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The journey to work of young adults with mobility disability: a qualitative study on the digital technologies that support mobility

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ABSTRACT

Mobility is essential in navigating familiar and unfamiliar environments. People with disability may experience vulnerability in navigating the external environment, when mobility is hindered by discomfort, commodification, or disorientation. Independent commute, choice, and control can be enhanced with appropriate aids, technology, and infrastructure. Self-determination can also be seen to enhance mobility through the realisation of strengths and limitations of the individual and the opportunity to act with self-regulation, in a way that responds to events in an empowered way. Utilising a critical incident technique, this qualitative study examines the enabling and disabling factors that impact self-determination of young adults with mobility disability in the context of their journey to work and explores the role digital technologies can play in this journey. Key findings related to the importance of mobility planning, transport options and communication in the journey to work are discussed. The importance of digital technologies is highlighted including the proposed features of digital enabling platforms.

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KEYWORDS
Disability; mobility; young adult; digital technologies; commute; self-determination; employment; journey to work

Points of Interest

- Mobility is part of the journey to work experience that involves physical commute as well as the activities involved in planning and getting ready before commuting.
- Routine journeys take less planning and preparation than new journeys to work.

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- For young adults with mobility disability, the journey to work is enhanced through mobility planning, transport option, policies and standards and communication.
- Self-determination of young adults with mobility disability can be enabled or disabled by a range of factors that significantly influence the journey to work experience.
- Digital technologies aid in supporting the planning and the commute experience for people with mobility disability.

Introduction

The intersection between transport and employment is well documented, with access to transport considered significant to finding initial employment and to maintaining employment once it has been secured (Lubin and Deka 2012; Chamorro-Koc, Stafford, and Adkins 2015). Despite the transport challenges experienced by people with disability, physical movement is considered essential for participation in society and more specifically, participation in employment opportunities (Kenyon, Lyons, and Rafferty 2002; Unsworth et al. 2021). This is particularly relevant for people with disability as confidence, social connections, and financial independence arise out of engagement in employment (ABS 2016; Cregan, Kulik, and Bainbridge 2017). These challenges are further exacerbated by people with mobility disability who experience potential environmental inaccessibility, further challenging levels of self-control and autonomy (Ma and Mak 2023).

Self-determination is an important addition to the conversation around employment and the transport needs of people with mobility disability. Self-determination includes the prevalence of both external and intrinsic factors that influence the fulfillment of a person's psychological needs (Ryan and Deci 2017). Limitations to self-determination exist where there is lack of choice or control, including choices around a person's physical movement. This lack of choice and control can lead to a level of vulnerability for people with disability (Echeverri and Salomonson 2019) impacting independence and self-determination, which needs to be addressed (LaGrow, Wiener, and LaDuke 1990; Park & Chowdbury, 2022). Whilst previous research has examined the enabling and disabling factors associated with mobility in the context of the journey experience, there is a lack of research examining the impact of self-determination in the context of the journey to work.

Utilising a qualitative design, this research employed semi-structured interviews to understand the experience of young adults with mobility disability in Australia (Creswell and Creswell 2017). Young adults were selected as they often face additional challenges and poor working conditions (Wakeford and Waugh 2014). The Critical Incident Technique (CIT) was utilised in face-to-face

interviews to explore the impact of self-determination on young adults with mobility disability (Flanagan 1954; Butterfield et al. 2005) with the aim of identifying the enabling and disabling factors that impact self-determination in the context of journey to work experiences. Participants, in the study, described, not only their journey to work experiences but also memories of events that impacted their level of self-determination. One of the key insights raised related to the impact of digital technologies on participation in society. Thematic analysis supported the identification and classification of critical incidents in relation to the enabling and disabling factors that impact self-determination in the journey to work experiences of participants. Policies and standards, mobility planning, technology and alternative transport options featured heavily in the research findings.

Literature review

Mobility is a term with various definitions according to the context of its use. Mobility can be associated with physical, psychological, and social factors and the ability to navigate the physical environment. For people with disability, mobility is influenced by access to appropriate aids, technology, and suitable infrastructure to move through places and spaces (Warren, Ayton, and Manderson 2014). External barriers that place people in a vulnerable position hinder independent travel, choice, and control for those with mobility disability (Hine and Mitchell 2001; Chamorro-Koc et al. 2015). For example, during movement, people with disability may experience physical discomfort (e.g. bumpy roads), commodification (e.g. being ignored by a driver), and disorientation (e.g. driver takes the wrong route leading to a passenger not knowing when they will arrive) which can lead to vulnerability (Echeverri and Salomonson 2019). When people experience vulnerability, they cannot be fully independent. The United Nations Convention on the Rights of Persons with Disabilities highlights that personal mobility needs to be provided with the highest possible level of independence for people with disability in the manner and at the time of their choice (United Nations 2006). However, services often fail because they do not reflect peoples' needs (Lee and Chen 2009; Brown and Wyatt 2010; Park and Chowdbury, 2022). Situations where people with disability do not have control or choice over their mobility represent a limitation to self-determination. For this reason, independence, and self-determination for people with disability are advocated for wherever possible (LaGrow, Wiener, and LaDuke 1990).

External factors outside of a person's control, such as infrastructural barriers, impact self-determination and make the outcome of independent travel less certain. However, independent travel is highly desired because it benefits people with disability in many aspects, including economically and in terms of participation in society (LaGrow, Wiener, and LaDuke 1990; Rapegno and

Ravaud 2017; Berg and Ihlström 2019). Upon reviewing studies about travel experiences of people with disability in Europe, Hine and Mitchell (2001) concluded that prevalent barriers in the use of public transport include: inaccessible design of buses, trains, and bus and train stations; the location of bus stops and stations; the unpredictably long wait; customer care and travel information; and the cost of fares for travel. Lubin and Deka (2012) have also collected evidence from studies in North America that identify limited-service schedules, unreliable travel times, and need for advanced scheduling as barriers that also discourage people with disability from using public transport. In a recent systematic literature review, Unsworth et al. (2021) found throughout the literature, that although increasing awareness and adoption of features to enhance accessibility is increasing, access to transportations for those using mobility devices can still not be assumed. In Australia, Chamorro-Koc et al. (2015) identified similar barriers, highlighting the requirement for extensive planning and the ability to find alternative transport solutions when stranded, are crucial challenges to overcome as current services and infrastructure do not provide enough support for seamless journeys for people with mobility disability. These studies illustrate that some of the common limitations to mobility are infrastructural and informational factors that disrupt both planning and physical commute. What is not clear however in the literature is the factors impacting self-determination for people with mobility disability, in the context of the journey to work experience. Whilst various enabling and disabling factors have been identified, a clear gap remains when considering how these factors impact the self determination of young adults with mobility disability, at all stages of the journey to work.

This research investigated young adults with mobility disabilities' perspectives about the enabling and disabling factors that impact their self- determination in the context of the journey to work and the role digital technologies play in supporting these young adults. Despite numerous difficulties, researchers agree that mobility is essential for people with disability to participate in society, particularly for searching for jobs and maintaining employment (Boyce et al. 1999; Kenyon, Lyons, and Rafferty 2002; Lubin and Deka 2012; Chamorro-Koc et al. 2015; McMahon et al. 2015). Particular issues emerge when looking into the intersection of mobility and employment. For example, in a survey with 145 people with disability seeking employment Lubin and Deka (2012) assessed that 76% of all participants believed that transport was essential for employment, 25% mentioned leaving a job because of commute difficulties, and 40% reported altogether rejecting a job offer because of commute barriers. Also, transport can affect the ability to travel to a job interview, reducing the chances of getting a job in the first place (Kenyon et al. 2002). Nevertheless, employment is a desirable outcome for people with disability because employment increases wellbeing, confidence, social networks, and financial independence (ABS 2016; Cregan, Kulik,

and Bainbridge 2017). With this goal of employment in mind for young people with mobility disability, it is therefore important to understand the factors which limit their self-determination in their journey to work.

Explained as a meta-theory, Self-determination theory (SDT) captures a person's motivation, development, and wellness (Ryan and Deci 2017). SDT focuses on understanding how intrinsic and extrinsic factors contribute to enhancing or obstructing people's motivation to satisfy their three basic psychological needs of autonomy, competence, and relatedness (Ryan and Deci 2020). Autonomy is defined as the need to act with volition and self-endorsement over a person's own behaviour, capturing both a sense of initiative and ownership of one's actions. Competence concerns a person's ability to master, and to feel effective, within their environment, and occurs most frequently in environments which afford opportunities for growth and positive feedback. Relatedness reflects the extent to which a person feels a sense of belonging or connection with others in their social environment.

To completely satisfy these psychological needs people require high-quality intrinsic motivation. Motivation within self-determination framing is classified as either 'a-motivated', whereby no motivation is present; 'extrinsically motivated', where motivation is the result of external factors impacting on people's behaviour (Deci and Ryan 1985), or 'intrinsically motivated', where activities performed by a person are motivated by their own internal interests (Deci and Ryan 2000). SDT proposes that the highest level of motivation is intrinsic motivation and the lowest is a-motivation, with various stages of extrinsic motivation capturing the between points (Raeburn et al. 2015). Stages of motivation are believed to be influenced by how people interact with their environment. As people progress toward intrinsic motivation, they are more likely to achieve the basic psychological needs of autonomy, competence, and relatedness (Deci and Ryan 2000).

SDT has been applied successfully across numerous contexts including education, sport, health, and work, to understand peoples' behaviours (Sykes 2023). Wehmeyer, Kelchner, and Richards (1996) identify that for people with disability there are four characteristics associated with self-determination: (i) the person acts autonomously—the person acts free from external influences, and according to their own preferences; (ii) the behaviour is self-regulated—the person chooses the most appropriate skill to use in a particular situation; (iii) the person initiates and responds to events in a psychologically empowered manner—the person has control over the cognitive, personal, and motivational aspects; (iv) the person acts in a self-realising manner—the person is aware of their strengths and limitations and applies them in a beneficial way. Satisfying these four areas is crucial to enable self-determination in many aspects of people with mobility disabilities' lives. Although SDT has been posited as a motivational framework to help guide employment opportunities for people with disability previously (Goldfarb, Gal, and Gola 2019), it

has largely focused on the theory's ability to focus on the motivation behind work choices and frame how much of a person's behaviour is self-determined (Goldfarb, Golan, and Gal 2023) within the actual workplace. Examples of this include, solving problems in the workplace and in developing career plans (Wong et al. 2021). Where SDT has been applied to travel for people with mobility disability, it has been applied within leisure tourism to understand the motivational mechanisms behind travel for people with mobility challenges (Zhang et al. 2019). The results of Zhang et al. (2019), support the relevance in applying SDT to goal pursuit behaviours as undertaken in the current research, and suggest that the more challenging the goal, the more autonomous motivations are needed to achieve the behaviour and that intrinsic motivation is the ultimate end point. Therefore, applying SDT to understand the commute journey to work for young people with mobility disability is suitable to explore the enables and disablers in this commute journey, and to highlight the potential supporting role of digital technologies.

Research process

The research utilised a qualitative design to understand and explore the meaning young adults with mobility disability, associate with or create from their journey to work experiences (Creswell, 2017). Semi-structured interviews employing the Critical Incident Technique (CIT) were conducted with eight young adults with mobility disabilities living in Brisbane, an urban area in Australia. An urban area was selected for the study context due to the complexities of the commute, including the mix of public transport and private transport options within this context, and the pre-existing focus within Australian cities of social inclusion, by the Australian Government through the National Disability Insurance Scheme (NDIS) (Wiesel et al. 2019).

The interviews included open-ended questions and were conducted face-to-face, lasting on average 40 min. The sample size of eight participants was suitable for this study based on the qualitative methodology and the identification of 86 critical incidents (Flanagan 1954; Gremler 2004). Within CIT, the unit of analysis is the 'critical incident' rather than the number of participants. To be considered a critical incident, an example of the incident needs to be given, as well as a description of the importance of the incident to the participant, and how helpful or hindering the incident is (Butterfield et al. 2009). As the unit of analysis is the critical incident, data saturation occurs at the incident level rather than the participant level; in other words, when new critical incidents do not produce new themes (Flanagan 1954).

CIT enables participants to recall specific events in their own words rather than within a set framework therefore providing participants the opportunity to give detailed accounts of their own experiences, which is useful for

providing rich, in-depth understanding of a phenomenon (Bitner 1990; Stauss and Weinlich 1997). As stated by Butterfield et al. (2009), CIT helps understand what 'helps or hinders' a specific experience or activity. Although asking participants about retrospective events may elicit recall bias, given that participants are asked about specific events, rather than generalities, interpretations, or conclusions means that CIT meets the criteria for valuable and reliable data (Bitner, Booms, and Mohr 1994; Greer 2015). CIT was applied to identify the enabling and disabling factors that impact self-determination in the context of the journey to work for young adults with mobility disability (Flanagan 1954; Butterfield et al. 2005). This study also identified how digital technologies support the different activities that assist the journey.

During the interviews, questions were asked to motivate participants to discuss: (i) limiting situations that caused disturbance to their mobility, (ii) supporting strategies that improved their experience, and (iii) how the use of digital technologies to prepare for, or during mobility, supported them. The interviews were structured with open ended questions about challenges and enablers to self-determination in their physical journey to their work, as this concept is a crucial aspect of wellbeing for people with disabilities (Abery 1994; Wehmeyer 2005; Schalock and Verdugo 2012; Schalock, Verdugo, and Braddock 2002).

The interviews started with questions asking participants to provide details of a routine journey focusing on their journey to work. Participants provided descriptions of their journeys to work from the moment they prepare to leave, to the time they arrive at their final destination. Interview questions asked participants to discuss how they adapted to barriers or dealt with unexpected events during journeys, and if digitally enabled services helped them in those situations. The interviews were conversational and participant-led with the researcher asking opportunistic questions when appropriate. Because of this approach, participants reported critical incidents not only about their journey to work experience but also about other memories of events when their self-determination was impacted. These reports raised insights into the use of digital technology in other aspects of their participation in society. Thematic analysis was conducted to identify critical incidents and classify them to represent the enabling and disabling factors that impact self-determination in the journey experiences of participants (Braun and Clarke 2006; Nowell et al. 2017).

The eight young people who agreed to participate in the study were aged between 25 and 30 years old with a 50/50 spilt male/female, with seven participants having completed tertiary education, and one reporting having completed secondary education. All but one participant had a job at the time of the interview, however the participant without a current job, had been previously employed. This sample was deemed appropriate given that they all had experience commuting to their place of employment. The length

of time with their current employer varied between six months to three or more years. In terms of choice of transport type for commute, these participants mentioned public transport options such as the bus and train, as well as a taxi and their own vehicle. Half of the participants only commute on rare occasions, while the others' commute frequency ranges from two to three times a week, to daily commutes. Four participants answered that their commute time is longer than 60 minutes. The other three said that it takes them between 30 and 60 minutes to get to work, and one person reported taking 10–30 minutes to commute. For all but one participant, the commute takes longer than 60 minutes to prepare for. Seven out of eight participants said that they use digital technologies to plan for the commute, and all of them said that they access online information while commuting. Their preferred device to access online information is their smartphone, which they use every day. All but one of the participants uses a wheelchair for mobility, with the eighth also having mobility challenges. This specific group was selected as mobility has been highlighted as one of the main restrictions to participation in employment-related activities for people with disability (Chamorro-Koc et al. 2015). Furthermore, isolating a particular population based on individual characteristics is common practice in the vulnerability space to acknowledge the uniqueness of different groups' experiences (Baker et al. 2015).

Results

The CIT identified 86 incidents that were then classified into five categories and 22 sub-categories (Table 1). The distribution of critical incidents per category helped to identify the level of impact that each one of the CIT categories has in impacting the self-determination of young adults with mobility disability in their journey to work. The results showed the following percentages: mobility planning (32.6%), transport option (25.6%), technology (16.3%), policy and standards (16.3%), and communication (9.3%). The key findings from the categories will be discussed in turn, with technology incidents integrated into the other categories as this was often highlighted as the solution to overcome the other incidents.

Mobility planning

This category was the most frequently mentioned by participants at 32.6%, and it includes incidents about planning for journeys to work to avoid risks and strategies to overcome barriers during journeys to work. The most significant sub-categories within this category are double-checking information and relying on others, both separately representing 11.6% of total incidents. The nature of

Table 1. Frequency of critical incidents by category and sub-category.

Incident category	%	Sub-category	%
Mobility planning (28)	32.6	Double-checking information (10)	11.6
		Relying on others (10)	11.6
		Planning for mobility (4)	4.7
		Online support to problem solve (2)	2.3
		Decision making (1)	1.2
		Skills and confidence (1)	1.2
Transport option (22)	25.6	Public transport accessibility (7)	8.1
		Taxi (5)	5.8
		Public space accessibility (4)	4.7
		Rideshare (4)	4.7
		User data registration (2)	2.3
Technology (14)	16.3	Suggestions for improvements (8)	9.3
		Online peer support (5)	5.8
		Virtual environments (1)	1.2
Policy and standards (14)	16.3	Accessibility information (4)	4.7
		Lack of understanding of user needs (4)	4.7
		Providing feedback to service providers (4)	4.7
		Local council engagement (1)	1.2
		User as the expert (1)	1.2
Communication (8)	9.3	Pictures (4)	4.7
		Inaccurate online information (3)	3.5
		Outdated online information (1)	1.2
Total: 86 incidents			

the information that participants usually need to check concerns physical accessibility of the destination. This step is mostly considered a barrier to self-determination because participants believe that the information could be more clearly presented on digital technologies to facilitate planning. Also, because of the need to double-check information, planning takes time, so planning usually starts hours, if not days before the physical commute.

> *Because I'm very organised I will map out my journey to the tee as to where I'm going. So, I do a mixture of Google Maps and then understanding how long is it going to take by public transport? Do I feel well enough to drive myself? How much of a journey is it? And if I've never been there before I am a bit nerdy, I'll probably do a test run before I do the real one so that I can iron out any kinks and refine the journey for the real one. (P6)*

One of the most significant disabling factors that impacts self-determination in planning for the journey to work is the lack of specific online information about the accessibility of venues. Participants reported both enabling and disabling experiences of asking friends, family, service providers and even strangers to assist them in planning for or during their journeys. For example, assistance from other people might be required because of mobility barriers in public spaces such as streets and public buildings. The lack of accessibility in some public spaces can limit the control that people with mobility disability have over their own physical movement. A participant commented that a way to work around physical barriers is to have help from friends; however, the ideal scenario is to plan in advance to avoid situations where assistance is required. Public transport can also place people with mobility disability a situation where they need to collaborate with staff to overcome accessibility

limitations. In situations, for example, where a lift is broken at a train station, the interaction with service providers is recognised as a supporting strategy because staff can respond to specific customer needs. This reliance on planning for journeys to work removed the feeling of autonomy and competence from individuals and highlighted their level of uncertainty about their journey to work. The increased reliance on others within their environment also provided further challenges to the participant's feelings of autonomy.

The extent in planning for routine and new journeys to work varied significantly. If a participant is going to a known destination, planning is only required for getting ready for the journey, for example, to organise accessible transport. When a participant was returning to the same place of employment and accessing the same physical commute pathway, more competence and thus autonomy was felt. Meanwhile, much more extensive planning is necessary for a new journey. In fact, most of the participants only described the planning steps for a new journey because the commute part depends on the strategies determined during planning. In other words, the choice of transport option, or the support from friends or family, for example, might change according to the accessibility of the route and venue. This creates additional levels of challenges for those individuals who may work across locations or be seeking alternative employment opportunities.

Transport options

Transport options were the second most frequently mentioned category comprising 25.5% of total incidents in a participant's journey to work. Participants commented on enabling and disabling factors concerning public transport (8.1%), taxis (5.8%), rideshare companies (4.7%) and user data registration (2.3%). They also commented on the accessibility of public space (4.7%) and how it impacts their mobility. The accessibility of public transport options such as bus and trains, and bus stops and platforms, are the most common disabling factor (8.1% of incidents) that limits participants' mobility. An example is a problem with the ramp at train stations:

> *About five or three years ago, I would often get on the train and the guard who normally brings the ramp would often forget and I'd be left on the train. There was probably around, I'd say six times, that I was waiting for someone to get around and I tried to call them, and they didn't listen, and the train just left. And I was stuck on the train. (P1)*

It was also identified that unexpected things can happen, such as broken lifts or ramps not being brought out, which impacts mobility. There are strategies to overcome those barriers; however, what service providers do to inform or assist people in these situations are crucial to mobility outcomes.

These factors further challenge the autonomy of a person and limit their ability to be self-determined.

In relation to taxi drivers, the incidents reported were of negative experiences where participants felt a lack of choice or control in the situation. Driver attitudes can influence physical comfort and sense of security: The public space accessibility also impacts the transport options for people with mobility disability. Participants reported situations where they had to put themselves in danger to be able to access certain places because of physical barriers on their journey.

> *Even the little ramps on the side of the roads are really quite steep and that I did quite a bit. So, I prefer to um, it's a bit risky like not risky, but it's like cross the middle of the road to get across the other side, and then the opposite side of the street's ramp. I think that's just how some of them are built. (P2)*

Policy and standards

Incidents in this category (16.3% of total incidents) relate to issues concerning different understandings of accessibility and how these understandings impact the quality of the information provided on digital technologies. The sub-categories include issues with accessibility information (4.7%), lack of understanding of user needs (4.7%), experiences of providing feedback to service providers about accessibility (4.7%), engagement with local council (1.2%) and the acknowledgement that users are the experts of their mobility (1.2%). This happens because people can have different ideas of what accessibility means. It was found that when service providers make assumptions about a participant's needs, especially from the perspective of someone not living with a disability, participants' mobility was compromised.

> *I guess it's going a bit deeper than just saying they have a ramp, or they have a lift. Um, but those, uh, those are the only things that I think people without a disability would often think about. Um, well, uh, it's often a lot more things that affect how you can access something. (P1)*

Problems like this happen because, as highlighted by participants, there is inconsistency in how accessibility information is shared. Problems often centre on the quality of the information provided online, which can be vague and provide very little details. A participant's competence is challenged when information is limited or when there is little understanding of the requirements of a person with diverse needs.

Communication

Communication was the final identified category comprising 9.3% of total incidents. This category includes incidents about communication between

people and service providers through digital technologies, including the use of pictures (4.7% of total incidents). The communication category also encompasses reports of differences that participants encountered between information that was provided online, and what they experienced in reality (3.5% of incidents), as well as issues with outdated online information (1.2% of incidents). These factors all limit the feeling of competence and autonomy felt by a participant over their own ability to access their workplace.

Although journey planners may be available, these planners demonstrate that communication with service providers for routine journeys to work is usually limited to organising transport (and only if necessary). For new journeys, however, communicating with service providers, especially people who are familiar with the accessibility of their destination, is a crucial step of planning, which is difficult. Communication with people at their destination is the final step before participants decide to undertake a journey. It is at this point that participants make the final assessment of accessibility and how successful their journey can be. The issue identified by participants, is that this is also usually when miscommunication happens and information about accessibility provided does not correspond to the physical environment they encounter in reality when they are undertaking their journey. These are factors which all limit the self-determination of a participant in their journey to work. Despite working towards autonomy through intrinsic motivation, the reliance on others to achieve participants' journey goals highlights the role of extrinsic factors in goal achievement. Table 2 outlines a summary of all of the enabling and disabling factors highlighted in the critical incidents by the participants.

Discussion

The importance of accessing employment for people with disability has been well documented (Beatson et al. 2020). Understanding the enabling and disabling factors in the journey to work for people with mobility disability helps to ensure successful commute to their workplace, therefore aiding in successful workforce integration. Utilising self-determination theory, this research identifies the factors that support young adults with mobility disability in their journey to work, and which factors are likely to challenge this journey. Furthermore, this research overlays the role of digital technology in improving this journey. Digital technologies were found to have the potential to provide supporting strategies to enable self-determination of young adults with mobility disability in their journey to work. Using digital technologies in their journey to work often enabled people with mobility issues to overcome some of the challenges associated with the built environment and public transport. This integration of digital technology solutions supports the

Table 2. Enabling and disabling factors.

Critical Incident Category	Enabling factors	Disabling factors
Mobility planning	The option to contact service providers can provide a sense of security and more effective communication	Having to contact service providers to double-check the information about accessibility
	Planning for journeys in advance to avoid being stranded by physical barriers during mobility	Having to rely on others to overcome accessibility limitations
	Receiving help from friends or service providers (such as support workers) to find ways to overcome physical barriers	The negative attitude from service providers in response to operational issues that limit people's mobility
	Using digital technologies to plan for mobility independently	Lack of clear and specific online information about the accessibility of venues and support services available
	A framework for venues to follow to provide consistent accessibility information	
	Option to visually preview journeys for example using virtual reality	
Transport options	Support from public transport staff to overcome accessibility barriers or to find alternative transport options due to breakdowns (broken lifts, blocked tracks)	Limited accessibility of public transport vehicles and stations
	Finding taxi drivers who provide a good service and being able to use them for rides regularly	Issues with taxi services such as disorientation, driver's attitude, physical discomfort, and lack of control over navigation
	Storage of people's profile information to adapt journeys ongoingly to their preferences	Unforeseen barriers of public spaces (for example, blocked footpath) that require immediate adaptations to the journey
Policy and standards	Communication with service providers to provide feedback on how to improve accessibility based on the perspective from someone living with a disability	Inaccurate accessibility information because of service providers different understandings of accessibility or assumptions about people's access needs
Communication	Option to access visual information about venues/stations/street (through pictures) to make a personal assessment of accessibility	Online accessibility information that does not correspond to the physical environment in reality
	Peer-support networks where people in the same situation share "expert" knowledge based on their personal experiences	Lack of relevant information targeted at people with disabilities

development of self-determination within the journey to work. Self-determination can empower people with disability to have choice and control and reduces their feelings of vulnerability and improve wellbeing (Ryan and Deci 2017), and has been utilised to understand people with disability within the workforce previously (Goldfarb, Golan, and Gal 2023) and has been used to understand mobility challenges for leisure travellers (Zhang et al. 2019).

Even though earlier studies such as Lubin and Deka (2012) have suggested how enabling and disabling factors contribute to commute mobility for people with disability, there were no indications in the literature for how self-determination impacts young adults with mobility disability within the context of the journey to work. The literature review has pointed out that extensive planning is required for people with disability to go from one place to another (Palisano et al. 2009; Lubin and Deka 2012; Chamorro-Koc et al. 2015). Similarly, this current research has found that planning the

journey to work using digital technology solutions (for example, journey planners and visualisation such as *via* Google Maps satellite view), plays a significant role in aiding commute mobility for people with mobility disability. This research identified that planning through digital technologies is necessary to avoid being stranded by physical barriers during the journey to work, and to be able to commute as independently as possible. By utilising internal self-determined factors, people can exercise as much control and choice over their mobility. This independence is advocated for people with disability frequently (LaGrow, Wiener, and LaDuke 1990).

Digital technologies provide people the ability to demonstrate competence and autonomy, two of the fundamental components of SDT (Ryan and Deci 2017). The young adults with mobility disability in the current research highlighted that a significant part of planning for new journeys includes using digital technologies to gather information about accessibility. When this information is not explicitly described online by service providers, people need to use communication to contact the providers for further details, which is considered a limiting situation. Although this is utilised using technology (e.g., phone and emails), it still restricts the ease of real time digital technology solutions. Despite this, the option to contact service providers may provide a sense of security and become a supporting strategy to avoid unnecessary risks when planning for journeys and reflects external factors within self-determination theory. These findings are in line with what Echeverri and Salomonson (2019) describe as proactive and explicit articulation, which is a coping strategy that people use by interacting with service providers to prevent situations of vulnerability from occurring in the first place.

However, when young adults with mobility disability encounter unexpected barriers during a journey, they might need support from others to overcome those barriers. In these situations, help from service providers might be necessary and how staff respond to people's needs can influence the positive or negative outcome of their interaction. Kaufman-Scarborough (1999, 2001) recognise that service providers' attitudes have a strong influence on peoples' experiences. Therefore, how staff respond to people can directly, positively or negatively, impact their experience of the journey to work. The findings also demonstrate the importance of social support from friends, family, and service providers, which is consistent with work from Beatson et al. (2021) who find that socio-cultural factors can help young adults with disability in their journeys. These social support factors represent the external factors which influence a person's self-determination (Ryan and Deci 2017).

Aligned with previous studies, this current research identified that digital technologies support planning for mobility (Chamorro-Koc et al. 2015), which can enhance an individual's self-determination. Digital technologies facilitate

access to peer-support networks and information that helps people plan their journey to work. Extending previous studies that have investigated the movement of people with disability, this research identified four core functionalities where digital technologies can be used to empower young adults with mobility disability in their journey to work: (i) peer-to-peer communication, (ii) readily available information about all support services and all aspects that influence mobility, (iii) centralised information from different service systems, and (iv) self-service delivery. Each of these factors will now be discussed in turn including specific digital technology tools that were suggested by the participants as ways to enhance self-determination in their journey to work.

Peer-to-peer communication

Providing an opportunity for people with mobility disability to communicate with peers by tapping into the network of available information establishes relatedness among people, hence contributing to their self-determination (Ryan and Deci 2017). Links to shared social media sites were suggested to facilitate this peer-to-peer communication by participants, such as *via* Facebook pages and the setting up of other shared forums where appropriate. This could also include avenues for providing and accessing transport reviews or route reviews. This could be provided in the form of a 'TripAdvisor' style of review platform as well.

Readily available information about all support services and all aspects that influence mobility

One of the key challenges highlighted was the ability to access real time data when there were changes impacting people whilst they were on their actual journey to work such as closed train tracks or broken lifts. With the intersect between transport, employment, and disability well understood (Lubin and Deka 2012; Park and Chowdbury 2022), identifying available solutions at this critical real time juncture is important (Hine and Mitchell 2001). In an effort to ensure autonomy (Ryan and Deci 2017) in their journey to work, participants suggested the use of digital technologies such as real time journey planners, alternative journey options/suggestions (connected with real time information), real time images such as bus and train stations, and pre-booking services that included real-time information.

Centralised information from different service systems

One of the key issues that emerged from participants was the integration of different systems. Given that infrastructural barriers are highlighted as having

a key impact on people's self-determination (Ryan and Deci 2017), finding a solution that overcomes these challenges is important. Drawing together information from different sources about services that indirectly influence journey planning for work commuting can help to overcome these barriers (Unsworth et al. 2021). Digital solutions integrating real time weather information, assistance from disability support workers and information from government providers about topics such as travel funding was suggested. The focus here was on centralised information about support services rather than de-centralised systems.

Self-service delivery

The final digital technology solution to promote autonomy and competence (Ryan and Deci 2017) proposed by participants was self-service technology, through a digital platform enabling people to complete tasks independently. The suggested technology which could be integrated into this platform included search engine options, voice commands, digital technology accessibility, and the ability to link directly with service providers, both disability support workers, and transport providers.

These factors outlined above to facilitate the journey to work, help create self-determination for people with disability. These factors extend the work of Wehmeyer, Kelchner, and Richards (1996), who highlighted the importance of creating the ability to act autonomously, having self-regulated behaviour, being able to initiate and respond to events in a psychologically empowered manner, and acting in a self-realising manner when creating SDT for people with disability.

With the integration in mind of the four characteristics proposed by participants in the research (peer-to-peer communication, readily available information about all support services and all aspects that influence mobility, centralised information from different service systems, and self-service delivery), one of the ways to advance the findings is to develop a platform that comprises all the information required for people with mobility disability to plan their journey to work, and to incorporate a peer-to-peer communication channel. Table 3 outlines the key features identified by participants through the CIT interviews as relevant to the construction of a digital platform to support self-determination for the journey to work. The platform draws together the sub-categories of critical incidents and the digital recommendations that were suggested to potentially overcome the incidents which arose in the journey to work. By bringing together a shared platform integrating multiple sources of information and potential touch points, people could work together to provide a communication channel for users to interact with service providers to share needs and accessibility problems or solutions. This way, both users and providers would feel, and could be more

Table 3. Co-creation of digital enabling platform.

Platform feature	Enabling mobility factor
Journey Planner	The platform provides links to other services to give a summary of all significant commute considerations such as: weather, traffic, public transport, carer availability, maps, biometrics (personal health points) GPS location The ability for a support worker to pick up more than one passenger
Centralised information about support services available	One platform to access all relevant information Collection of information from other sources, such as TransLink or other transport providers, into one platform Link to other organisations, for example, carer organisation
Choice of support staff	Provide the ability for service users to select support worker Provide information to service users about carer availability by giving notifications and enable the service user to choose from support staff that are available
Timely information	Real-time updates about any complications to people's journeys Wide range of real-time transport options to enable people to make personal choices about what works best for them
Alternative journey options	The platform could provide backup options based on people's preferences in case conditions for the journey change. For example, if support worker is not available an alternative option is automatically provided
Duplication of journeys	Option to upload journey preferences to a platform and duplicate it for following journeys
Journey adaptation on-the-go	Ability to alter journey on-the-go in case something changes, or for example, if the service user needs to find an accessible toilet
Real-time images	Pictures of public venues available online for people to be able to see the street access, the aspects of the surface, the inclines and other relevant accessibility information
Search engine	Opportunity to use a search engine (voice/type) with a wide variety of search parameters to find support services
Voice activation and voice commands	Voice activation and voice response
Weather information	Weather information in real-time
Contact service providers	Search results with links to contact service providers
Cover a wide range of disabilities	Incorporate a range of disability types
Digital platform accessibility	Accessible on all platforms by all software, including screen readers and voice commands
Pre-booking services	Option to pre-book services for future journeys
Link to social media	Link to social media to review others' experiences of services Opportunity to have discussions with peers

empowered, leading towards self-determination. In addition, a digital platform could provide for centralised and timely information that would allow for alternative journey options if required during commuting thus adding further to the level of intrinsic motivation and degree of autonomy and self-determination.

Conclusion

The findings from this research corroborate the importance of supporting people with mobility disability in their journey to work. The importance of digital technologies as a solution to potentially mitigate some of the critical incidents which were highlighted by the participants in this research offers avenues for local governments to overcome potential disablers and help people achieve

their employment goals. Given the nuanced solutions at a geographic level due to the integration of local transport options, weather options and peer-to-peer options in real time, these technological solutions are best situated at a local government level. While national governments and peak bodies may drive the solution, the implementation needs to be local to make it meaningful for people in their self-determined journeys to work. Furthermore, implementation plans need to incorporate views of those with lived experience to ensure appropriate understanding of potential challenges as well as solutions. Suggestions to introduce such solutions should include input from local governments, those with lived experiences, disability employment service (DES) providers, transport providers and technology (digital) operators to integrate different perspectives. It is important that local government input should include those from different departments such as transport, employment, and social services, to ensure the reduction of a siloed approach which is often the criticism of government policy processes.

This study has some limitations that need to be acknowledged and that could potentially be addressed in future research. The findings of this research are based on a qualitative investigation within the context of journey experiences from the perspectives of users and service providers in Brisbane, Australia. Brisbane is an urban area with different public transport options, and therefore, the research acknowledges that people living in other areas, such as rural communities or other countries might have different experiences. Further research could examine the journey experiences of people living in other conditions to see how their experiences compare to the ones identified in this research and to identify if digital technology solutions offer the same opportunities to mitigate negative incidents. Also, due to the qualitative nature of the study, the validity of the findings could be enhanced by using quantitative approaches.

In addition, the research involved the participation of young adults with mobility disability, and therefore, the enabling and disabling factors that impact their self-determination could be associated with their age and lived experience of disability. It could be of interest in future studies to have participants from other age groups and disability types to see how the results compare.

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References

Abery, Brian. 1994. "A Conceptual Framework for Enhancing Self-Determination." *Challenges for a Service System in Transition*, 345–380.

ABS. 2016. Disability. *4430.0 - Disability, Ageing and Carers, Australia: Summary of Findings, 2015*. Retrieved from https://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/4430.0Main%20F eatures202015?opendocument&tabname=Summary&prodno=4430.0&issue=2015&num=&view=

Baker, S. M., LaBarge, M., & Baker, C. N. (2015). Consumer Vulnerability: Foundations, Phenomena, and Future Investigations. In K. Hamilton, S. Dunnet, & M. Piacentini (Eds.), *Consumer Vulnerability: Conditions, Contexts and Characteristics*. London: Routledge.

Beatson, Amanda, Aimee Riedel, Marianella Chamorro-Koc, Greg Marston, and Lisa Stafford. 2020. "Encouraging Young Adults with a Disability to Be Independent in Their Journey to Work: A Segmentation and Application of Theory of Planned Behaviour Approach." *Heliyon* 6 (2): E03420. https://doi.org/10.1016/j.heliyon.2020.e03420

Beatson, Amanda, Aimee Riedel, Marianella Chamorro-Koc, Greg Marston, and Lisa Stafford. 2021. "Factors Influencing the Journey to Work for Young People with Physical and/or Neurological Conditions." *Disability and Rehabilitation* 43 (9): 1270–1278. https://doi.org/10.1080/09638288.2019.1655804

Berg, Jessica, and Jonas Ihlström. 2019. "The Importance of Public Transport for Mobility and Everyday Activities among Rural Residents." *Social Sciences* 8 (2): 58. https://doi.org/10.3390/socsci8020058

Bitner, Mary Jo. 1990. "Evaluating Service Encounters: The Effects of Physical Surroundings and Employee Responses." *Journal of Marketing* 54 (2): 69–82. https://doi.org/10.2307/1251871

Bitner, Mary Jo., Bernard H. Booms, and Lois A. Mohr. 1994. "Critical Service Encounters: The Employee's Viewpoint." *Journal of Marketing* 58 (4): 95–106. https://doi.org/10.2307/1251919

Boyce, William, Shankar Malakar, Robert Millman, and Krishna Bhattarai. 1999. "Physically Disabled Children in Nepal: A Follow-up Study." *Asia Pacific Disability Rehabilitation Journal* 10 (1): 20–26.

Braun, Virginia, and Victoria Clarke. 2006. "Using Thematic Analysis in Psychology." *Qualitative Research in Psychology* 3 (2): 77–101. https://doi.org/10.1191/1478088706qp063oa

Brown, Tim, and Jocelyn Wyatt. 2010. "Design Thinking for Social Innovation." *Development Outreach* 12 (1): 29–43. https://doi.org/10.1596/1020-797X_12_1_29

Butterfield, Lee D., William A. Borgen, Norman E. Amundson, and Asa-Sophia T. Maglio. 2005. "Fifty Years of the Critical Incident Technique: 1954-2004 and beyond." *Qualitative Research* 5 (4): 475–497. https://doi.org/10.1177/1468794105056924

Butterfield, Lee D., Asa-Sophia T. Maglio, William A. Borgen, and Norman E. Amundson. 2009. "Using the Enhanced Critical Incident Technique in Counselling Psychology Research." *Canadian Journal of Counselling and Psychotherapy* 43 (4): 265–282.

Chamorro-Koc, Marianella, Lisa Stafford, and Barbara Adkins. 2015. "Seamless Journeys: enhancing Accessibility to Work through Digital Technologies for People with Mobility-Related Impairments." In *Proceedings of the 6th IASDR (the International Association of Societies of Design Research Congress*, pp. 298–310. Australia: IASDR (The International Association of Societies of Design Research).

Cregan, Christina, Carol T. Kulik, and Hugh T. J. Bainbridge. 2017. "Differences in Well-Being among People with Disabilities in Paid Employment: Level of Restriction, Gender and Labour Market Context." *Social Policy & Administration* 51 (7): 1210–1230. https://doi.org/10.1111/spol.12263

Creswell, John W., and J. David Creswell. 2017. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. California: Sage Publications.

Deci, Edward L., and Richard M. Ryan. 1985. *Motivation and Self-Determination in Human Behavior*. New York: Plenum Publishing Co.

Deci, Edward L., and Richard M. Ryan. 2000. "The" What" and" Why" of Goal Pursuits: Human Needs and the Self-Determination of Behavior." *Psychological Inquiry* 11 (4): 227–268. https://doi.org/10.1207/S15327965PLI1104_01

Echeverri, Per, and Nicklas Salomonson. 2019. "Consumer Vulnerability during Mobility Service Interactions: Causes, Forms and Coping." *Journal of Marketing Management* 35 (3-4): 364–389. https://doi.org/10.1080/0267257X.2019.1568281

Flanagan, John C. 1954. "The Critical Incident Technique." *Psychological Bulletin* 51 (4): 327–358. https://doi.org/10.1037/h0061470

Goldfarb, Yael, Eynat Gal, and Ofer Gola. 2019. "A Conflict of Interests: A Motivational Perspective on Special Interests and Employment Success of Adults with ASD." *Journal of Autism and Developmental Disorders* 49 (9): 3915–3923. https://doi.org/10.1007/s10803-019-04098-7

Goldfarb, Yael, Ofer Golan, and Eynat Gal. 2023. "A Self-Determination Theory Approach to Work Motivation of Autistic Adults: A Qualitative Exploratory Study." *Journal of Autism and Developmental Disorders* 53 (4): 1529–1542. https://doi.org/10.1007/s10803-021-05185-4

Greer, Dominique A. 2015. "Defective Co-Creation: Developing a Typology of Consumer Dysfunction in Professional Services." *European Journal of Marketing* 49 (1/2): 238–261. https://doi.org/10.1108/EJM-07-2012-0411

Gremler, Dwayne D. 2004. "The Critical Incident Technique in Service Research." *Journal of Service Research* 7 (1): 65–89. https://doi.org/10.1177/1094670504266138

Hine, Julian, and Fiona Mitchell. 2001. "Better for Everyone? Travel Experiences and Transport Exclusion." *Urban Studies* 38 (2): 319–332. https://doi.org/10.1080/00420980020018619

Kaufman-Scarborough, Carol. 1999. "Reasonable Access for Mobility-Disabled Persons is More Than Widening the Door." *Journal of Retailing* 75 (4): 479–508. https://doi.org/10.1016/S0022-4359(99)00020-2

Kaufman-Scarborough, Carol. 2001. "Sharing the Experience of Mobility-Disabled Consumers: Building Understanding through the Use of Ethnographic Research Methods." *Journal of Contemporary Ethnography* 30 (4): 430–464. https://doi.org/10.1177/089124101030004004

Kenyon, Susan, Glenn Lyons, and Jackie Rafferty. 2002. "Transport and Social Exclusion: Investigating the Possibility of Promoting Inclusion through Virtual Mobility." *Journal of Transport Geography* 10 (3): 207–219. https://doi.org/10.1016/S0966-6923(02)00012-1

LaGrow, Steven, William Wiener, and Robert LaDuke. 1990. "Independent Travel for Developmentally Disabled Persons: A Comprehensive Model of Instruction." *Research*

in Developmental Disabilities 11 (3): 289–301. https://doi.org/10.1016/0891-4222(90)90014-y

Lee, Yu-Cheng, and Jih-Kuang Chen. 2009. "A New Service Development Integrated Model." *The Service Industries Journal* 29 (12): 1669–1686. https://doi.org/10.1080/02642060902793573

Lubin, Andrea, and Devajyoti Deka. 2012. "Role of Public Transportation as Job Access Mode: Lessons from Survey of People with Disabilities in New Jersey." *Transportation Research Record: Journal of the Transportation Research Board* 2277 (1): 90–97. https://doi.org/10.3141/2277-11

Ma, Gloria Yuet Kwan, and Winnie W. S. Mak. 2023. "Maintenance of Ableist Society for Wheelchair Users: Roles of Medical Model of Disability and Witnessed Negotiation for Accessibility." *Disability & Society* 1–26. https://doi.org/10.1080/09687599.2023.2209277

McMahon, Don D., Cate C. Smith, David F. Cihak, Rachel Wright, and Melinda M. Gibbons. 2015. "Effects of Digital Navigation Aids on Adults with Intellectual Disabilities: Comparison of Paper Map, Google Maps, and Augmented Reality." *Journal of Special Education Technology* 30 (3): 157–165. https://doi.org/10.1177/0162643415618927

Nowell, Lorelli S., Jill M. Norris, Deborah E. White, and Nancy J. Moules. 2017. "Thematic Analysis: Striving to Meet the Trustworthiness Criteria." *International Journal of Qualitative Methods* 16 (1): 160940691773384. https://doi.org/10.1177/1609406917733847

Palisano, Robert J., Lorie J. Shimmell, Debra Stewart, John J. Lawless, Peter L. Rosenbaum, and Dianne J. Russell. 2009. "Mobility Experiences of Adolescents with Cerebral Palsy." *Physical & Occupational Therapy in Pediatrics* 29 (2): 133–153. https://doi.org/10.1080/01942630902784746

Park, Jun, and Subeh Chowdbury. 2022. "Towards an Enabled Journey: Barriers Encountered by Public Transport Riders with Disabilities for the Whole Journey Chain." *Transport Reviews* 42 (2): 181–203. https://doi.org/10.1080/01441647.2021.1955035

Raeburn, T., V. Schmied, C. Hungerford, and M. Cleary. 2015. "Self-Determination Theory: A Framework for Clubhouse Psychosocial Rehabilitation Research." *Issues in Mental Health Nursing* 36 (2): 145–151. https://doi.org/10.3109/01612840.2014.927544

Rapegno, Noémie, and Jean-François Ravaud. 2017. "Disability, Residential Environment and Social Participation: Factors Influencing Daily Mobility of Persons Living in Residential Care Facilities in Two Regions of France." *BMC Health Services Research* 17 (1): 683. https://doi.org/10.1186/s12913-017-2602-8

Ryan, Richard M., and Edward L. Deci. 2017. *Self-Determination Theory: Basic Psychological Needs in Motivation, Development, and Wellness*. New York: Guilford Publications.

Ryan, Richard M., and Edward L. Deci. 2020. "Intrinsic and Extrinsic Motivation from a Self-Determination Theory Perspective: Definitions, Theory, Practices, and Future Directions." *Contemporary Educational Psychology* 61: 101860. https://doi.org/10.1016/j.cedpsych.2020.101860

Schalock, Robert L., and Miguel Angel Verdugo. 2012. *A Leadership Guide for Today's Disabilities Organizations*. Baltimore, Maryland: Paul H. Brookes.

Schalock, Robert L., Miguel Angel Verdugo, and David L. Braddock. 2002. *Handbook on Quality of Life for Human Service Practitioners*. Washington, DC: American Association on Mental Retardation.

Stauss, Bernd, and Bernhard Weinlich. 1997. "Process-Oriented Measurement of Service Quality: Applying the Sequential Incident Technique." *European Journal of Marketing* 31 (1): 33–55. https://doi.org/10.1108/03090569710157025

Sykes, Cheryl. 2023. "How Australia's Employment Services System Fails Jobseekers: Insights from Self-Determination Theory." *Australian Journal of Labour Economics* 26 (1): 84–113.

United Nations. 2006. *Convention on the Rights of Persons with Disabilities and Optional Protocol*. https://www.un.org/disabilities/documents/convention/convoptprot-e.pdf

Unsworth, Carolyn, Man Hei So, Julian Chua, Prasad Gudimetla, and Anjum Naweed. 2021. "A Systematic Review of Public Transport Accessibility for People Using Mobility Devices." *Disability and Rehabilitation* 43 (16): 2253–2267. https://doi.org/10.1080/09638288.2019.1697382

Wakeford, Michelle, and Fiona Waugh. 2014. *Transitions to Employment of Australian Young People with Disability and the Ticket to Work Initiative*." National Ticket to Work Network.

Warren, Narelle, Darshini Ayton, and Lenore Manderson. 2014. "Mobility Issues for People with Disabilities." In *Encyclopedia of Quality of Life and Well-Being Research*, 4095–4099. Dordrecht: Springer.

Wehmeyer, Michael L. 2005. "Self-Determination and Individuals with Severe Disabilities: Re-Examining Meanings and Misinterpretations." *Research and Practice for Persons with Severe Disabilities* 30 (3): 113–120. https://doi.org/10.2511/rpsd.30.3.113

Wehmeyer, Michael L., Kathy Kelchner, and Sandy Richards. 1996. "Essential Characteristics of Self-Determined Behavior of Individuals with Mental Retardation." *American Journal on Mental Retardation* 100 (6): 632–642.

Wiesel, Ilan, Carolyn Whitzman, Brendan Gleeson, and Christine Bigby. 2019. "The National Disability Insurance Scheme in an Urban Context: Opportunities and Challenges for Australian Cities." *Urban Policy and Research* 37 (1): 1–12. https://doi.org/10.1080/08111146.2018.1481026

Wong, Jasin, Wendy J. Coster, Ellen S. Cohn, and Gael I. Orsmond. 2021. "Identifying School-Based Factors That Predict Employment Outcomes for Transition-Age Youth with Autism Spectrum Disorder." *Journal of Autism and Developmental Disorders* 51 (1): 60–74. https://doi.org/10.1007/s10803-020-04515-2

Zhang, Y., Gao, J., Cole, S. T., & Ricci, P. (2019). Beyond accessibility: empowering mobility-impaired customers with motivation differentiation. International. *Journal of Contemporary Hospitality Management, 31*(9), 3503–3525.