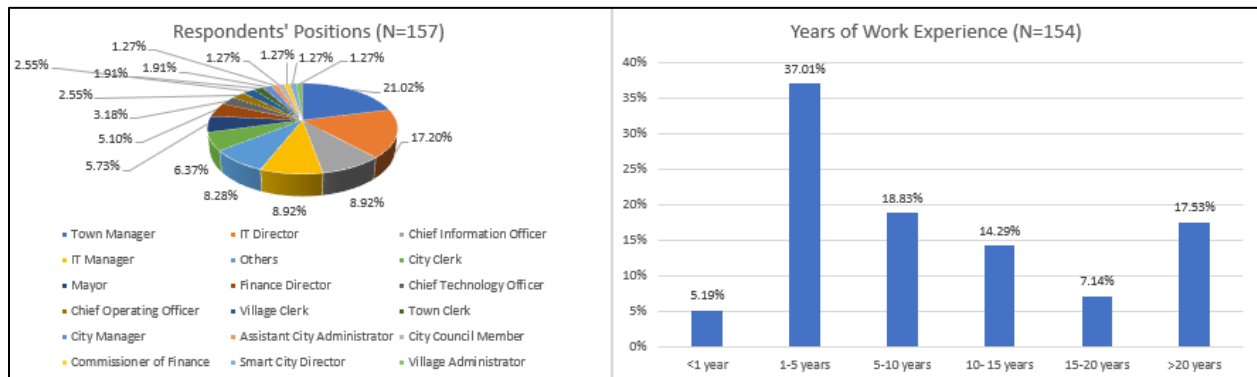


Figure 1. Demographic Information of Survey Respondents

## 3. Characteristics of Local Governments

In this section (see Figure 2-5), we summarize the characteristics of local governments that participated in our survey, including the types of local governments, the size of the population they are serving, their annual budget and the percentage of the budget that they devote to their public libraries.



About half (48.23%) of the respondents are from city governments and 21.99% are town governments. The percentage of county governments and village governments is the same (12.77%). The rest are a few boroughs (2.13%) and townships (2.13%).

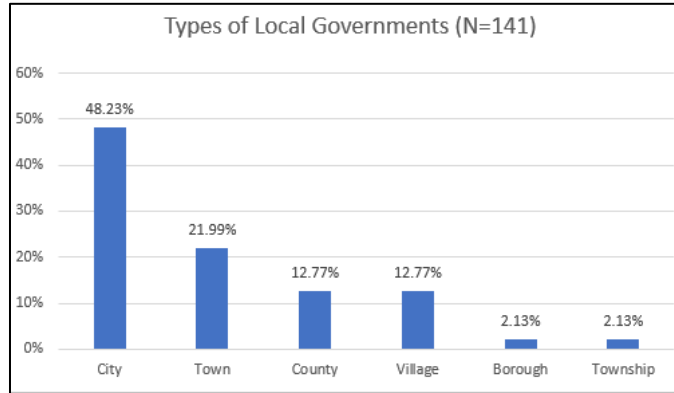


Figure 2. Type of Local Governments

Over 36% of the local governments are serving communities with a population of less than 5,000. About one third are serving communities with populations between 10,000 and 50,000. Less than 1% of the local governments are serving communities with populations greater than 500,000.

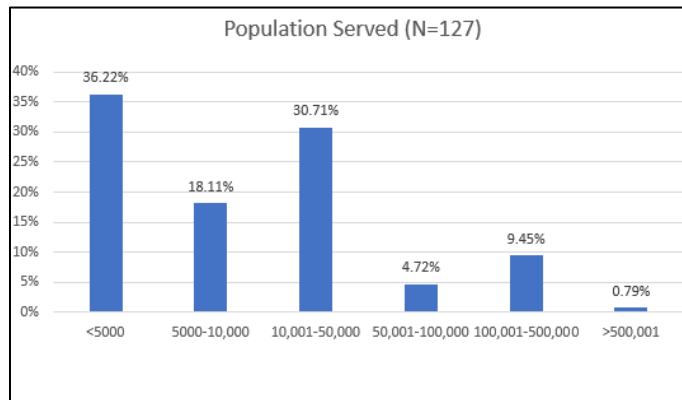


Figure 3. Population Served by Local Governments

In terms of resources, 31.36% of local governments have an annual budget of \$10-\$50 million, 7.63% of them have an annual budget below \$1 million and 4.24% of them have an annual budget greater than \$500 million.

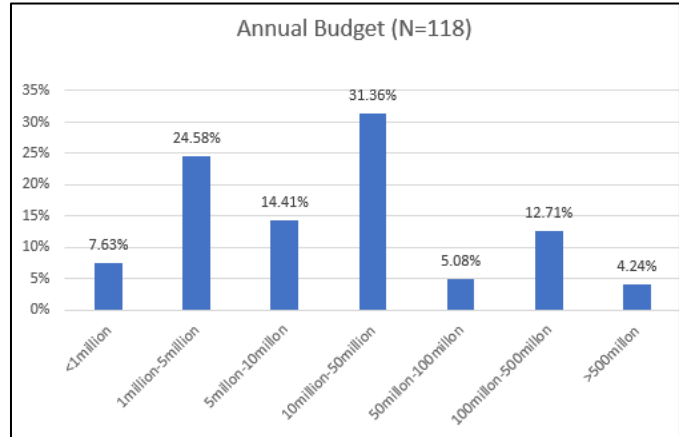


Figure 4. Annual Budget of Local Governments

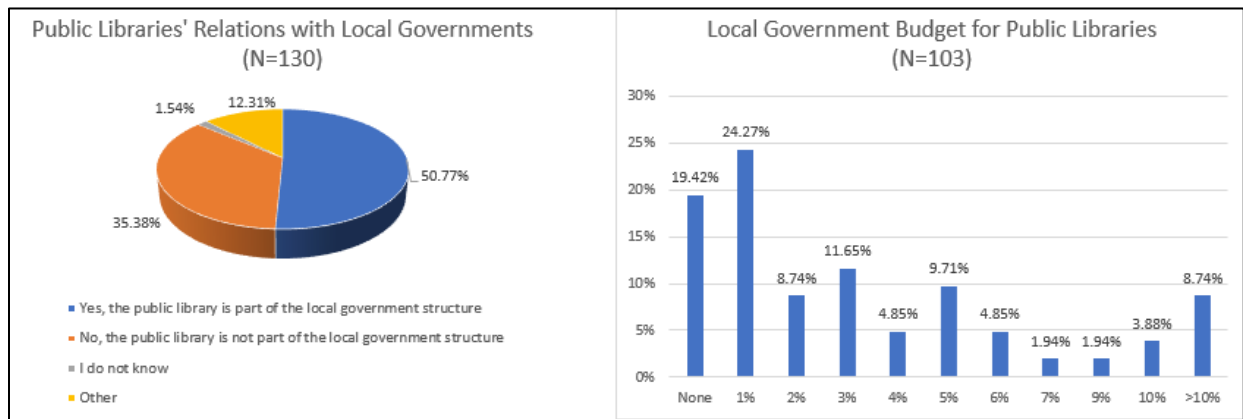


Figure 5. Public libraries' Relations with Local Governments

Among the local governments that participated in our survey, 50.77% of them have their public libraries as a department or unit within the local government organizational structure. For 35.38% of them, their public libraries are not part of the local government organizational structure. According to the additional comments, in some communities, public libraries operate independently, but they are either in buildings owned by the local government or receive funding from the local government.

Among the local governments who responded to our survey, 19.42% of them do not provide funding for their public libraries and their public libraries are not a department or a unit within the local government. For the ones that do provide funding for their public libraries, 24.27% of them allocate about 1% of local government annual budgets to support the development of public libraries. In contrast, only 3.88% of local governments allocate more than 10% of their budgets for their public libraries.

## 4. Local Governments' Perceptions of the Smart City/Community Concept

In this section (see Figure 6-9), we report local government's perceptions on the concept of smart city/community and the current smartness development in their communities.

Regarding the definition of smart city/community, more than 60 % of local governments perceive that the development of a smart city/community relies on the intensive use of technology (66.94%). Three quarters (75%) think that one of the goals of smart communities is to make the community more connected, over 60% think its goals also include improve residents' quality of life (68.55%) and the efficiency of community operations (64.52%). Less than 20% of the sample think that the development of a smart city/community is to upgrade public transportation (19.35%) and offer better quality and affordable healthcare (14.52%). According to the additional comments, some local governments think that smart community development greatly relies on the development of technology. Also, some local governments indicate they are not very familiar about the concept of smart city/community.

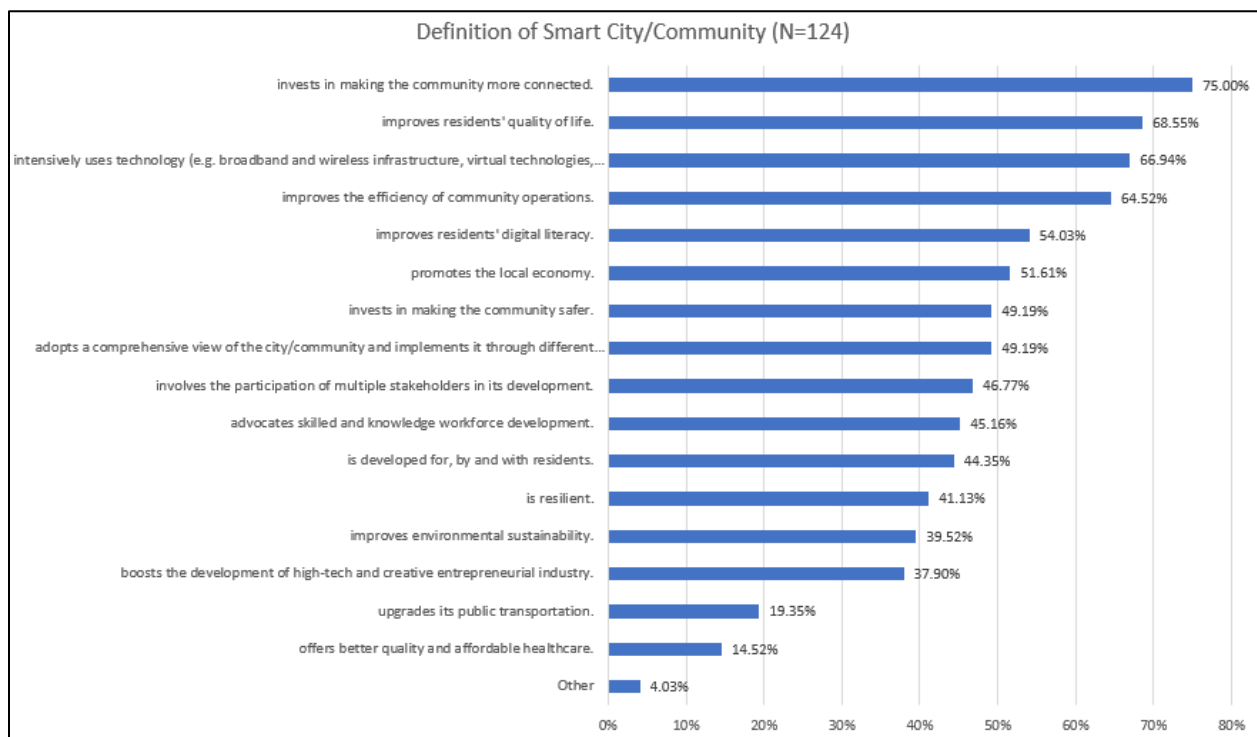


Figure 6. Local Governments' Perceptions of Smart City/Community

Among all the local government participants, 77.12% do not have an official smart city/community plan, 11.86% of them have one, and 11.02% of the respondents do not

know if they have an official smart city/community plan. Some respondents who are knowledgeable of their governments' official smart city/community plan are IT professionals in the local governments, who are usually involved in the development of smart communities.

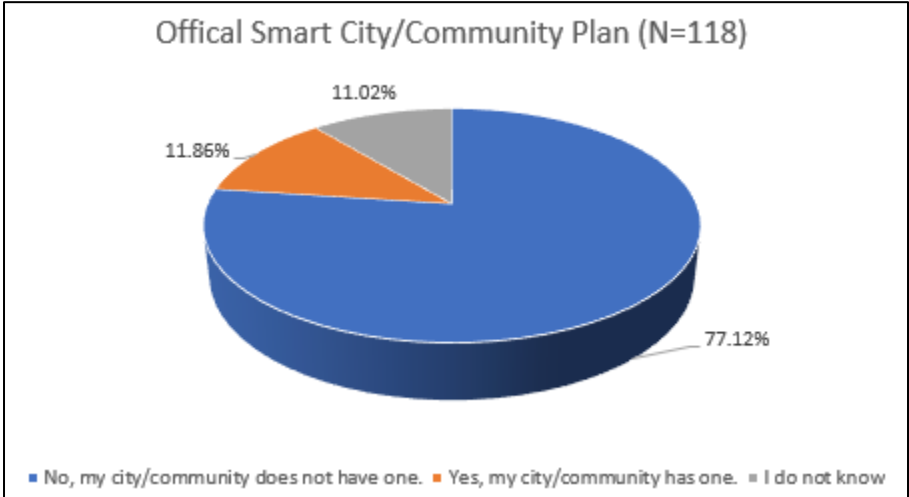


Figure 7. Official Smart City/Community Plan

Besides local governments, other community stakeholders may also participate in the development of smart communities. However, based on the responses we received, it seems that there is very limited involvement of other community stakeholders in the development of smart communities. More than half of the respondents (57.41%) indicated that there are no nonprofit organizations or private organizations participating in the development of their smart communities. About 40% of the respondents mentioned that there are no other government agencies (38.33%) or academic institutions (42.86%) participating in the development of their smart communities.

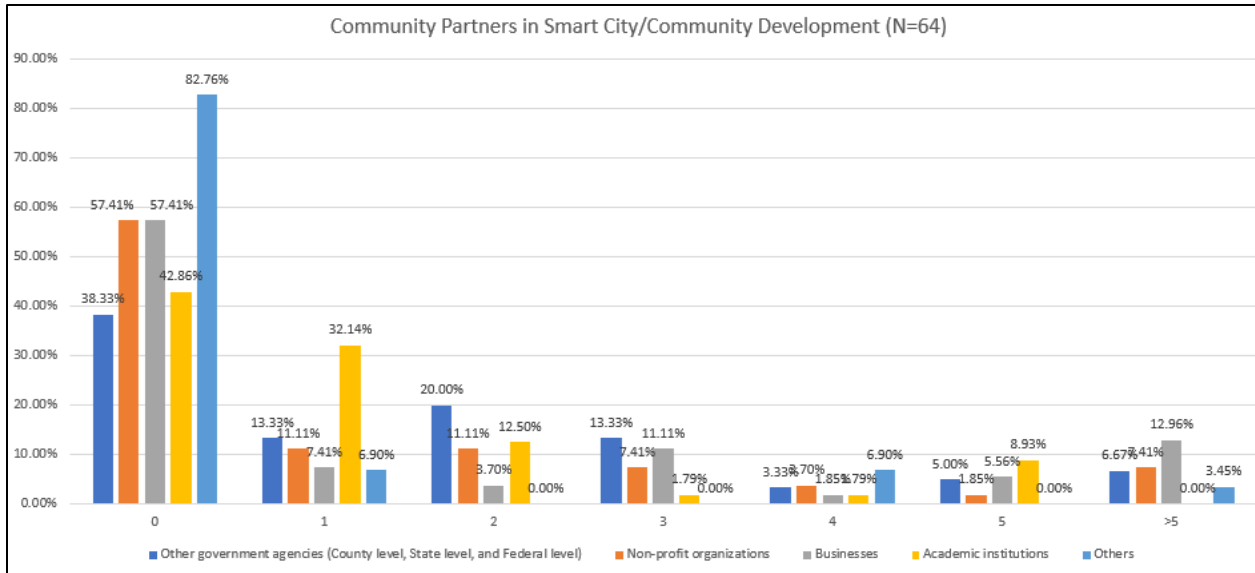


Figure 8. Community Partners in Smart City/Community Development

On a scale of 1 (not smart at all) to 10 (extremely smart), more than half of the local governments (60.14%) surveyed give a score of 4 or lower on the level of smartness of their communities. About 9% of them think their communities are not smart at all (score of 1), only 1.14% of them think their communities are very smart (score of 9), and none of them think their communities are extremely smart (score of 10).

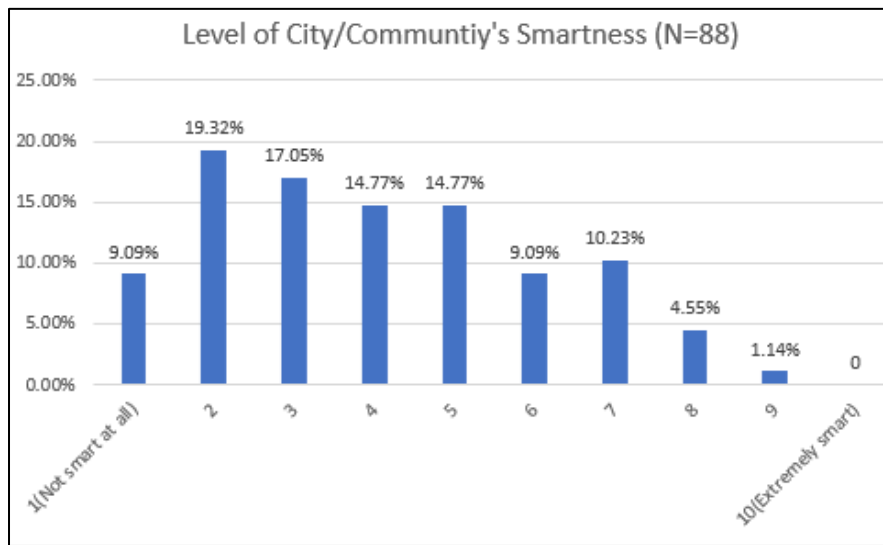


Figure 9. Level of City/Community's Smartness

## 5. The Role of Public Libraries in the Development of Smart Communities

Most of the local governments that participated in our survey think public libraries play an important role in the development of smart communities, but the specific role that public libraries play varies across local governments (See Figure 10).

Over 70% of the local governments in our sample think that public libraries can help improve residents' digital literacy and skills and enable them to better utilize technology for better decision making and life improvement (76.83%). They also believe that public libraries serve as a trusted public platform offering various resources that encourage and support residents' engagement, creation, innovation, and collaboration (73.17%). Only 34.15% of local governments think that the public libraries welcome and assist the development of the local economy and entrepreneurial activities. Also, 3.66% of respondents do not think public libraries play a role in the development of smart communities.

According to the additional comments, some local governments think public libraries are important to their communities, but they do not see how they are related to smart community development. Some local governments indicate that there is no investment in the development of smart communities, so it is hard to define the role of public libraries in this area.

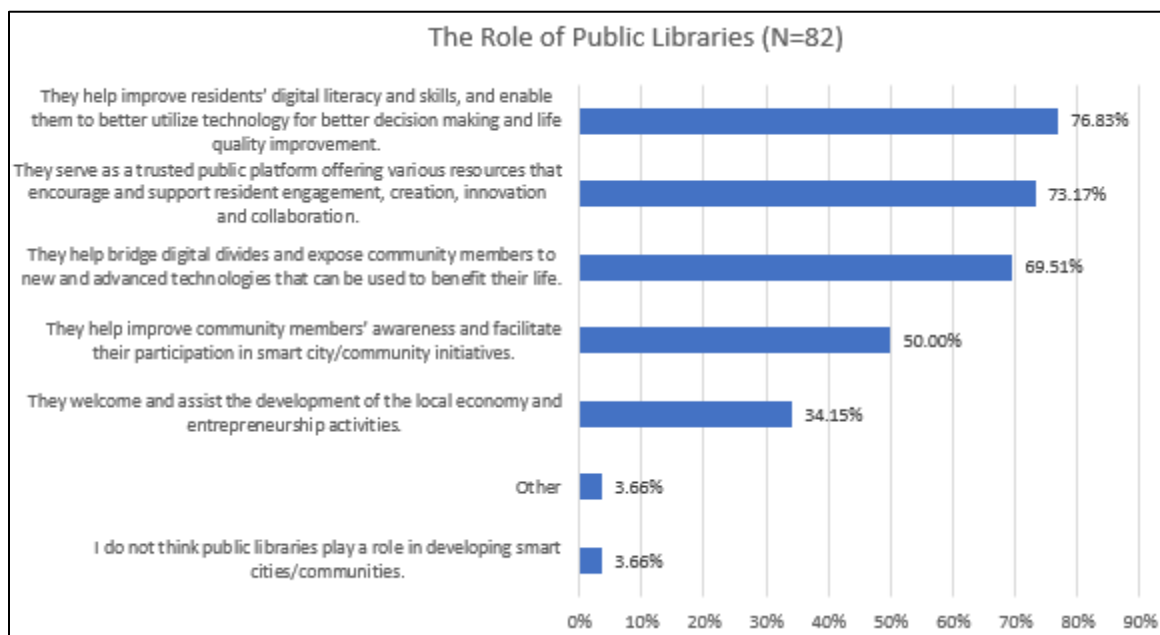


Figure 10. Local Government Perceptions of Public Libraries' Role in the Development of Smart Communities



## 6. Public Libraries' Current Participation in the Development of Smart Communities

In this section (see Figure 11-12), we report on the perception of how public libraries have been participating in the development of smart communities, according to local governments.

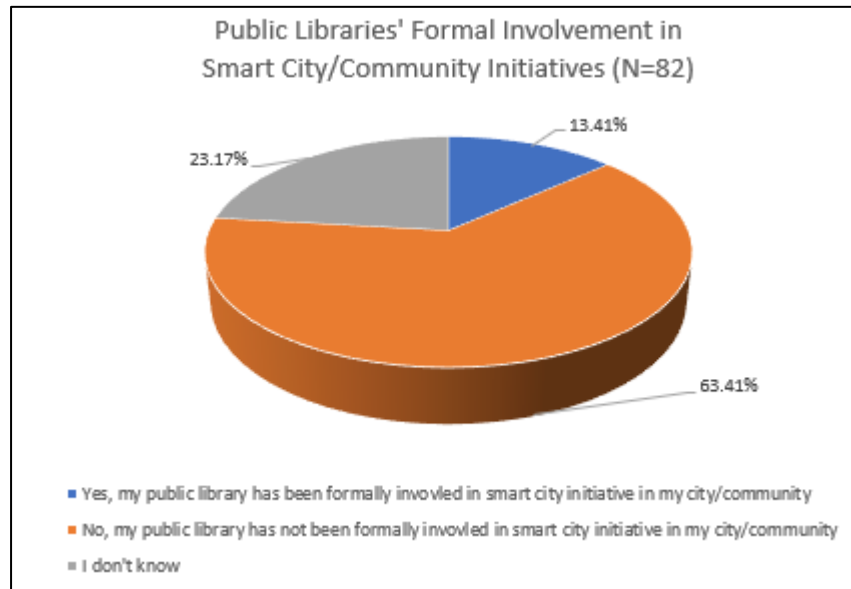


Figure 11. Public Libraries' Formal Involvement in Smart City/Community Initiatives

Among the local governments that participated in our survey, only 13.41% of their public libraries have been formally involved in the smart city initiatives in their communities. More than half of public libraries (63.41%) have not been formally involved in smart city initiatives in their communities, and 23.17% of the local governments do not know whether their public libraries have been formally involved in the smart city initiatives in their communities.

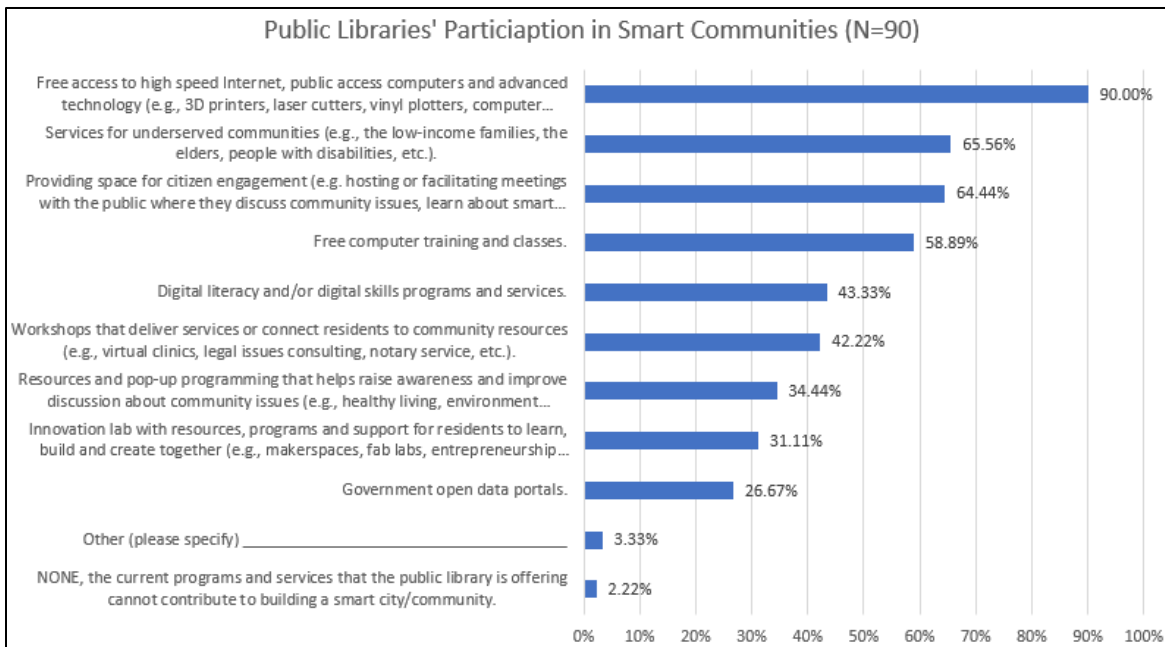


Figure 12. Public Libraries' Participation in the Development of Smart Communities

### 6.1. Program and Services

Public libraries are providing different programs and services to participate formally and informally in the development of smart communities. The service most mentioned by local governments is free access to high-speed Internet and public access to computers and advanced technology (90%). More than half of the local governments also mention that their public libraries provide services for underserved communities (65.56%), space for citizen engagement (64.44%) and free computer training and classes (58.89%), all of which contribute to the development of smart communities. Only 26.67% of local governments mention government open data portals as a program or service provided by public libraries that contribute to the development of smart communities. Finally, 2.22% of the local governments do not think that the current programs and services offered by their public libraries can contribute to the development of smart communities.

### 6.2. Benefits

From the perspective of local governments, public library participation in the development of smart communities brings benefits to residents, the community and also to public libraries themselves (See Figure 13-15).

Regarding benefits for residents, the most mentioned benefit by the local governments is that residents can have access to high-speed Internet and different kinds of

technologies at no cost (90.28%), therefore increasing digital inclusion. Over half of them mention additional benefits, such as residents feeling safe and comfortable to utilize public libraries space to get together, communicate and collaborate with each other (75%), improved digital literacy (59.72%), increased community engagement and satisfaction (50%), and increased hands-on experience with various kinds of technologies (50%).

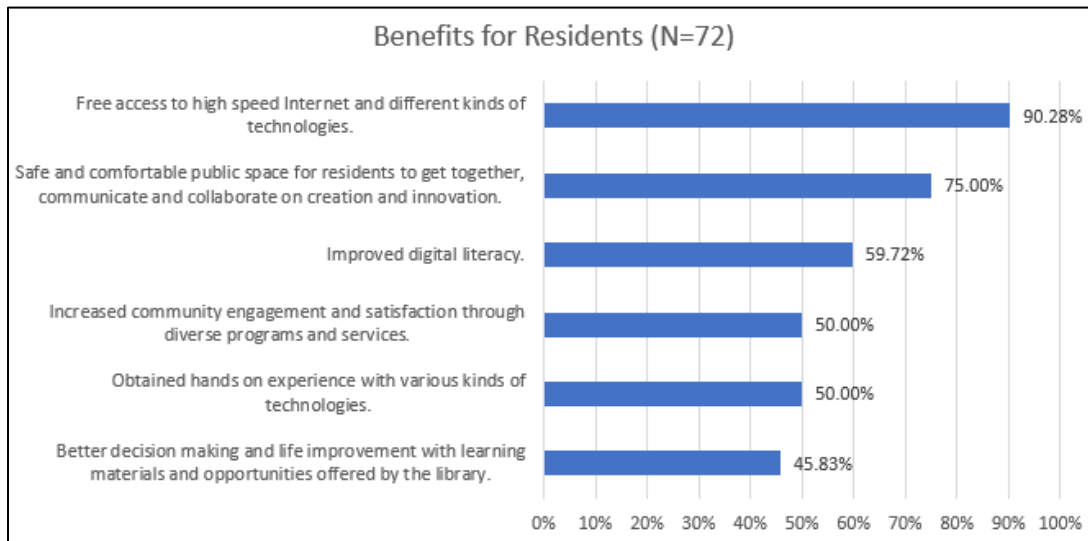


Figure 13. Benefits for Residents

Regarding benefits for the community, over 60% of the local governments think that the participation of public libraries in the development of smart communities helps bridge the digital divide within the community (64.29%), better satisfy community needs (62.86%) and improve community connectivity (61.43%). There are other benefits for communities that are less mentioned by the local governments, such as increasing technological innovation (30%), increasing workforce development and local economic development (25.71%) and boosting entrepreneurship within the community (11.43%).

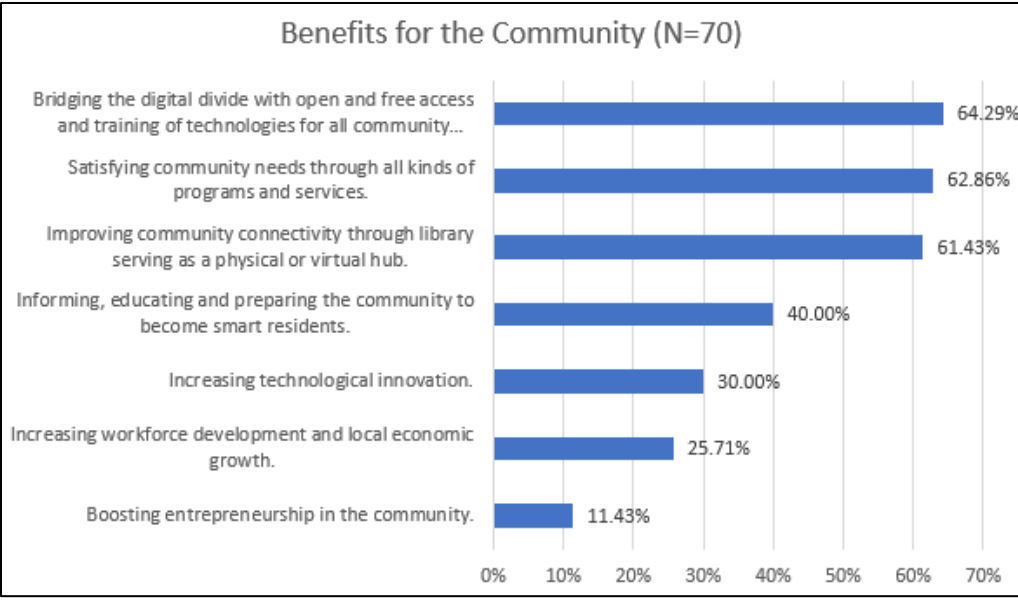


Figure 14. Benefits for the Community

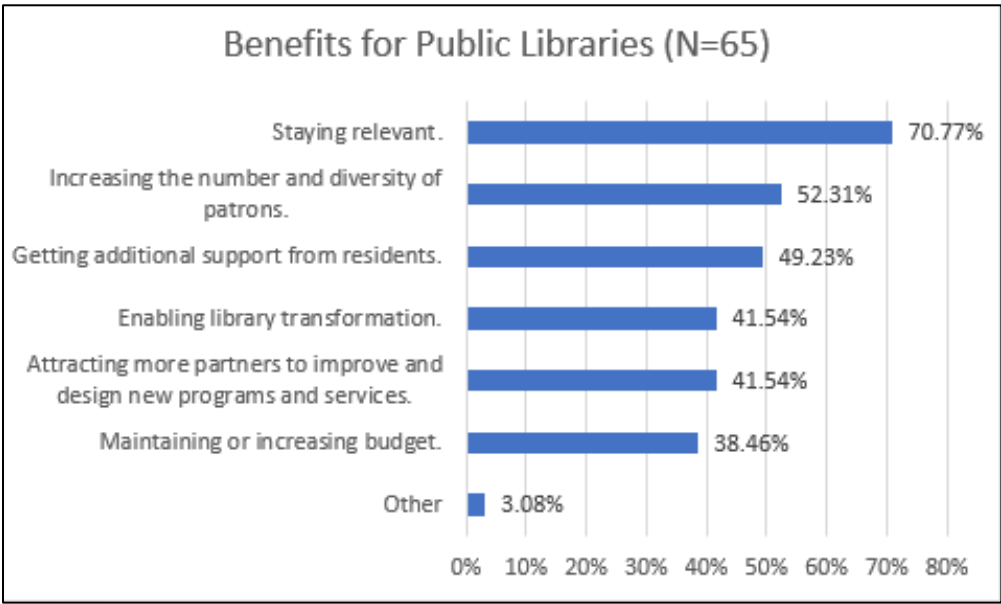


Figure 15. Benefits for Public Libraries

Regarding benefits for public libraries, over 70% of the local governments think that participating in the development of smart communities help public libraries stay relevant to the community. About half of the local governments also think that such participation helps public libraries attract more users (52.31%) and obtain additional support from the residents (49.23%). Maintaining or increasing the budget is the least mentioned benefit for public libraries in the perspective of local governments (38.46%). According to the

additional comments, some local governments are not aware of the benefits for public libraries when public libraries participate in the development of smart communities.

### 6.3. Costs and Challenges

Local governments also express their perspectives on the various costs and challenges that public libraries face when they participate in the development of smart communities (Figure 16-17).

Buying and updating technology (82.86%), financial and time costs in designing new programs and services (74.29%), and training staff (68.57%) are the most mentioned public library costs by local governments. Coordination among different community stakeholders (40%) and exploring opportunities and forming partnerships (40%) are the least mentioned costs.

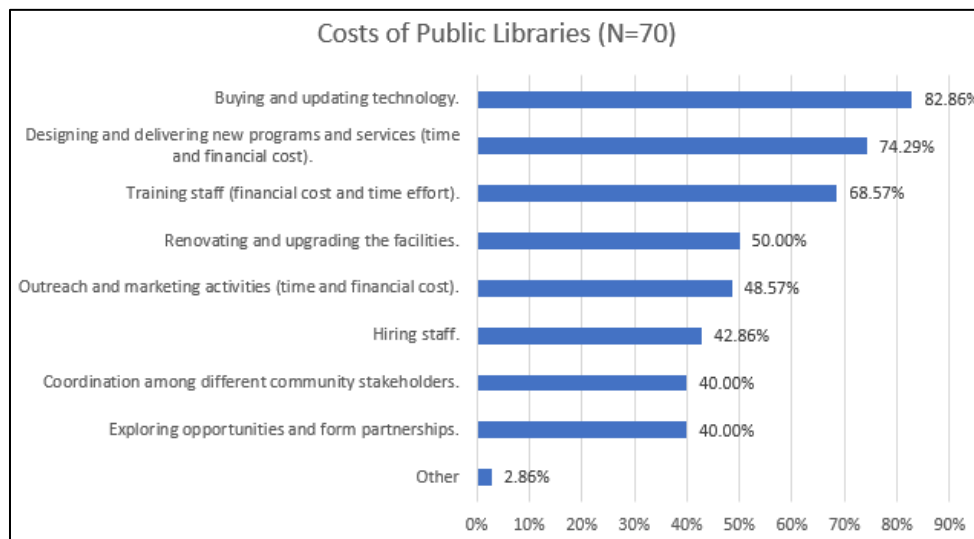


Figure 16. Costs of Public Libraries

From the perspective of local governments, limited budget (80.28%) and limited staff (69.01%) are the two biggest challenges that public libraries have encountered when they take part in the development of smart communities. Obstacles in partnership building and collaboration (4.23%) is the least mentioned challenge by local governments.

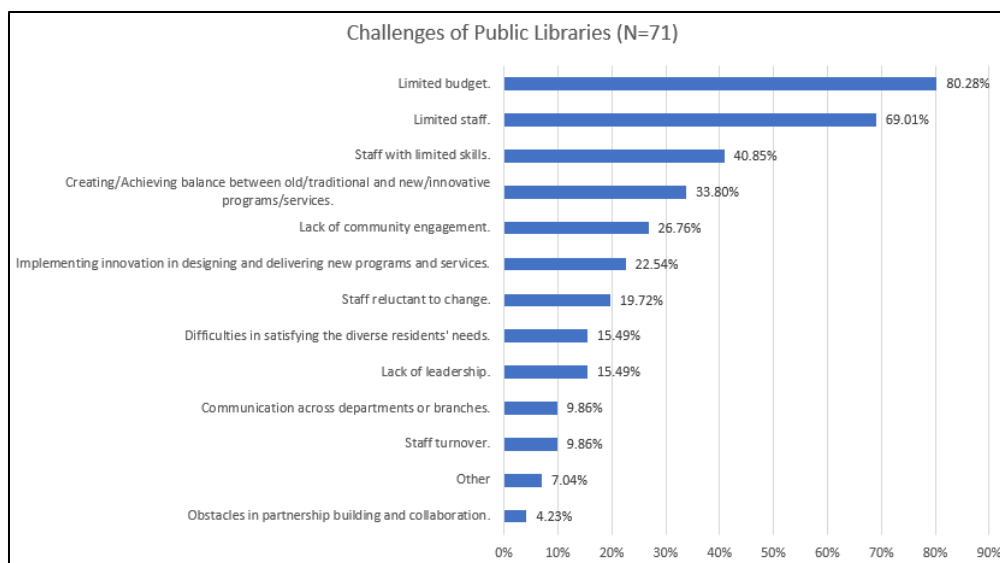


Figure 17. Challenges of Public Libraries

According to the additional comments, some local governments think that public libraries' limited facilities (e.g., equipment, physical space within library building, etc.) constrain their capabilities to participate in the development of smart communities. Some local governments believe that sometimes there is a disconnect between what the community wants and what the library thinks the community wants. Some local governments state that even though public libraries have great staff and leadership, they are often left out of the discussion about community issues and development.

#### 6.4. Success Factors

In the perspective of local governments, there are many factors affecting the success of public libraries' participation in the development of smart communities (See Figure 18).

About 70% of local governments think it is important for public libraries to create a welcoming environment that helps with citizen engagement (76.81%) and makes public libraries accessible to the community (68.12%). Over half of the local governments think that having library staff who are willing to learn and adapt to new programs and services (59.42%) and better identify community needs (53.62%), which help public libraries contribute to the development of smart communities. Investment in outreach and marketing (27.54%) is the least mentioned success factor referenced by the local governments.



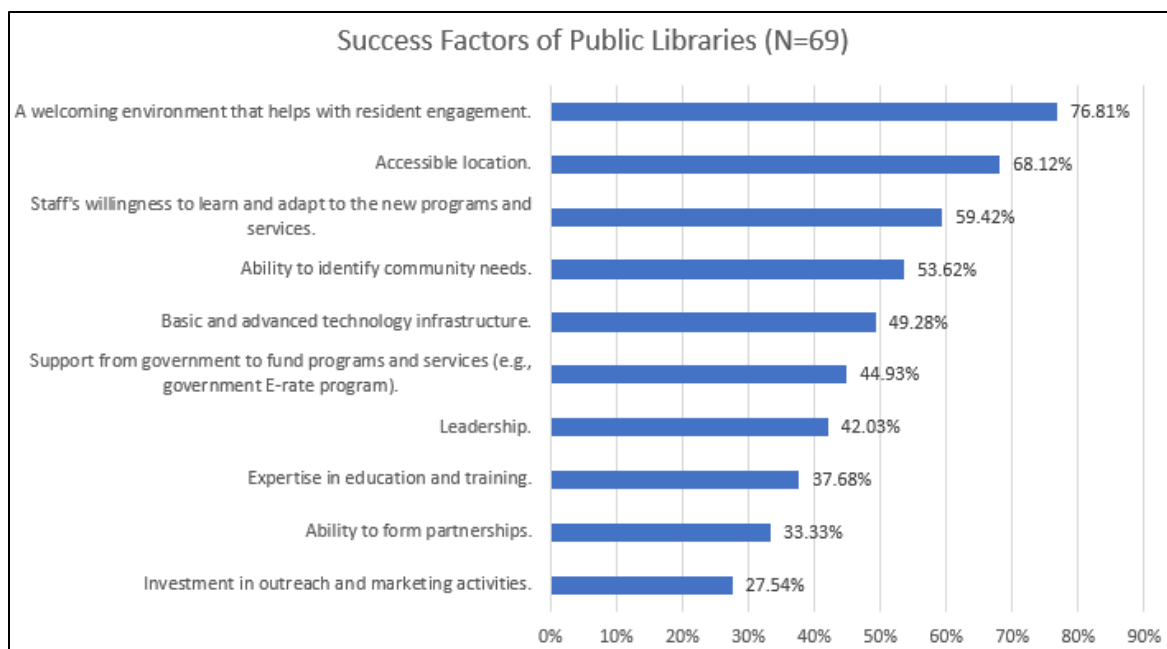


Figure 18. Success Factors of Public Libraries

## 7. Public Libraries' Future Participation in the Development of Smart Communities

Local governments also shared their views on public libraries' future participation in the development of smart communities. Also, there are several program and services that local governments believe public libraries should provide in the future (See Figure 20).

### 7.1. Programs and Services

Providing free computer training and classes at various levels is the most mentioned potential future service according to 80% of the local government respondents. More than 60% of local governments would also like to see public libraries provide digital literacy and digital skills programs and services (73.61%), conduct workshops that deliver services or connect residents to community resources (69.44%), become technology hubs with free access to high-speed Internet, public access computers and other advanced technologies (69.44%), provide space for citizen engagement (66.67%), and provide services for underserved communities (63.89%). We also noticed that all of the programs and services which local governments expected public libraries to provide in the future were already offered by many of the public libraries, according to the responses to the current programs and services of public libraries that contribute to the development of smart communities.

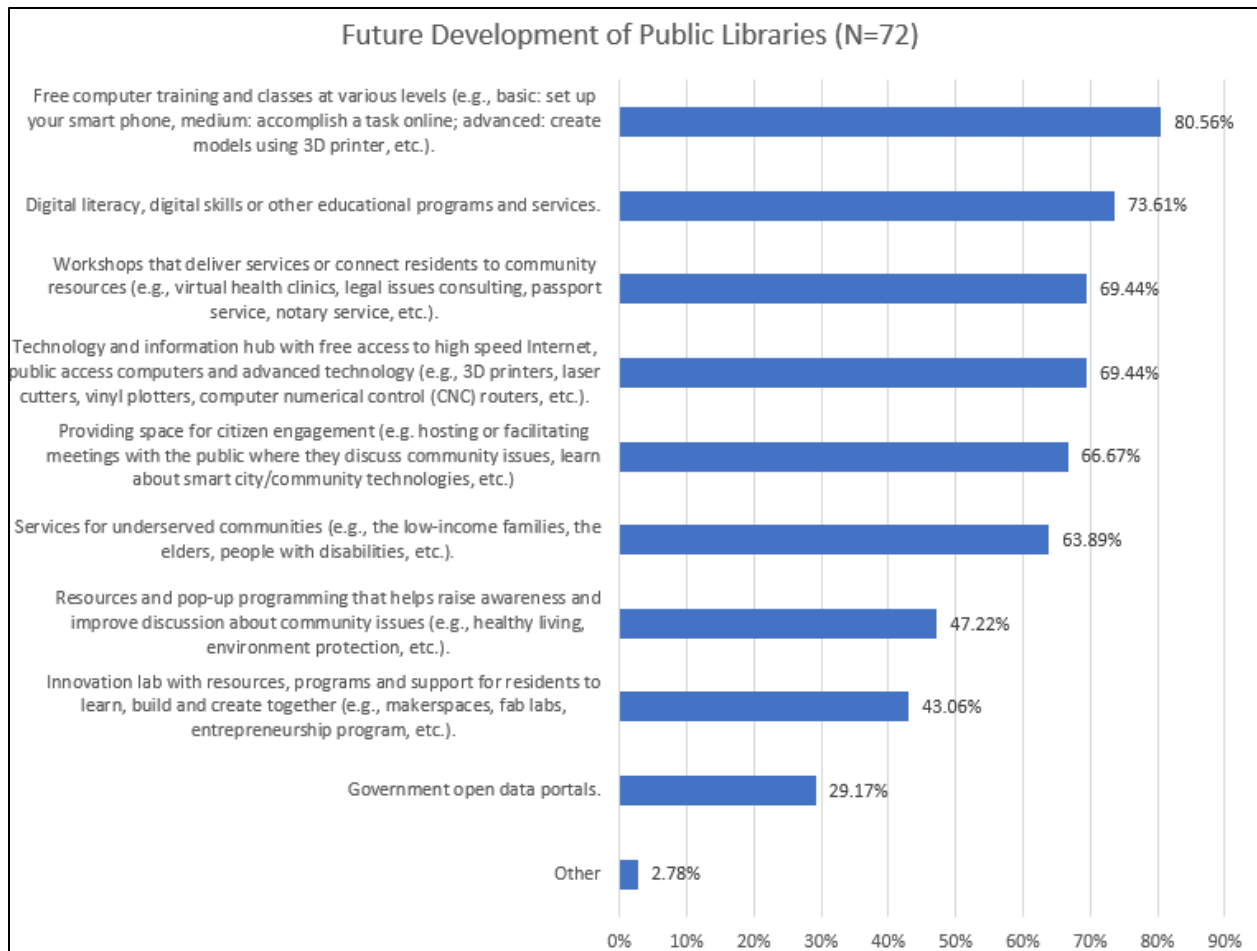


Figure 19. The Future Development of Public Libraries

## 7.2. Strategies

To become more involved in the development of smart communities, more than 50% of the local governments think that public libraries should adopt these following strategies: 1) actively applying for funding (73.24%); 2) actively building partnerships (66.20%); 3) actively being involved in conversations with the local government and other community stakeholders (59.15%); and 4) outreach activities and promotion of libraries' brand, programs and services (57.75%). Hiring consultants (19.72%) is the least mentioned strategy by local governments for public libraries' future development.

According to the additional comments, local governments think that bigger facilities will help public libraries better participate in the development of smart communities. They also believe that public libraries should be more innovative in serving their communities, especially younger generations of patrons.

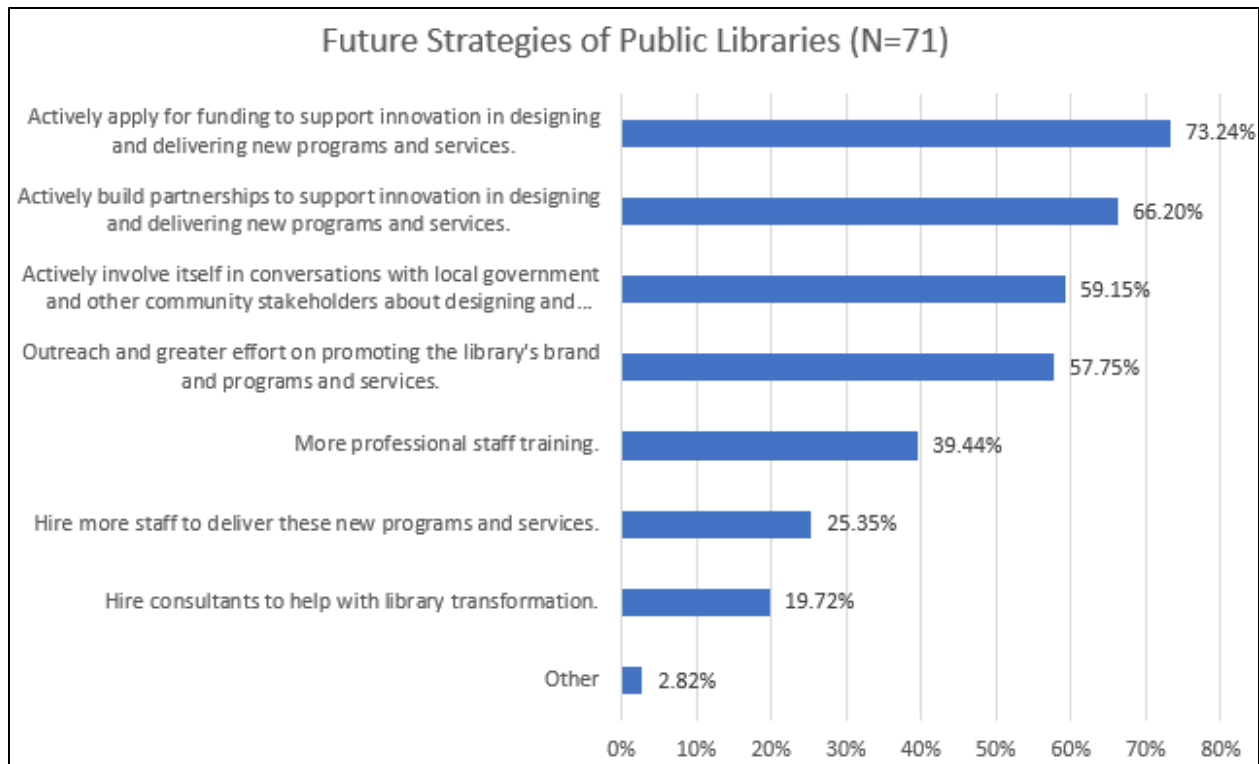


Figure 20. The Strategies of Public Libraries' Future Development

### 7.3. Potential Benefits

According to local governments, public libraries' involvement in the development of smart communities will bring future additional benefits for residents, the whole community and public libraries themselves. The responses are consistent with the local governments' perceptions on the benefits of public libraries' current involvement in the development of smart communities (See Figures 21-23).

Over 80% of the local governments think that residents will receive future benefits in many different aspects, including increased community engagement and satisfaction (83.82%), improved digital literacy (82.35%) and increased digital inclusion through free access to high-speed Internet and different kinds of technologies (82.35%).

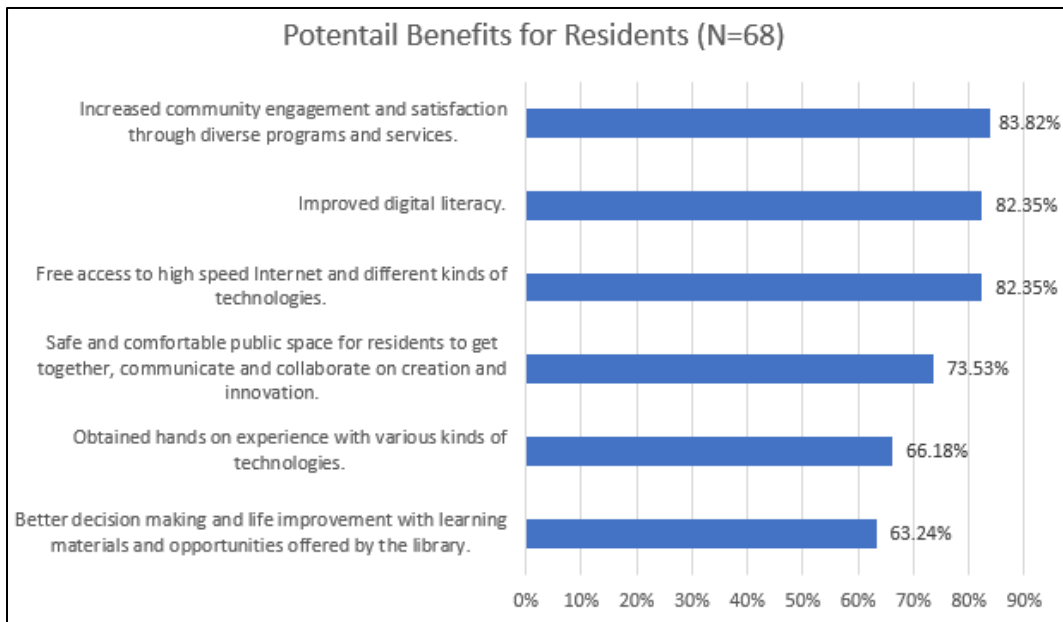


Figure 21. Potential Benefits for Residents

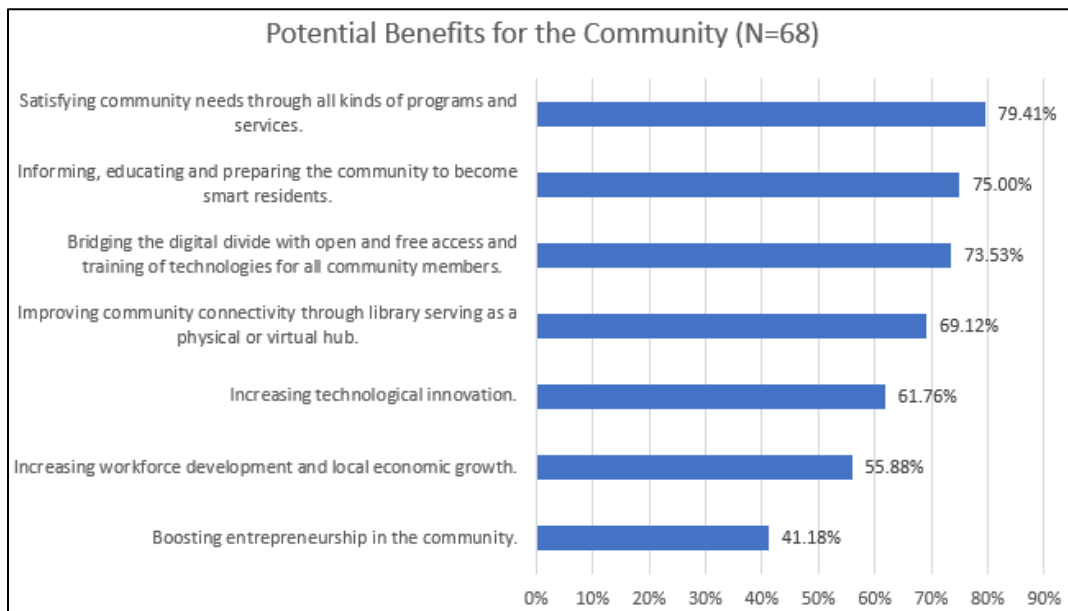


Figure 22. Potential Benefits for the Community

More than 70% of local governments think that communities will receive future benefits such as satisfying community needs (79.41%), training residents to become smarter (75%), and bridging the digital divide (73.53%).

About 90% of the local governments think that staying relevant is the biggest potential future benefit for public libraries if they increase their involvement in the development of smart communities. Getting additional support from residents (72.06%), enabling library transformation (64.71%), attracting more partners in designing programs (64.71%) and increasing the number and diversity of patrons (63.24%) are other potential benefits for public libraries that are mentioned by more than 60% of the local governments.

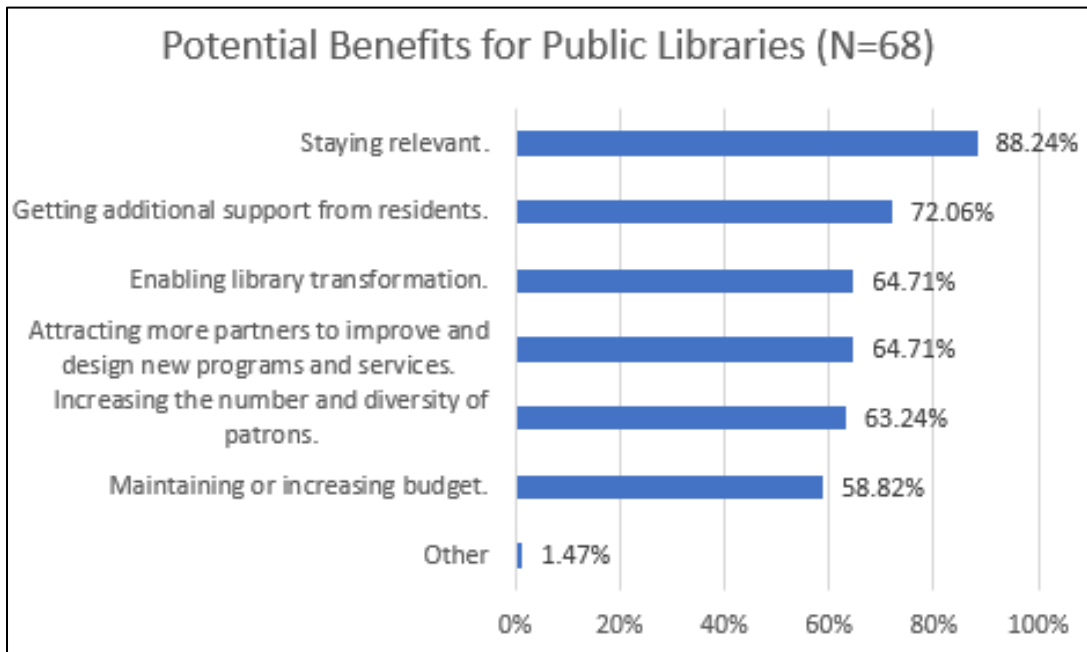


Figure 23. Potential Benefits for Public Libraries

#### 7.4. Potential Costs and Challenges

Besides potential future benefits, local governments also indicate the potential future costs and challenges that public libraries would encounter if they became more involved in the development of smart communities. The responses are very similar to the local governments' perceptions of the costs and challenges that public libraries have encountered in their current involvement in the development of smart communities (See Figures 24-25).

Buying and updating technology (81.16%), financial and time costs from designing new programs and services (78.26%) and training staff (75.36) are the top three potential future costs identified by over 75% of the local governments. Over 50% of local governments also view outreach (56.52%) and renovating facilities (53.62%) as other important potential future costs for public libraries. Exploring opportunities and forming

partnerships (39.13%) is the least mentioned potential future cost by the local governments.

Limited budget (86.76%) and limited staff (69.12%) are the biggest potential future challenges mentioned by most of local governments. Over 35% of the local governments also view staff with limited skills (39.71%), achieving balance between new and old programs (39.71%), implementing innovation in designing new programs and services (36.76%) and lack of community engagement (35.29%) as other potential future challenges for public libraries. Staff turnover (5.88%) is the least mentioned potential future challenge by local governments.

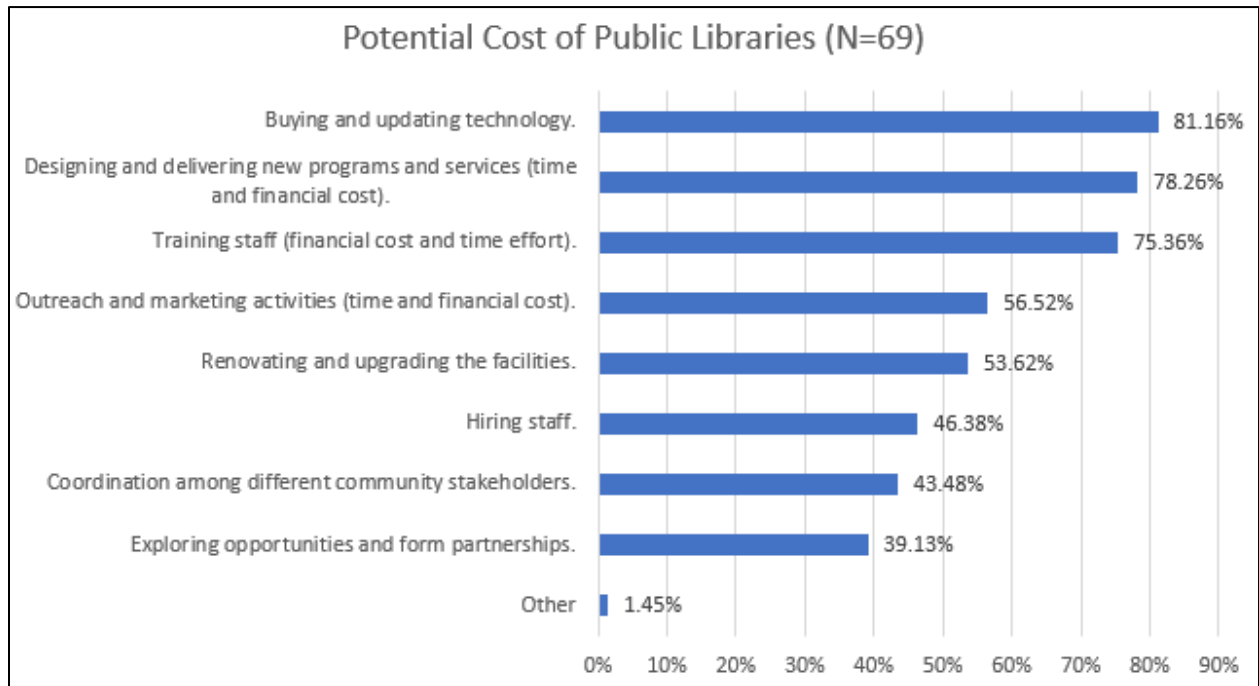


Figure 24. Potential Costs of Public Libraries



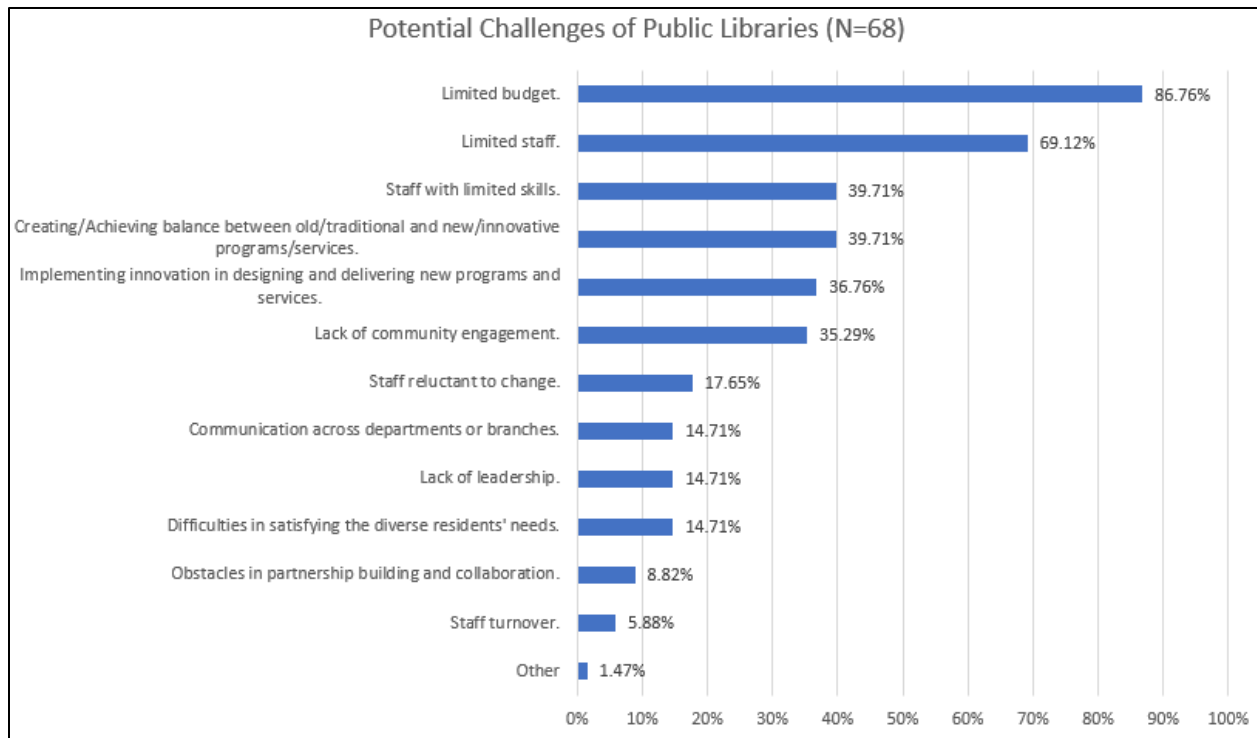


Figure 25. Potential Challenges of Public Libraries

## 8. Initial Implications

The following section describes some initial implications based on local governments' responses to questions about the concept of smart city, the development of smart communities, the role of public libraries in the development of smart communities, as well as the benefits, costs, challenges and expected future contribution of public libraries to the development of smart communities.

In terms of the concept of a smart city, more than half of the local governments of our sample think that the development of a smart city/community relies on the intensive use of technology to achieve the main goal of making the community more connected, improve efficiency of community operations and improve residents' quality of life. It seems that this technology-centered view on the concept of smart city/community results in local governments assessing the current level of smartness of their communities, and the role public libraries are playing or can play to contribute to developing a smart community based on the deployment and use of various technologies. This is illustrated in more detail in the following paragraphs.

Regarding the current development of smart communities, around 78% of the local government participants do not have an official smart city/community plan. Besides local governments, there is very limited involvement of other community stakeholders in the development of smart communities. These results may be, at least in part, affected by the fact that over 36% of the local governments participating in the survey are serving communities with a population of less than 5,000, and there is usually limited development in terms of becoming smart in such small communities. The limited involvement of other stakeholders in the development of smart communities may also be the reason why less than 2% of the local governments think that their communities are very smart (score of 9), while more than half give a score of 4 or lower (on a scale of 10).

On the role of public libraries in the development of smart communities, less than 24% of the local governments do not know whether their public libraries have been formally involved in the smart city initiatives in their communities. It may be because the local government respondents are not very familiar with the smart city development in their communities. It may also indicate that some local governments are not aware of the role that public libraries serve in the development of smart communities, or there may be a lack of communication between public libraries and local governments in terms of what public libraries are doing that contribute to the development of smart communities.

The rest of the local governments mention that public libraries are providing different programs and services due to their formal and informal participation in the development of smart communities. However, based on the most mentioned programs and services (such as free access to high-speed Internet and public access to computers and advanced technology mentioned by 90% of the local government respondents), it seems that most local governments think public libraries' main contribution to the development of smart communities has to do with bridging the digital divide and promoting digital literacy, which is aligned with their technological view on what a smart community is.

About local governments' expectation on the future public libraries' programs and services that contribute to the development of smart communities, besides value about program related to technology provision, most of them more would like to see that public libraries offer more programs about digital literacy, such as free computer training and classes at various levels. This again aligns with their perceptions of the concept of smart city and how the development of a smart city/community relies on the intensive use of technology. To further contribute to the development of smart communities, local governments think that public libraries should not only help provide residents with access to technologies, but also provide training to improve their abilities to utilize these technologies. From this we can see that local governments' perceptions of public libraries' current and future programs in the development of smart communities are

basically the same. It is, therefore, clear that local governments recognize public libraries mostly as spaces of access to -- and use of -- technology and that they do not envision public libraries doing more and playing additional roles in contributing to the development of smart communities.

Most local governments think that public libraries' participation in the development of smart communities has brought many benefits to residents, one of the most mentioned benefits is bridging digital divide. This also aligns with the public libraries' program: technology provision, which most local governments view as the public libraries' contribution to the development of smart communities. This response stays the same when local government talk about the potential benefits for public libraries' future programs and services in the development of smart communities. The consistency in the results indicates that for local governments, the most important function that a public library provides is as a space of access to and use of technology.

Local governments also recognized that public libraries are experiencing and will experience various costs and challenges. The most mentioned current and future costs and challenges stay the same, they are all about limited budget to support buying and updating technology. This aligns with their perceptions that public libraries mainly contribute to the development of smart communities by providing residents with access to various kinds of technologies.

Coordination among different community stakeholders, exploring opportunities and forming partnerships are the least mentioned cost by local governments. This aligns with the fact that most public libraries do not really need to partner with other community stakeholders to provide certain services to contribute to developing smart communities, such as offering access to the Internet and computers and offering training to their patrons, which most local government respondents view as the most important contributions of public libraries to the development of smart communities. This also, to some extent, aligns with the fact that in some communities there is very limited involvement among stakeholders in developing smart communities. This may be explained by the fact that we have a relative high proportion of respondents from small communities, with small populations and a lack of an official smart city/community strategy.

## **Acknowledgements**

The authors would like to thank local government professionals who participated in our survey, and local government associations across the United States, who helped promote and distribute our survey. This survey is implemented in partnership with the American Library Association (ALA)'s Center for the Future of Libraries and funded by

the Institute of Museum and Library Services under Grant No. LG-96-17-0144-17. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the Institute of Museum and Library Services.

## About CTG UAlbany and About this Project

The Center for Technology in Government at the University at Albany (CTG UAlbany) works with governments worldwide transforming public services through innovations in technology, policy and management. A research institute at the University at Albany, State University of New York, CTG UAlbany was established in 1993 to pursue new ways to use technology to address practical problems of information management and service delivery in government.

CTG UAlbany collaborates with hundreds of domestic and international researchers on understanding and applying emerging technologies. At the same time, CTG UAlbany works with scores of local, state, federal and international government bodies as a trusted advisor and consultant through funded projects about management and policy decisions to govern the use of new technologies as tools for public service transformation.

More information at: <https://www.ctg.albany.edu/>.

The four-year research project “Enabling Smart, Inclusive, and Connected Communities: The Role of Public Libraries” is one of CTG UAlbany’s research projects, conducted in partnership with the American Library Association (ALA)’s Center for the Future of Libraries. It aims at better understanding how public libraries can advance their role as community anchors in smart city and community initiatives by contributing to the community’s understanding of and participation in such initiatives. Two research questions guide the study: 1) to what extent do public libraries, building on their expertise, knowledge, and background, contribute to communities’ understanding of and participation in smart city initiatives?; and 2) what are the existing and potential benefits, costs, risks, challenges, and unintended consequences for public libraries increasing their involvement in their communities’ smart city initiatives?

To address these two research questions, the following activities have been conducted: 1) a literature and current practices review, 2) an analysis of four case studies, and 3) a national survey. The project includes two main deliverables, the Opportunity Agenda and Roadmap Report and the Libraries in Smart Cities and Communities Toolbox, as well as several dissemination activities of results. The research is supported by the expertise of an Advisory Board which has provided strategic advice for multiple stages and activities.

The intended outcomes for public libraries, local governments and researchers include:

1. Increasing and sustaining relationships and collaborations between libraries and other organizations, such as city governments and community organizations.
2. Designing and developing two new and replicable resources to guide libraries willing to advance their role as community anchors in smart cities and to provide libraries with numerous resources and ideas for new programs and services contextualized to community issues/interests: the Opportunity Agenda and Roadmap Report and the Libraries in Smart Cities and Communities Toolbox.
3. Enhancing the relationships between researchers and practitioners by communicating research findings in different events and ways that will lead to improvements in library services.

More information at: <https://www.ctg.albany.edu/projects/imls2017/>.

## **Appendix I. Survey Methodology, Sample and Response**

This local government survey was distributed in two rounds. In the first round, the local government survey was distributed to 4,581 IT professionals and leaders from local governments across the United States through a SurveyMonkey email invitation. The survey was available between September 16th and October 30th, 2020, and reminders were sent to non-responders on a weekly basis. Within this sample, 360 email invitations bounced and were replaced with alternative contacts, and survey invitations were sent to these new contacts via email. One Hundred Seventy-One individuals opted out the survey without replacement.

We also used phone calls to follow up with 10% of the sample randomly. In the second round, we shared the survey link with local government associations across the United States and asked them to share the survey link with their local government members on our behalf between November 10th and December 18th, 2020. After the two-round distribution, we received 167 responses.

Before we distributed the surveys, we conducted two pretests and one pilot test to correct and validate the measures. For the two pretests we conducted one internally with researchers in our center (N=7) and one externally with subject experts (N=17) to check the language being used and the flow of the survey questions. The pilot test was conducted with 5% of the sample (N=243). The pretests and pilot tests lead to some revisions in the survey.



CTG

UNIVERSITY AT ALBANY

State University of New York